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: TL-341-2021-W00752-01

(2) Sale Name: Cruisin Murphy

(3) Contract Expiration Date: 10/31/2023

(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 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.

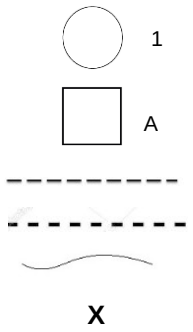
(7) The STATE representative will be designated when your plan is approved and is the person who will inspect and issue instructions regarding performance.

(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.



Cable Landing, with numbers for sequence.

Tractor Landing with alphabetical sequence.

Approximate setting boundary.

Spur truck roads.

Tractor yarding roads.

Temporary stream crossings.

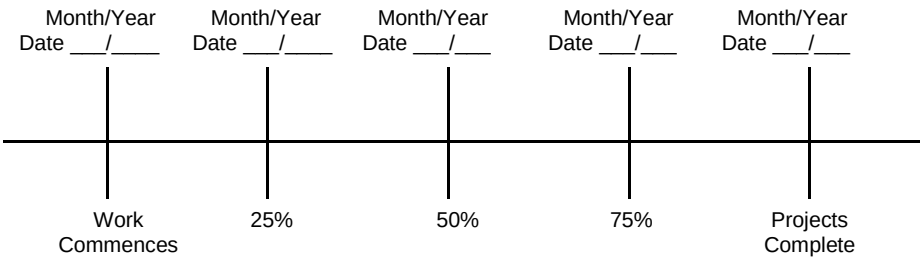
Oregon Department of Forestry
2600 State St Salem OR 97310
PART III: EXHIBITS

EXHIBIT B
OPERATIONS PLAN

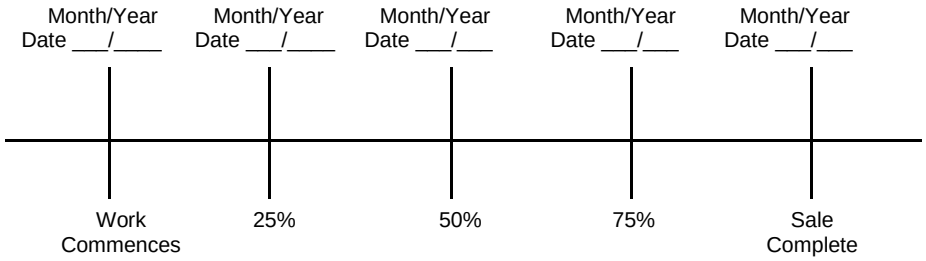
Completion Timeline

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. 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: _____

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
Tillamook - NWOA

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

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

(3) FROM: Tillamook Phone (503) 842-2545
(State Forestry District)
Address: 5005 THIRD ST
TILLAMOOK,OR 97141-2999

(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	☐	☑

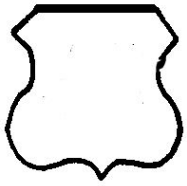
(8) **APPROVED SCALING LOCATIONS** (as shown on the ODF Approved Locations web-site)	Species	Yard	Truck	Weight

(9) **SALE NAME:** Cruisin Murphy
COUNTY: Tillamook

(10) **STATE CONTRACT NUMBER:**
TL-341-2021-W00752-01

(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**

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

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

(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

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

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

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

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

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

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

(9) Enter sale name and county.

(10) Enter sale Contract number.

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

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

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

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

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

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

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

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
Tillamook, NWOA

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

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

(3) FROM: Tillamook Phone (503) 842-2545
(State Forestry District)
Address: 5005 THIRD ST
TILLAMOOK,OR 97141-2999

(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.

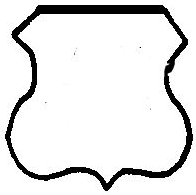
(8) TPSO PROCESSING INSTRUCTIONS
- Submit data files daily (or each day of activity).
- Mail or deliver scale tickets weekly to ODF Headquarters in Salem.

