



**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: SW-341-2019-W00768-01

(2) Sale Name: Kennedy Ridge

(3) Contract Expiration Date: 10/31/2021

(4) Purchaser Name: \_\_\_\_\_

(6) State Representatives:

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

(7) Purchaser Representatives:

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

(8) Name of Subcontractors and Start Dates:

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

|         | <u>Subcontractor Name.</u> | <u>Start Date</u> | <u>Cell No.</u> | <u>Alt Phone</u> |
|---------|----------------------------|-------------------|-----------------|------------------|
| FELLING |                            |                   |                 |                  |
| YARDING |                            |                   |                 |                  |

(9) Comments:

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(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**

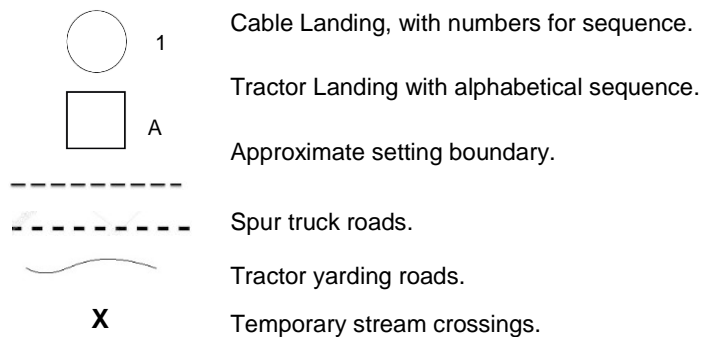
**INSTRUCTION SHEET FOR OPERATIONS PLAN**

**SUBMIT ONE COPY OF PLAN 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.
- (9) Show projected dates for commencement of both projects and logging. If projected dates need to be changed at a later date, notification must be given to the STATE representative by supplemental plan or otherwise, prior to commencement of such operations.
- (10) The STATE representative will furnish extra copies of Exhibit A of the contract for your use in preparing the operations map. The map shall use the following legend and show:
  1. Landing locations, approximate setting boundaries, and probable sequence of logging the settings. Number the settings in sequence.
  2. Locations of spur roads planned for construction, other than required by the timber sale contract. Provide spur road specifications
  3. Locations of proposed tractor yarding roads. Show if and how marked on the ground.
  4. Locations of temporary stream crossings.
  5. List the sequence of performing project work.
  6. Location of rock sources - attach pit development plans.




**Oregon Department of Forestry**

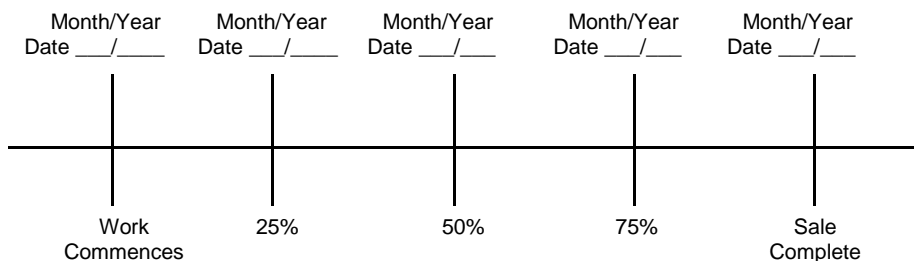
2600 State St Salem OR 97310

## PART III: EXHIBITS

**EXHIBIT B  
OPERATIONS PLAN**
**Completion Timeline**

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

**Projects**

**Harvest & Other Requirements**


The Federal Endangered Species Act (ESA) prohibits a person from taking any federally listed threatened or endangered species. Taking under the federal ESA may include alteration of habitat. STATE's approval of this plan does not certify that PURCHASER's operation under the plan is lawful under the federal ESA. As provided in the timber sale contract, PURCHASER's 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: \_\_\_\_\_

 SUBMITTED BY:  
PURCHASER

 STATE OF OREGON - DEPARTMENT OF  
FORESTRY

Title \_\_\_\_\_

Title \_\_\_\_\_



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

(1) ORIGINAL REGISTRATION ☐ Date \_\_\_\_\_  
REVISION NUMBER 000 ☐ Date \_\_\_\_\_  
CANCELLATION ☐ Date \_\_\_\_\_

(2) TO: \_\_\_\_\_  
(Third Party Scaling Organization)

(3) FROM: Southwest Phone (541) 474-3152  
Oregon  
(State Forestry District)  
Address: 5375 MONUMENT DR.  
GRANT PASS, OR 97526

(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'.

(7) Weight Scale Sample ☐ YES ☒ NO

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

(9) SALE NAME: Kennedy Ridge  
COUNTY: Josephine

(10) STATE CONTRACT NUMBER:  
SW-341-2019-W00768-01

(11) STATE BRAND REGISTRATION NUMBER:

(12) STATE BRAND INFORMATION:



(13) PAINT REQUIRED: YES ☒  
COLOR: Orange

| (14) SPECIAL REQUESTS (Check applicable)                 |                                     |
|--|-------------------------------------|
| PEELABLE CULL (all species).....                         | <input checked="" type="checkbox"/> |
| <b>NO DEDUCTIONS ALLOWED FOR MECHANICAL DAMAGE</b> ..... | <input checked="" type="checkbox"/> |
| ADD-BACK VOLUME - Deductions due to delay...             | <input checked="" type="checkbox"/> |
| 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



Oregon Department of Forestry  
**EXHIBIT C - SAWMILL GRADE**  
**INSTRUCTIONS FOR FORM 343-307a (rev. 11/11)**  
**Southwest Oregon - SOA**

- (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](mailto:services@crls.com)

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

Northwest Log Scalpers Inc.  
6137 NE 63rd St, Vancouver, WA, 98661  
Phone: (360) 553-7212 ext. 4 Fax: (360) 553-7213  
Email: [info@nwlogscalpers.com](mailto:info@nwlogscalpers.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](mailto:office@prlsb.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](mailto:yamhilllog@frontier.com)

Pacific Log Scaling & Grading Bureau, Inc.  
P.O.Box 23939, Portland, OR 97281  
Phone: (503) 684-5599 Fax: (503) 639-4880  
Email: [PacLogScale@sol.com](mailto:PacLogScale@sol.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](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](mailto:scaling@odf.state.or.us). Scaling Instructions for each brand should be scanned separately, for each approved TPSO.