(9) **SALE NAME:** Cruisin Murphy
COUNTY: Tillamook

(10) **STATE CONTRACT NUMBER:**
TL-341-2021-W00752-01

(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

Tillamook, NWOA

(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/DIVSIONS/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

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

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

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

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

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

(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 \\WPODFFILL01\Transfer\ScalingInstructions or e-mailed directly to scaling@odf.state.or.us. Scaling instructions for each brand should be scanned separately, for each approved TPSO.

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

EXHIBIT D

FOREST ROAD SPECIFICATIONS

POINT TO POINT	STATION TO STATION	SUBGRADE WIDTH (feet)	SURFACE WIDTH (feet)	DRAINAGE	DITCH SHAPE	DITCH DEMINSIONS (WIDTH X DEPTH) (feet)
A to B	0+00 to 129+75	Existing	12	Ditch	V	3X1
A to B	129+75 to 133+20	Existing	12	Existing	----	------
A to B	133+20 to 159+80	Existing	12	Ditch	V	3X1
A to B	159+80 to 161+30	Existing	12	Crown	----	------
C to D	0+00 to 0+25	Existing	12	Existing	V	3X1
C to D	0+25 to 8+75	Existing	12	Inslope, Left	V	3X1
E to F	0+00 to 0+40	Existing	12	Existing	V	3X1
E to F	0+40 to 2+35	Existing	12	Inslope, Left	V	3X1
E to F	2+35 to 4+60	Existing	12	Existing	----	------
E to F	4+60 to 30+35	Existing	12	Ditch	V	3X1
G to H	0+00 to 0+30	Existing	12	Existing	V	3X1
G to H	0+30 to 2+60	Existing	12	Inslope, Right	V	3X1
I to J	0+00 to 1+00	16	12	Crown	----	------
I to J	1+00 to 20+95	15	------	Crown	----	------
K to L	0+00 to 5+85	16	12	Outslope	----	------
M to N	0+00 to 6+55	16	12	Existing	----	------
O to P	0+00 to 35+60	Existing	12	Ditch	V	3X1
Q to R	0+00 to 0+30	Existing	12	Crown	----	------
Q to R	0+30 to 3+35	Existing	12	Ditch	V	3X1
Q to R	3+35 to 4+95	Existing	12	Crown	----	------
Q to R	4+95 to 12+05	Existing	12	Ditch	V	3X1
Q to R	12+05 to 14+90	Existing	12	Crown	----	------
Q to R	14+90 to 39+85	Existing	12	Ditch	V	3X1
Q to R	39+85 to 40+90	Existing	12	Crown	----	
Q to R	40+90 to 52+45	Existing	12	Ditch	V	3X1
Q to R	52+45 to 54+90	Existing	12	Existing	----	
Q to R	54+90 to 73+60	Existing	12	Ditch	V	3X1
S to T	0+00 to 3+70	16	12	Ditch	V	3X1

EXHIBIT D

FOREST ROAD SPECIFICATIONS

POINT TO POINT	STATION TO STATION	SUBGRADE WIDTH (feet)	SURFACE WIDTH (feet)	DRAINAGE	DITCH SHAPE	DITCH DEMINSIONS (WIDTH X DEPTH) (feet)
S to T	3+70 to 16+80	16	12	Existing	----	------
S to T	16+80 to 23+60	16	12	Crown	----	------
U to V	0+00 to 119+55	Existing	12	Existing	----	------
U to V	119+55 to 122+70	20	18	Outslope	----	------
U to V	122+70 to 127+80	Existing	12	Existing	----	------
U to V	127+80 to 131+90	Existing	12	Outslope	----	------
W to X	0+00 to 91+00	Existing	12	Existing	----	------
W to X	91+00 to 100+75	16	12	Outslope	----	------
Y to Z	0+00 to 42+90	Existing	12	Existing	----	------
AA to BB	0+00 to 1+55	Existing	12	Existing	----	------
CC to DD	0+00 to 2+15	16	12	Outslope	----	------
EE to FF	0+00 to 1+00	16	12	Existing	----	------
EE to FF	1+00 to 11+90	15	------	Existing	----	------
GG to HH	0+00 to 12+50	Existing	12	Ditch	V	3X1
GG to HH	12+50 to 15+25	Existing	12	Crown	----	------
II to JJ	0+00 to 5+90	16	12	Outslope	----	------

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. Trees outside the clearing limits shall not be felled unless approved in writing by STATE. All danger trees, leaners, and snags outside the clearing limits which could fall and hit the road shall be felled. Where clearing limits have not been marked, clearing limits shall be as follows:

- New construction – 10 feet back from the top of the cut slope and 5 feet back from the toe of fill slopes.
- Improvement and reconstruction - 10 feet back from the shoulder of the subgrade or the ditch, whichever is widest.

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 limits shall be as follows:

- New construction - From the top of the cutslope to the toe of the fill.
- Improvement and reconstruction - 4 feet back from the shoulder of the subgrade or the ditch, whichever is widest.
- Sidecast pullback – From top of pullback to toe of pullback.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

For improvement, clearing and grubbing is required only on Segments A to B (144+60 to 145+95), E to F, 0+00 to 2+35, Left), G to H (Right), I to J (1+60 to 20+95), O to P (20+15 to 24+25), S to T (0+00 to 3+70), U to V (121+15 to 122+70), W to X, (91+00 to 100+75), EE to FF (0+00 to 11+90) and GG to HH, (0+00 to 0+50).

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 not be 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.

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.

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. All fills and drainage structure backfills shall be machine compacted according to the “Compaction and Processing Requirements” in Exhibit E.

Unless road plans show otherwise, all roads shall be on a balanced cross section, except when the slope is over 55 percent, the road shall be on full bench for the width specified.

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

All bank excavation and sidecast pullback on a project road segment shall be completed prior to subgrade approval.

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; 2 feet for fills over 6 feet high.

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

DRAINAGE

Ditch. Construct ditch as specified in Exhibit D. Subgrade shall be crowned at 4 to 6 percent. Construct lead-off ditches away from subgrade at locations marked in the field or as directed by STATE.

Outslope. Road subgrade shall be outsloped at 4 to 6 percent.

Inslope. Road subgrade shall be insloped at 4 to 6 percent.

Crown. Road subgrade shall be crowned at 4 to 6 percent.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

Existing. Road subgrade and drainage shall be maintained in its current configuration, outsloped where outsloped, insloped where insloped, crowned where crowned and ditched where ditched.

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.

SLOPES	Back Slopes	Fill Slopes
Rock	Vertical to 1/4:1	Not Steeper
Common	3 /4 :1	Than 1 ½: 1

Top of cutslopes shall be rounded.

LANDINGS. Landings shall be constructed as posted in the field, no less than 50 feet wide and no more than 70 feet wide unless otherwise approved by STATE. Surface is to be crowned for drainage with general grade no more than 4 percent and no less than 2 percent. All cuts shall be ditched. Surface the landing as shown in the "Road Surfacing" table in Exhibit E.

TURNAROUNDS. Increase subgrade width an additional 30 feet for a length of 16 feet with 20' radius returns at locations marked in the field.

SEASONAL WINTERIZATION. All unsurfaced roads or unfinished subgrades shall be waterbarred in accordance with the specifications in Exhibit I, and blocked from vehicular traffic prior to October 31, annually and as directed by STATE.