**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(s), Purchaser, Specific distribution instructions are outlined on the last page of this report: Instructions for Form



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

Southwest Oregon, SOA

(1) ORIGINAL REGISTRATION ☐ Date \_\_\_\_\_  
REVISION NUMBER 000 ☐ Date \_\_\_\_\_  
CANCELLATION ☐ Date \_\_\_\_\_

(2) TO: \_\_\_\_\_  
(Approved Pulp Processing Facility)

(3) FROM: Southwest Phone (541) 474-3152  
Oregon  
(State Forestry District)  
Address: 5375 MONUMENT DR.  
GRANT PASS, OR 97526

(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

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

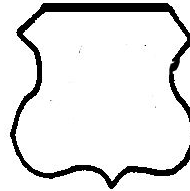
(9) **SALE NAME:** Kennedy Ridge

COUNTY: Josephine

(10) **STATE CONTRACT NUMBER:**  
SW-341-2019-W00768-01

(11) **STATE BRAND REGISTRATION NUMBER:** \_\_\_\_\_

(12) **STATE BRAND INFORMATION:**



(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**



Oregon Department of Forestry  
**EXHIBIT C - PULP SORT**  
**Instructions for Form 343-307b**

Southwest Oregon, SOA

- (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](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](mailto: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](mailto: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@southernoregonlogscaling.com](mailto:info@southernoregonlogscaling.com)

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

Pacific Log Scaling & Grading Bureau, Inc.  
P.O.Box 23939, Portland, OR 97281  
Phone: (503) 684-5599 Fax: (503) 639-4880  
Email: [PacLogScale@sol.com](mailto:PacLogScale@sol.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.
- (7) **Must Complete.** Enter sale name and county. If more than one county write in all the counties that the sale is located in.
- (8) **Must Complete.** Enter sale Contract number.
- (9) **Must Complete.** Enter Oregon's State Brand Registry Number **(REQUIRED)**.
- (10) **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).
- (11) Use this section to list any special instructions or the reason for any revisions in section item (1).
- (12) **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 \\WPODFILL01\Transfer\ScalingInstructions or e-mailed directly to [scaling@odf.state.or.us](mailto: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 Pulp Processing Location, Purchaser, District, Mgmt. Unit**

EXHIBIT D

FOREST ROAD SPECIFICATIONS

**Minimum specifications**

| ROAD    | SUBGRADE<br>WIDTH | SURFACED<br>WIDTH | POINT TO<br>POINT | STATION TO<br>STATION | DRAINAGE          |
|---------|-------------------|-------------------|-------------------|-----------------------|-------------------|
| Spur 1  | 14                | 12                | A to D            | 0+00 to 55+50         | Maintain existing |
| Spur 2  | 14                | 12                |                   | 0+00 to 18+00         | Outsloped         |
| Spur 2a | 14                | 12                |                   | 0+00 to 2+56          | Outsloped         |

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

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

**CLEARING CLASSIFICATION.**

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

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

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

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

**GRUBBING CLASSIFICATION.**

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

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

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

- Where end-haul is required
- On side slopes exceeding 60 percent
- On unstable areas
- In any stream channel (Type F, N or D) or where material may enter the stream channel.

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



EXHIBIT D

FOREST ROAD SPECIFICATIONS

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

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

Unless road plans show otherwise, all roads shall be on a balanced cross section, except when the slope is over 60 percent, the road shall be on full bench for the width specified.

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

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

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

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

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

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

DRAINAGE

Subgrade. Subgrade shall be outsloped, at 4 to 6 percent as shown on the "Forest Road Specifications" table in this Exhibit.

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

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

Location: Intervisible but not greater than 750 feet apart and as directed by STATE.

SLOPES

Solid Rock

Fractured Rock

Soil - side slopes 50% and over

Soil - side slopes less than 50%

Cut Slopes

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

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

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

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

Fill Slopes

1½:1

1½:1

Top of cut slope shall be rounded.

LANDINGS. Landings shall be constructed as posted in the field, no less than 50 feet wide and no more than 70 feet wide unless otherwise approved by STATE. Surface is to be outsloped 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 H, and blocked from vehicular traffic prior to October 31, annually and as directed by STATE.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD CONSTRUCTION INSTRUCTIONS:

- (1) Excavated Materials. Excavated materials shall be utilized for road construction and hauled in where necessary. Surplus excavation materials shall be hauled to the waste areas as marked in the field and/or designated on Exhibit A. Surplus excavated materials and waste materials shall be sloped and compacted for drainage. Fills shall be thoroughly compacted in accordance with this Exhibit.
- (2) Subgrade Preparation and Application of Surfacing Rock.
  - (a) Complete culvert installations, drainage ditches, ditchouts, fill construction, and other specified work prior to the application of surfacing rock.
  - (b) Subgrade shall be outsloped 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 outsloped at 4 to 6 percent.

**The subgrade shall be approved by STATE prior to the application of rock.**

**Unless otherwise specified, full bench shall be required on all side slopes greater than 60%.**

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

**Spur 2 (Stationing 0+00 to 18+00)**

**Subgrade instructions:**

- 0+00 to 18+00      Clear and grub. Clearing debris shall be piled on stable locations and end hauled where necessary. Piled or endhauled clearing debris shall be piled in a manner to facilitate burning. The piles shall be conical in nature.
- On slopes greater than 60 percent, stumps shall be end hauled to a designated waste area shown on Exhibit A.
- The subgrade shall be outsloped 4 to 6 percent.
- Additional subgrade width shall be provided for offtracking around horizontal curves. See offtracking table below.
- Where additional subgrade width is needed around horizontal curves and is not provided, the operator shall use the formula as stated above in this exhibit.
- Top of cut is approximately 10 feet horizontal distance from posted Right-of-Way.
- The grade should build out to 15 percent slope. The grade shall not exceed 15 percent grade unless otherwise approved by STATE.
- 0+00      The operator shall widen the inside edge of the horizontal curve at the intersection, so that log trucks can make the turn.
- 0+00 to 7+30      The subgrade shall be full bench construction unless otherwise specified.
- Any excessive incidental sidecast as determined by visual inspection by STATE, shall be removed.
- 5+00      The soil type changes from silty sand to gravel in nature. The material encountered will likely be a colluvium or alluvium of sand and gravel. It is unlikely that harder material will be encountered deeper in the excavation.
- The operator shall selectively choose some of the colluvium to be wasted on top, of existing dirt road Spur 1 as pre base rock material. If STATE determines that the colluvium material is suitable for base rock material, the operator may utilize clean colluvium material for base rock in the form of pit run.
- The STATE anticipates the first 2 to 3 feet will likely be cleaner rock material in nature. Likely, the further down in excavation, the more contaminated the colluvium will become.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

**Spur 2 (Stationing 0+00 to 18+00)**

Colluvium is loose unconsolidated material that has been redeposited at the base of a slope due to rain or environmental factors, downslope creep, and natural process. This material was likely produced by an old rock outcropping at the top of the ridge, and over time, fragments of rock have given way due to freeze thaw processes and gravity, and deposited at the base of the rock outcrop.

7+65 Construct a minimum 60 foot by 50 foot landing. The landing will be located at the apex of the horizontal curve. The operator shall excavate into the cut bank to gain width, and may place the excavated soil on the spine of the ridge to produce the pad.

7+30 to 18+00 The subgrade shall be balance cut and fill construction.

13+93 to 15+67 Large switchback curve.

15+67 to 18+00 The operator may utilize the top of the ridge as a waste area, or build up the road in the form of an embankment fill.

18+00 Construct a minimum 70 foot by 50 foot landing on top of knob.

**Rocking Instructions:**

0+00 to 18+00 Apply a compacted depth of 8" of Pit-Run quality rock.

0+00 to 18+00 Apply a compacted depth of 2" of 1 ½"-0" cap rock.

Apply additional rock for offtracking and turnouts as directed by STATE.

7+65 & 18+00 Apply 40 Cu. Yds. of Pit-Run landing rock at each landing.

**Spur 2a (Stationing 0+00 to 2+56)**

**Subgrade instructions:**

0+00 to 2+56 Clear and Grub. Pile clearing debris.

Subgrade shall be outsloped at 4 to 6 percent.

2+56 Construct a minimum 50 foot by 50 foot landing.

**Rocking Instructions:**

0+00 to 18+00 Apply a compacted depth of 8" of Pit-Run quality rock and cap it with a 2" lift of 1 ½"-0" rock

2+56 Apply 40 Cu. Yds. of Pit-Run landing rock.

EXHIBIT D  
FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS:

- (1) Excavated Materials. Excavated materials shall be utilized for road and fill construction and hauled in where necessary. Surplus excavation materials shall be hauled to the waste areas as marked in the field and/or designated on Exhibit A. Surplus excavated materials and waste materials shall be sloped and compacted for drainage.
- (2) Bank Slough Removal. Excavate all bank slough. Bank slough material shall not be pulled across existing surfacing rock.
- (3) Drainage Ditches. Where ditches occur, restore ditchlines, including ditchouts, as directed by STATE. Clean out all culvert inlets and outlets for a 10-foot radius. .
- (4) Sidecast Pullback. Excavate/pullback previously sidecast materials below the road at designated locations. Developed slopes shall be pulled back to a 1½:1 slope or to natural ground contours. The beginning position for sidecast pullback shall be no greater than (20) feet vertical distance from the existing road surface, in accordance with Exhibit \*. Sidecast material remaining greater than (20) feet below the road shall be tapered and sloped for drainage.

GENERAL ROAD IMPROVEMENT INSTRUCTIONS:

- (5) Subgrade Preparation and Application of Surfacing Rock.
  - (a) Complete culvert installations, drainage ditches, fill reconstruction, ditchouts, and other specified work prior to the application of new surfacing rock.
  - (b) Cut out all potholes and/or washboard sections from the existing surfacing.
  - (c) Apply required patching and leveling fill, as directed by STATE.
  - (d) Upon completion of above required work, apply, process, and compact surfacing rock in accordance to this Exhibit.

EXHIBIT D  
FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

**Spur 1 (A to D) as shown on Exhibit A (Stationing 0+00 to 55+50)**

**Subgrade instructions:**

0+00 to 55+50 Prepare subgrade for surfacing.

The operator shall maintain the existing drainage. If the road is outsloped, then leave outsloped, if it's ditched then clean the ditches.

The outside edge of the road where berms exists, shall be leveled out, endhauling if necessary, and compacted to allow for adequate drainage.

At natural depression, low spots, and as directed by STATE, the operator shall construct drainage dips to help relieve water off the roadway. Drainage ditches shall be installed as shown on Exhibit J. The dips should be an elongated gradual depression at a total depth of 1.5 feet. The dip shall be installed at a 45 degree angle across the entire width of the road.