ADDITIONAL ROAD INSTRUCTIONS

A to B: Toll Road

0+00 to 133+20	Begin rocking as specified in Exhibit E and as directed by **STATE.**
15+50	Install culvert marker and clean culvert inlet as specified in Exhibit G.
32+10	Install culvert marker and clean culvert inlet and outlet as specified in Exhibit G.
48+65	New culvert installation requires lead-off ditch construction as specified in Exhibit G and as marked in the field and directed by **STATE.**
52+25	Replace existing culvert marker and clean culvert inlet and outlet as specified in Exhibit G.
55+90	Install culvert marker and clean culvert inlet and outlet as specified in Exhibit G.
59+95	Install culvert marker and clean culvert inlet and outlet as specified in Exhibit G.
66+95	Install culvert marker and clean culvert inlet and outlet as specified in Exhibit G.
73+60	Replace existing culvert marker and clean culvert inlet and outlet as specified in Exhibit G.
81+00	Replace existing culvert marker and clean culvert inlet as specified in Exhibit G.
86+85	Replace existing culvert marker and clean culvert inlet and outlet as specified in Exhibit G.
91+65	Replace existing culvert marker and clean culvert inlet as specified in Exhibit G.
97+00	Replace existing culvert marker and clean culvert inlet and outlet as specified in Exhibit G.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

ADDITIONAL ROAD INSTRUCTIONS

A to B: Toll Road

103+75	Replace existing culvert marker and clean culvert inlet and outlet as specified in Exhibit G.
109+00	Replace existing culvert marker and clean culvert inlet and outlet as specified in Exhibit G.
114+40	Replace existing culvert marker and clean culvert inlet and outlet as specified in Exhibit G.
124+90	Replace existing culvert marker and clean culvert inlet as specified in Exhibit G.
136+90	Install culvert marker and clean culvert inlet and outlet as specified in Exhibit G.
143+05	Replace existing culvert marker and clean culvert inlet as specified in Exhibit G.
144+60 to 145+95	Widen subgrade 5 feet as marked in the field for ditch and as directed by **STATE**. End haul excavated ditch waste material to Waste Area 1.
147+40	Replace existing, damaged culvert as specified in Exhibit G.
153+10	Install culvert marker and clean culvert inlet and outlet as specified in Exhibit G.
159+80	Construct lead-off ditch as specified in Exhibit G and as marked in the field and as directed by **STATE.**

C to D: Big Bertha Road West

0+25	Construct 90 foot lead-off ditch as specified in Exhibit G and as marked in the field and as directed by **STATE.** Begin insloping road with ditch.
3+15	Construct 75 foot lead-off ditch according to Exhibit G and as marked in the field and as directed by **STATE.** Continue insloping road with ditch.
5+05	Construct 45 foot lead-off ditch according to Exhibit G and as marked in the field and as directed by **STATE.** Continue insloping road with ditch.

E to F: Big Bertha Road East

0+40	Begin insloping road, left, with ditch.
2+35	Junction. Point H of Segment G to H. End insloping road, left, with ditch.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

ADDITIONAL ROAD INSTRUCTIONS

E to F: Big Bertha Road East

4+60	Construct landing as specified in this Exhibit and Exhibit E, left, and as marked in the field and as directed by **STATE**.
5+50 to 30+35	Pull ditch and end haul waste material to Waste Area 1.
8+35	End haul slide to Waste Area 1.
9+20	End haul slide to Waste Area 1.
11+00	Replace existing culvert marker and clean inlet and outlet as specified in Exhibit G.
14+05	Replace existing culvert marker and clean inlet and outlet as specified in Exhibit G.
18+65	New culvert installation requires lead-off ditch construction as specified in Exhibit G and as marked in the field and as directed by **STATE.**
20+55	Replace existing culvert marker and clean inlet and outlet as specified in Exhibit G.
24+70	Replace existing culvert as specified in Exhibit G. New 18”X60’ culvert will extend beneath Segment M-N.
27+35	Construct landing according to this Exhibit and Exhibit E, right, and as marked in the field and as directed by **STATE**.
28+40	Replace existing culvert marker and clean inlet and outlet as specified in Exhibit G.