Compact the subgrade according to the compaction and processing requirements.

Tamp outside edge of road where cracking has occurred.

B to C Operator shall round the top of cut. The cut slope was over steepened during the initial construction. The STATE anticipates the operator to excavate approximately 500 Cu. Yds. of soil to improve the cut slope angle and round off the top edge.

47+47 Conduct sidecast pull back. A log is buttressed against a couple trees. The operator shall remove the log and remove all material resting against the log. The operator shall remove all the material back to its natural slope.

55+50 At point D as shown on Exhibit A, construct a landing. The landing shall be a minimum 50 feet by 50 feet.

**Rocking Instructions:**

0+00 to 55+50 Apply a compacted depth of 8" of Pit-Run quality rock.

0+00 to 55+50 Apply a compacted depth of 2" of 1 ½"-0" cap rock.

Apply additional rock for offtracking and turnouts as directed by STATE.

55+50 Apply 40 Cu. Yds. of Pit-Run landing rock.

EXHIBIT D  
FOREST ROAD SPECIFICATIONS

Horizontal Curve Widening  
Sale: Kennedy Ridge

Typical Stinger Steered with 40' Logs  
Length (L) 31

| Road                       | Horizontal Curve | Arc length | Delta "Δ" | Radius "R" | OFF TRACKING | Rock Total Cu. Yds |
|----------------------------|------------------|------------|-----------|------------|--------------|--------------------|
| Rock depth equals 9 inches |                  |            |           |            |              |                    |
| Spur 1                     | 1+41             | 100        | 170       | 50         | 10.6         | 50                 |
| Spur 1                     | 14+83            | 75         | 65        | 50         | 8.0          | 30                 |
| Spur 1                     | 17+00            | 141        | 180       | 45         | 12.1         | 80                 |
| Spur 2                     | 0+00             | 60         | 100       | 50         | 9.6          | 30                 |
| Spur 2                     | 7+30             | 86         | 130       | 45         | 11.5         | 50                 |
| Spur 2                     | 13+93            | 157        | 180       | 50         | 10.6         | 70                 |
| <b>Total</b>               |                  |            |           |            |              | <b>310</b>         |

Equations

$$L = (L1^2 - L2^2 + L3^2)^{1/2}$$

$$OT = (R - (R^2 - L^2)^{1/2}) [1 - \exp(-0.015\Delta(R/L) + 0.216)]$$

PROOF CHECK

$$ODF \text{ MANUAL} = 400 / \text{Radius}$$

Note: The Delta "Δ" is an estimation of the actual degree of curve.

The operator shall add the offtracking total to the minimum subgrade width to determine the final width required at the curve.

## EXHIBIT D

## FULL BENCH AND END-HAUL REQUIREMENTS

| Road   | STA. TO STA. | CONTAINMENT –<br>SIDECAST | WASTE AREA<br>LOCATION | WASTE AREA<br>TREATMENT |
|--------|--------------|---------------------------|------------------------|-------------------------|
| Spur 2 | 0+00 to 7+30 | (1) Incidental            | (1), (2), & (3)        | (1), (2), & (3)         |

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) Normal/Incidental: The amount of excavated material lost over the outside edge of the road shall not exceed 1 foot in depth.

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

Waste Area Location

- (1) Spur 1 between the stations of 52+70 and 55+50, as shown on Exhibit A, and as marked in the field.
- (2) Spur 2 between the stations of 15+00 and 18+00, on top of the ridge, as shown of Exhibit A, and as marked in the field.
- (2) As approved by STATE

Waste Area Treatment

- (1) Deposit at waste area, spread evenly, compact, and provide adequate drainage.
- (2) Pile woody debris separate from other waste material.
- (3) Seed and mulch fill slopes.



EXHIBIT D

FULL BENCH AND END-HAUL REQUIREMENTS

Special instructions:

Waste Area 1: The operator may utilize the top of the ridge on Spur 1 as a waste area. Location is approximately between the stations of 52+70 and 55+50. The footprint shall be in the form of an embankment fill. The height of the fill shall not exceed 6.5 feet in height. The maximum quantity of waste shall be 1500 Cu. Yds. of in place material. The operator shall compact the waste to ensure structural stability. The width of finished subgrade shall be a minimum of 16 feet of width. All fill slopes shall be seeded and mulched.

Waste Area 2: The operator may utilize the flat in-between the switchback and top landing of spur 2 to waste material. The STATE anticipated the operator using the waste in the form of an embankment fill to reduce the grade leaving the landing. The operator may also, waste the material in the form of a pad or pile on the flat. The waste area shall be uniformly shaped and the extent of the footprint shall be determined by STATE. The operator shall concentrate the majority of the mass on the center of the ridge, except for the portion that may be used as an embankment fill. The maximum quantity of waste shall be 2,500 Cu. Yds.

Stumps: The operator may place stumps on the fill slope of spur 1, between the stations of 50+00 to 55+50. Alternative location shall be approved by STATE.

EXHIBIT E

ROAD SURFACING

| ROAD: Spur 1                 |                       |                        |                              | POINT TO POINT     |    | Sta. to Sta.  |      | TOTAL<br>VOLUME<br>(CY) |
|------------------------------|-----------------------|------------------------|------------------------------|--------------------|----|---------------|------|-------------------------|
| Application                  | Rock Size<br>and Type | Location               | Depth of<br>Rock<br>(inches) | A to D             |    | 0+00 to 55+50 |      |                         |
|                              |                       |                        |                              | Volume (CY)<br>Per |    | Number<br>of  |      |                         |
| Cap Rock                     | 1 ½"-0"               | 0+00 to 55+50          | 2"                           | Station            | 11 | Station       | 55.5 | 610                     |
| Base Rock                    | Pit Run               | 0+00 to 55+50          | 8"                           | Station            | 40 | Stations      | 55.5 | 2220                    |
| Turnouts                     | Pit Run               | Determined by<br>STATE | 6"                           | Turnout            | 10 | Turnouts      | 2    | 20                      |
| Curve Widening               | Pit Run               | Determined by<br>STATE | 8"                           | Variable           |    | Curves        | 3    | 160                     |
| Landings                     | Pit Run               | 55+50                  | 6"                           | Landing            | 40 | Landings      | 1    | 40                      |
| Total Rock for Road Segment: |                       |                        | A to D    0+00 to 55+50      |                    |    |               |      | 3050                    |

| ROAD: Spur 2                 |                       |                        |                              | POINT TO POINT     |    | Sta. to Sta.  |    | TOTAL<br>VOLUME<br>(CY) |
|------------------------------|-----------------------|------------------------|------------------------------|--------------------|----|---------------|----|-------------------------|
| Application                  | Rock Size<br>and Type | Location               | Depth of<br>Rock<br>(inches) | N/A                |    | 0+00 to 18+00 |    |                         |
|                              |                       |                        |                              | Volume (CY)<br>Per |    | Number<br>Of  |    |                         |
| Cap Rock                     | 1 ½"-0"               | 0+00 to 18+00          | 2"                           | Station            | 11 | Stations      | 18 | 200                     |
| Base Rock                    | Pit Run               | 0+00 to 18+00          | 8"                           | Station            | 40 | Stations      | 18 | 720                     |
| Curve Widening               | Pit Run               | Determined by<br>STATE | 8"                           | Variable           |    | Curves        | 3  | 150                     |
| Landings                     | Pit Run               | 7+65 & 18+00           | 6"                           | Landing            | 40 | Landings      | 2  | 80                      |
| Total Rock for Road Segment: |                       |                        | 0+00 to 18+00                |                    |    |               |    | 1150                    |

| ROAD: Spur 2a                |                       |              |                              | POINT TO POINT     |    | Sta. to Sta. |      | TOTAL<br>VOLUME<br>(CY) |
|------------------------------|-----------------------|--------------|------------------------------|--------------------|----|--------------|------|-------------------------|
| Application                  | Rock Size<br>and Type | Location     | Depth of<br>Rock<br>(inches) | N/A                |    | 0+00 to 2+56 |      |                         |
|                              |                       |              |                              | Volume (CY)<br>Per |    | Number<br>of |      |                         |
| Cap Rock                     | 1 ½"-0"               | 0+00 to 2+56 | 2"                           | Station            | 11 | Stations     | 2.56 | 30                      |
| Base Rock                    | Pit Run               | 0+00 to 2+56 | 8"                           | Station            | 40 | Stations     | 2.56 | 100                     |
| Landings                     | Pit Run               | 2+56         | 6"                           | Landing            | 40 | Landings     | 1    | 40                      |
| Total Rock for Road Segment: |                       |              | 0+00 to 2+56                 |                    |    |              |      | 170                     |

| ROCK TOTALS (CY) | Pit Run | 1 ½"-0" | Total |
|------------------|---------|---------|-------|
|                  | 3530    | 840     | 4370  |

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

EXHIBIT E

ROCK ACCOUNTABILITY

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

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

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

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

Load Records. Notify STATE before spreading the rock and maintain a record of all rock delivered for spreading. Make the record available for STATE inspection. A weekly report listing the amount of rock shall be available. However, depth measurement shall be used to determine contract compliance.

EXHIBIT E

CRUSHED ROCK SPECIFICATIONS

Grading Requirements

|                   |         |              |         |
|-------------------|---------|--------------|---------|
| <u>For ¾"-0"</u>  | Passing | 1" sieve     | 100%    |
|                   | Passing | ¾" sieve     | 90-100% |
|                   | Passing | ⅜" sieve     | 55-75%  |
|                   | Passing | ¼" sieve     | 40-60%  |
|                   | Passing | No. 10 sieve | 20-40%  |
|                   | Passing | No. 40 sieve | 8-16%   |
|                   | Passing | 2" sieve     | 100%    |
| <u>For 1½"-0"</u> | Passing | 1½" sieve    | 90-100% |
|                   | Passing | ¾" sieve     | 60-90%  |
|                   | Passing | ¼" sieve     | 30-50%  |
|                   | Passing | No. 10 sieve | 15-30%  |
|                   | Passing | No. 40 sieve | 7-15%   |
| For Pit-Run       | Passing | 10" sieve    | 100%    |
|                   | Passing | 6" sieve     | 60-85%  |
|                   | Passing | 3" sieve     | 30-50%  |
|                   | Passing | ¼" sieve     | 0-10%   |

Control of gradation shall be determined by visual inspection by STATE.

EXHIBIT E

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, at the pre-operation meeting, prior to conducting any operation in quarry area. The plan shall include, but not be limited to:
  - (a) General plan for the quarry.
  - (b) Location of benches and roads to benches if new benches are needed.
  - (c) Disposal site for woody debris, overburden and reject material.
  - (d) Time lines for rock quarry use.
  - (e) Erosion Control measures.
2. PURCHASER shall notify STATE 5 days prior to the start of quarry development activities.
3. STATE doesn't anticipate there being much overburden, if any at all. If overburden exist, the operator shall remove any overburden necessary to maintain safe entry and exit of the quarry. All overburden and reject material may be placed at the base of the quarry in the existing floor as directed by STATE.
4. 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. **Blasting is not anticipated**, but if it's necessary, the operator shall:
  - a. 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 5:00 p.m.
  - b. 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.
  - c. 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.
5. 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.
6. Quarry face shall be developed in a uniform manner. All quarry backslopes shall be left in a stable condition.
7. Oversized material that is produced or encountered during development may be piled separately from other material.