G to H: Big Bertha Road East Junction

0+30	Begin insloping road, right, with ditch.
2+60	Junction with Segment E to F. Point H. End insloping road, right, and ditch.

O to P

0+00	Begin ditch, left.
3+15	Replace existing culvert marker and clean culvert inlet as specified in Exhibit G.
8+75	Install culvert marker and clean culvert inlet as specified in Exhibit G.
16+45	Replace existing culvert marker and clean culvert inlet as specified in Exhibit G.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

ADDITIONAL ROAD INSTRUCTIONS

O to P

20+15	End ditch, left. Begin excavation, right, for ditch. Install culvert marker and clean culvert inlet as specified in Exhibit G.
24+25	End excavation, right, for ditch.
27+40	End ditch, right. Begin ditch, left.
31+20	Replace existing culvert marker and clean culvert inlet as specified in Exhibit G.

Q to R: Murphy Grade

0+80 to 1+25	Improve existing lead-off ditch as specified in Exhibit G and as marked in field and as directed by **STATE.**
14+90	Install 18”X40’ culvert, Construct lead-off ditch as specified in Exhibit G and as marked in the field and as directed by **STATE**.
25+45	Construct lead-off ditch, left, as specified in Exhibit G and as marked in the field and as directed by **STATE**.
26+00	Improve existing lead-off ditch, left, as specified in Exhibit G and as marked in the field and as directed by **STATE**.
35+70	Construct lead-off ditch, left, as specified in Exhibit G and as marked in the field and as directed by **STATE.**
37+05	Construct lead-off ditches, left and right, as specified in Exhibit G and as marked in field and as directed by **STATE.**
37+75	Existing concrete pipe. Install culvert marker and clean inlet and outlet as specified in Exhibit G and as directed by **STATE**.
41+60	Improve existing lead-off ditch, left, as specified in Exhibit G and as marked in field and as directed by **STATE.**
45+10	Low spot. Install 18”X60’ culvert, as specified in Exhibit G and as marked in field and as directed by **STATE.**

EXHIBIT D

FOREST ROAD SPECIFICATIONS

ADDITIONAL ROAD INSTRUCTIONS

Q to R: Murphy Grade

52+45 Improve (rock with 50 C. Y's .of 2"-0" Crushed Rock) junction between Murphy Grade and Flora Mainline as directed by State. Prep Stockpile Site 3 as directed by **STATE**.

54+65 Install culvert marker and clean inlet and outlet as specified in Exhibit G.

67+70 Clean culvert inlet and outlet as specified in Exhibit G.

S to T

3+70 Waterbar Recreation Trail so it drains into culvert and construct lead-off ditch as specified in Exhibit G at culvert outlet and as marked in the field or as directed by **STATE**.

U to V: Bark Shanty and Telephone Shack Roads

0+00 Install culvert marker and clean culvert inlet and outlet as specified in Exhibit G.

10+50 Install culvert marker and clean culvert inlet and outlet as specified in Exhibit G.

16+90 Install culvert marker as specified in Exhibit G.

28+60 Install culvert marker and clean culvert inlet and outlet as specified in Exhibit G.

32+50 Replace existing 18 culvert with 24"X30' culvert as specified in Exhibit G.

46+55 Install culvert marker as specified in Exhibit G.

47+70 Install 18"X30' Culvert. Construct lead-off ditch as specified in Exhibit G and as marked in the field and as directed by **STATE**.

66+40 Install 24"X30' culvert. Construct lead-off ditch as specified in Exhibit G and as marked in the field and as directed by **STATE**.

67+05 Install culvert marker and clean culvert inlet and outlet as specified in Exhibit G.

68+95 Install culvert marker and clean culvert inlet and outlet as specified in Exhibit G.

75+80 Install culvert marker as specified in Exhibit G.

79+15 Install 18"X30' culvert. Construct lead-off ditch as specified in Exhibit G and as marked in the field and as directed by **STATE**.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

ADDITIONAL ROAD INSTRUCTIONS

U to V: Bark Shanty and Telephone Shack Roads

81+75	Install 18”X30’ culvert. Construct lead-off ditch as specified in Exhibit G and as marked in the In the field and as directed by **STATE**.
85+20	Install 18”X30’ culvert. Construct lead-off ditch as specified in Exhibit G and as marked in the field and as directed by **STATE**.
92+30	Install 24”X40’ culvert. Construct lead-off ditch as specified in Exhibit G and as marked in the field and as directed by **STATE.**
92+30 to 93+10	Construct ditch as specified in this Exhibit.
93+10	Remove existing culvert. Backfill with crushed rock.
94+90	Remove existing culvert. Backfill with crushed rock, Construct ditch as marked in the field and directed by STATE. Armor ditch with energy dissipator riprap.
119+50 to 121+15	Begin subgrade width of 20 feet, surface width of 18 feet, outsloping road and filling existing ditch with crushed rock.
121+15 to 122+70	Continue subgrade width of 20 feet, surface width of 18 feet and outsloping road. Excavate, right, as marked in the field and directed by STATE. End haul material to Waste Area 3, 127+15.

W to X: Simmons Spur

0+10 to 0+35	Reconstruct fill slope of road, right, as marked in field and as directed by **STATE.**
0+25	Install 24”X40’ culvert as specified in Exhibit G.
0+85	Install culvert marker as specified in Exhibit G.
1+50	Install 24”X50’ culvert. Construct lead-off ditch as specified in Exhibit G and as marked in the field and as directed by **STATE.**
2+20	Install 24”X50’ culvert. Construct lead-off ditch as specified in Exhibit G and as marked in field and as directed by **STATE**.
5+15	Install culvert marker as specified in Exhibit G.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

ADDITIONAL ROAD INSTRUCTIONS

W to X: Simmons Spur

35+80	Install culvert marker as specified in Exhibit G.
43+35	Install culvert marker as specified in Exhibit G.
50+20	Install culvert marker as specified in Exhibit G.
76+25	Install culvert marker as specified in Exhibit G.
84+10	Construct landing, right, as specified by this Exhibit and Exhibit E by excavating outside knob.
85+05	Install culvert marker as specified in Exhibit G.
88+40	Install culvert marker as specified in Exhibit G.

Y to Z

1+00 to 40+20	Grade road to remove vegetative material from road surface.

GG to HH

0+00	Improve intersection by excavating, right, as marked in the field and directed by **STATE.**
5+50	Install culvert marker and clean inlet/outlet as specified in Exhibit G.
8+10	End ditch, right. Construct lead-off ditch, right, according to Exhibit G and as marked in field and as directed by **STATE.**
12+50	End ditch, left. Construct lead-off ditch according to Exhibit G and as marked in field and as directed by **STATE.**

EXHIBIT D

FULL BENCH AND END-HAUL REQUIREMENTS

POINT TO POINT	STA. TO STA.
A to B	144+60 to 145+95
E to F	5+50 to 30+35
K to L	2+20 to 3+65
O to P	0+00 to 24+25
U to V	121+15 to 122+70

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

Full Containment: Sidecast material lost over the outside edge of the road shall not exceed 6 inches in depth, measured perpendicular to the natural ground slope. Pioneer excavation shall be removed by digging, loading, and hauling rather than by pushing or scraping methods.

Tree bases and stumps may have up to 12 inches of material directly above them.

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 Locations As shown on Exhibit A and/or as marked in the field.

Waste Area Treatment

(1) Clear waste areas within the clearing limits and as specified in this exhibit.

(2) All waste must be contained within the waste area clearing limits and cannot be placed on standing trees.

(3) Deposit soil waste at waste area, spread evenly, compact, and provide adequate drainage.

(4) Toe of waste shall be no closer than 20 feet from slope break.

(5) Pile woody debris separate from other waste material.