EXHIBIT E

ROCK QUARRY DEVELOPMENT AND USE

8. Access roads to the quarry, and the quarry floor, shall be cleared at the termination of use. The quarry floor shall be left in a condition approved by STATE prior to moving out all equipment. If blasting occurs, unused shot rock material shall be piled in the vicinity of the rock pit as directed by STATE. Quarry benches shall be blocked at the termination of use as directed by STATE.

**General remarks:**

London Quarry is a pre-developed pit run quarry. The STATE doesn't anticipate there being much overburden. Any waste generated should be placed at the quarry floor. Any incidental sidecast produced due to quarry use, shall be pulled back to minimize impacts. Blasting is not anticipated. The rock material is expected to be rippable with an excavator or dozer. Operator shall leave the quarry in a manor safe for entry and exit. Access roads to benches shall be blocked at the end of use and the quarry floor shall be left in a condition acceptable by STATE. Waterbars shall be installed on the quarry access roads as directed by STATE, and drainage of the quarry floor shall be approved by STATE.

EXHIBIT F

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 outsloped, at 4 to 6 percent as specified in the "Forest Roads Specifications" table in Exhibit D.

| ROADs                      | SUBGRADE COMPACTION OPTIONS |
|----------------------------|-----------------------------|
| Spur 1, Spur 2 and Spur 2a | (1) Vibratory roller        |

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

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

| ROAD SEGMENT                                   | FILLS COMPACTION OPTIONS |
|--|--------------------------|
| Spur 1 52+70 to 55+50<br>Spur 2 15+67 to 18+00 | (1) Vibratory roller     |

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 outsloped, at 4 to 6 percent as specified in the "Forest Roads Specifications" table in Exhibit D.

EXHIBIT F

COMPACTION AND PROCESSING REQUIREMENTS

| ROAD SEGMENT                              | CRUSHED COMPACTION OPTIONS |
|---|----------------------------|
| All road segments requiring crushed rock. | (1) Vibratory roller       |

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

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

| ROAD SEGMENT                         | PIT-RUN COMPACTION OPTIONS |
|--------------------------------------|----------------------------|
| All road segments requiring Pit-Run. | (1) Vibratory roller       |

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.

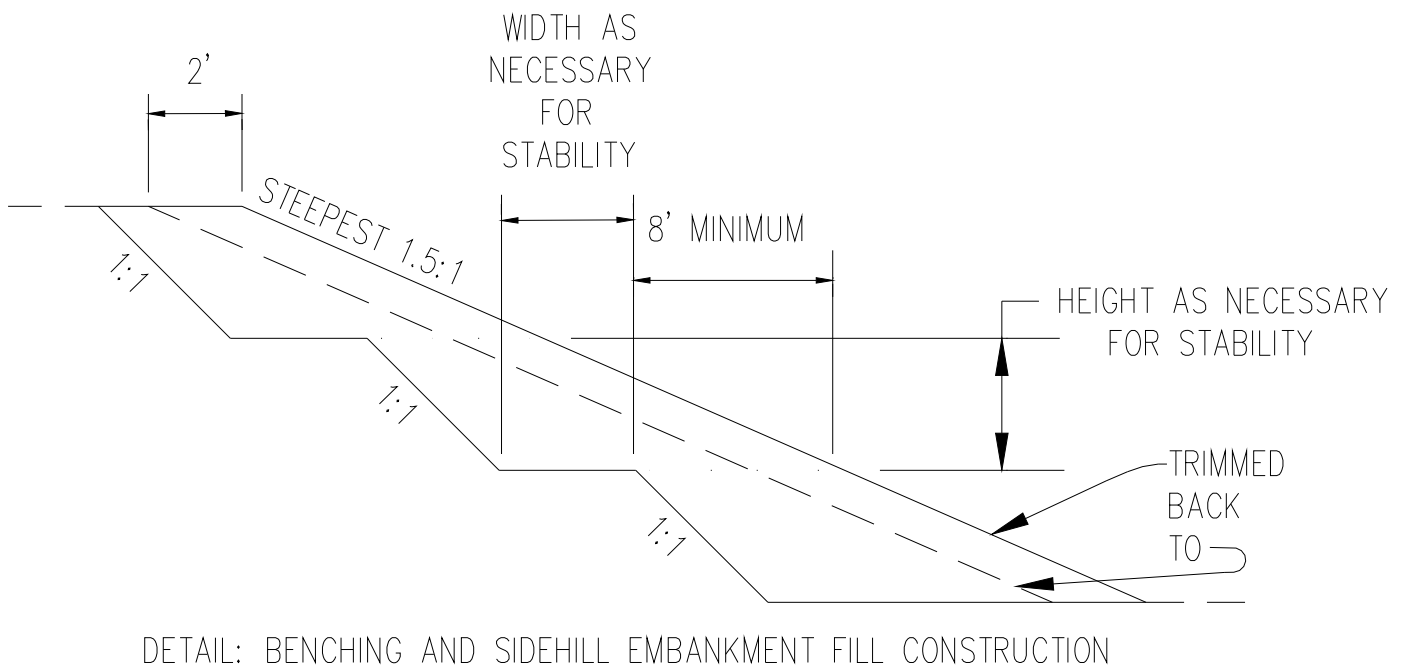


EXHIBIT G

SIDEHILL EMBANKMENT FILL CONSTRUCTION SPECIFICATIONS

(no scale)

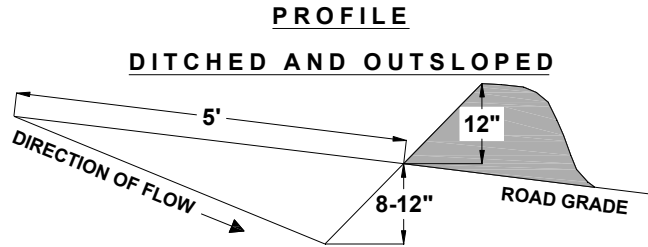
All temporary earth slopes shall comply with OR-OSHA requirements. Areas to receive structural fill that have a slope greater than  $2\frac{1}{2} : 1$  (40%) shall have horizontal benches and key ways cut into the fill areas prior to placing the new fills. All fill material shall be placed and compacted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



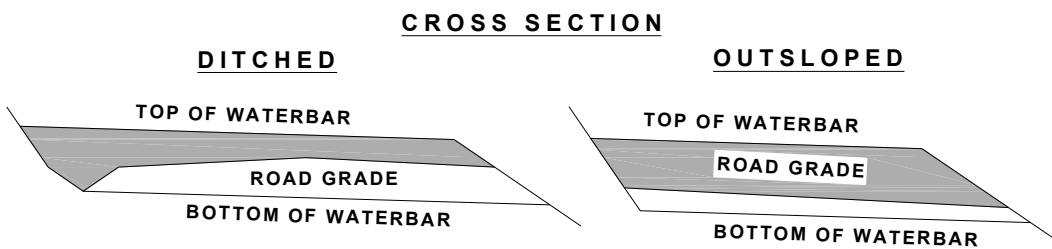
STATE shall be contacted to inspect the prepared bench configuration prior to new fill material placement. STATE shall be contacted to inspect the final cut and fill slope configurations.

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

# EXHIBIT H WATERBAR SPECIFICATIONS



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



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

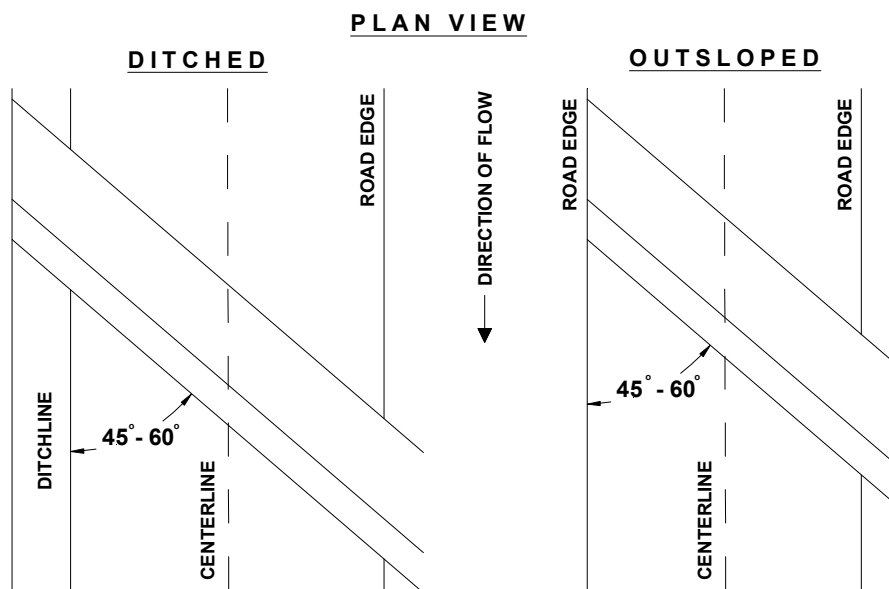
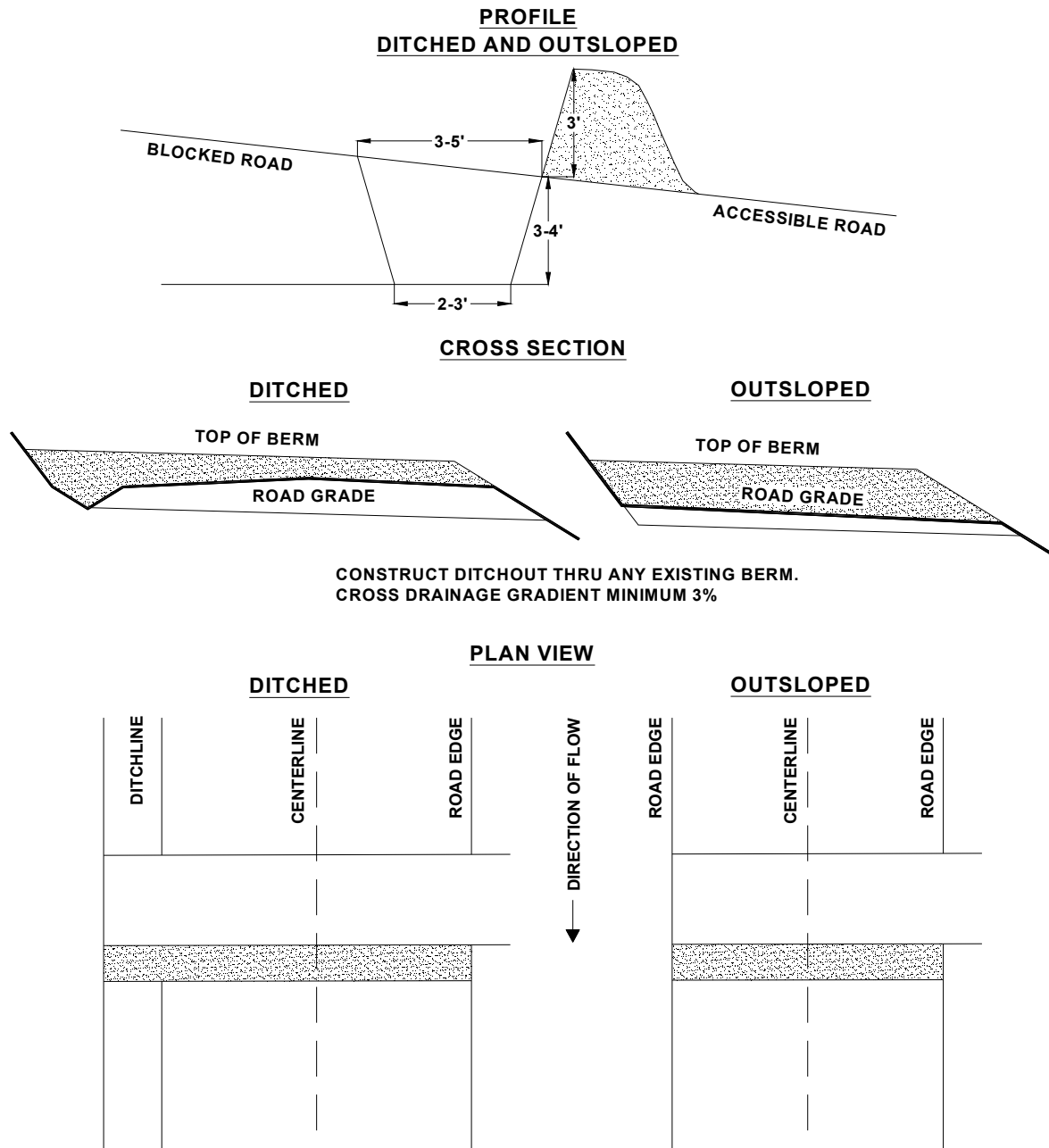