(6) Seed and fertilize all waste material in accordance with Exhibit L.

EXHIBIT E

ROAD SURFACING

ROAD SEGMENT:	A to B		STATIONS:	0+00 to 161+30				
Application	**Rock Size and Type**	**Location**	**Compacted Depth**	**Volume (CY) per**		**Number of Units**	**Curve Widening (CY)**	**Approx. Total (CY)**
Road Rock	Crushed 2"-0"	0+00 to 133+20	3 "	station	15	133.20	90	2,090
Road Rock	Crushed 2"-0"	133+20 to 147+40	6 "	station	30	14.20	20	450
Road Rock	Crushed 2"-0"	147+40 to 161+30	9 "	station	50	13.90	40	740
Turnouts	Crushed 2"-0"	A to B	3 "	TO	10	18		180
Turnouts	Crushed 2"-0"	A to B	6 "	TO	20	2		40
Turnouts	Crushed 2"-0"	A to B	9 "	TO	20	2		40

Application	**Rock Size and Type**	**Location**	**Approx. Total (CY)**
Culvert Backfill	Crushed 2"-0"	48+65	20
Culvert Backfill	Crushed 2"-0"	99+05	20
Culvert Backfill	Crushed 2"-0"	105+60	20
Culvert Backfill	Crushed 2"-0"	113+10	20
Culvert Backfill	Crushed 2"-0"	116+20	20
Culvert Backfill	Crushed 2"-0"	147+40	20
Culvert Backfill	Crushed 2"-0"	150+25	20
Culvert Backfill	Crushed 2"-0"	156+45	20
Junction Rock	Crushed 2"-0"	0+00	30
Junction Rock	Crushed 2"-0"	161+30	30

ROAD SEGMENT:	C to D		STATIONS:	0+00 to 8+75				
Application	**Rock Size and Type**	**Location**	**Compacted Depth**	**Volume (CY) per**		**Number of Units**	**Curve Widening (CY)**	**Approx. Total (CY)**
Road Rock	Crushed 2"-0"	0+00 to 8+75	9 "	station	50	8.75	20	460
Turnouts	Crushed 2"-0"	C to D	9 "	TO	20	2		40

Application	**Rock Size and Type**	**Location**	**Approx. Total (CY)**
Junction Rock	Crushed 2"-0"	0+00	30

EXHIBIT E

ROAD SURFACING

ROAD SEGMENT:	E to F		STATIONS:	0+00 to 30+35				
Application	**Rock Size and Type**	**Location**	**Compacted Depth**	**Volume (CY) per**		**Number of Units**	**Curve Widening (CY)**	**Approx. Total (CY)**
Road Rock	Jaw-Run 4"-0"	0+00 to 5+05	9 "	station	50	5.05	20	270
Road Rock	Jaw-Run 4"-0"	5+05 to 30+35	6 "	station	30	25.30	40	800
Turnouts	Jaw-Run 4"-0"	E to F	9 "	TO	20	1		20
Turnouts	Jaw-Run 4"-0"	E to F	6 "	TO	20	4		80
Turnarounds	Jaw-Run 4"-0"	TBD	9 "	TA	30	1		30
Turnarounds	Jaw-Run 4"-0"	TBD	6 "	TA	20	3		60

Application	**Rock Size and Type**	**Location**	**Approx. Total (CY)**
Culvert Backfill	Crushed 2"-0"	18+65	20
Culvert Backfill	Crushed 2"-0"	24+70	40
Landing Rock	Jaw-Run 4"-0"	4+60	150
Landing Rock	Jaw-Run 4"-0"	27+35	150
Junction Rock	Jaw-Run 4"-0"	0+00	30
Energy Dissipator	Riprap 24"-12"	20+55	5