EXHIBIT I  
 TANK TRAP SPECIFICATIONS



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 J

ROAD DIP CONSTRUCTION SPECIFICATIONS

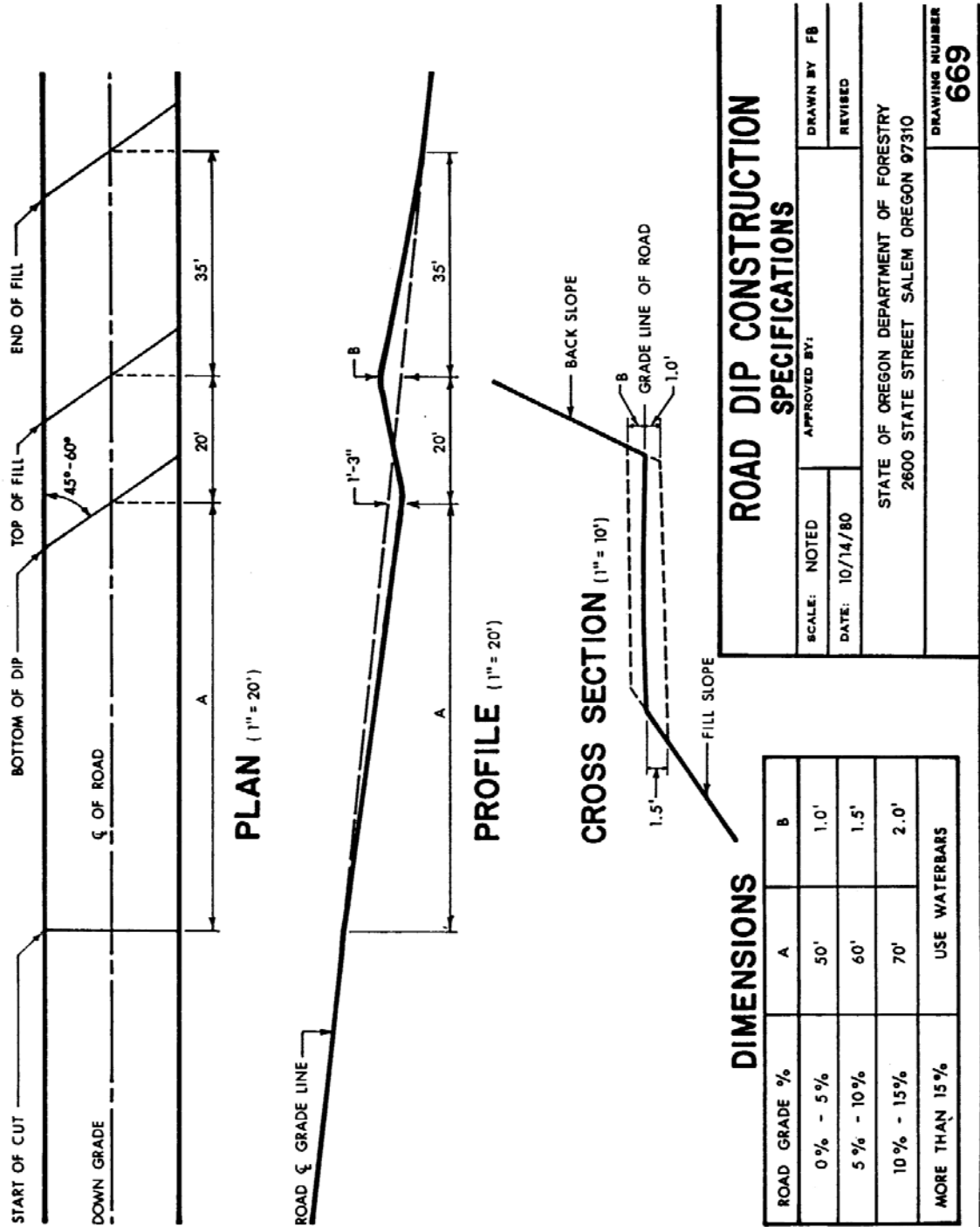


EXHIBIT K

TYPICAL CROSS SECTION VIEW OF SIDECAST PULLBACK AND ROAD REALIGNMENT