ROAD SEGMENT:	G to H		STATIONS:	0+00 to 2+60				
Application	**Rock Size and Type**	**Location**	**Compacted Depth**	**Volume (CY) per**		**Number of Units**	**Curve Widening (CY)**	**Approx. Total (CY)**
Road Rock	Jaw-Run 4"-0"	0+00 to 2+60	9 "	station	50	2.60	10	140
Turnouts	Jaw-Run 4"-0"	G to H	9 "	TO	20	1		20

Application	**Rock Size and Type**	**Location**	**Approx. Total (CY)**
Junction Rock	Jaw-Run 4"-0"	0+00	30

ROAD SEGMENT:	I to J		STATIONS:	0+00 to 1+00				
Application	**Rock Size and Type**	**Location**	**Compacted Depth**	**Volume (CY) per**		**Number of Units**	**Curve Widening (CY)**	**Approx. Total (CY)**
Road Rock	Jaw-Run 4"-0"	0+00 to 1+00	9 "	station	50	1.00	10	60
Turnouts	Jaw-Run 4"-0"	I to J	9 "	TO	20	1		20

Application	**Rock Size and Type**	**Location**	**Approx. Total (CY)**
Junction Rock	Jaw-Run 4"-0"	0+00	30

EXHIBIT E

ROAD SURFACING

ROAD SEGMENT:	K to L		STATIONS:	0+00 to 5+85				
Application	**Rock Size and Type**	**Location**	**Compacted Depth**	**Volume (CY) per**		**Number of Units**	**Curve Widening (CY)**	**Approx. Total (CY)**
Road Rock	Jaw-Run 4"-0"	0+00 to 5+85	9 "	station	50	5.85	20	310
Turnouts	Jaw-Run 4"-0"	K to L	9 "	TO	20	1		20
Turnarounds	Jaw-Run 4"-0"	TBD	9 "	TA	30	3		90

Application	**Rock Size and Type**	**Location**	**Approx. Total (CY)**
Landing Rock	Jaw-Run 3"-0"	0+75	150
Landing Rock	Jaw-Run 6"-0"	4+50	150
Landing Rock	Jaw-Run 6"-0"	5+85	150
Junction Rock	Jaw-Run 6"-0"	0+00	30

ROAD SEGMENT:	M to N		STATIONS:	0+00 to 6+55				
Application	**Rock Size and Type**	**Location**	**Compacted Depth**	**Volume (CY) per**		**Number of Units**	**Curve Widening (CY)**	**Approx. Total (CY)**
Road Rock	Jaw-Run 4"-0"	0+00 to 6+55	9 "	station	50	6.55	20	350
Turnouts	Jaw-Run 4"-0"	M to N	9 "	TO	20	1		20
Turnarounds	Jaw-Run 4"-0"	TBD	9 "	TA	30	2		60

Application	**Rock Size and Type**	**Location**	**Approx. Total (CY)**
Junction Rock	Jaw-Run 4"-0"	0+00	30
Landing Rock	Jaw-Run 4"-0"	6+55	150

ROAD SEGMENT:	O to P		STATIONS:	0+00 to 35+60				
Application	**Rock Size and Type**	**Location**	**Compacted Depth**	**Volume (CY) per**		**Number of Units**	**Curve Widening (CY)**	**Approx. Total (CY)**
Road Rock	Crushed 2"-0"	0+00 to 35+60	9 "	station	50	35.60	90	1,870
Turnouts	Crushed 2"-0"	O to P	9 "	TO	20	5		100
Turnarounds	Crushed 2"-0"	TBD	9 "	TA	30	2		60

Application	**Rock Size and Type**	**Location**	**Approx. Total (CY)**
Junction Rock	Crushed 2"-0"	0+00	30
Junction Rock	Crushed 2"-0"	35+60	30
Energy Dissipator	Riprap 24"-12"	3+15	5
Energy Dissipator	Riprap 24"-12"	31+20	5

EXHIBIT E

ROAD SURFACING

ROAD SEGMENT:	Q to R		STATIONS:	0+00 to 73+60				
Application	**Rock Size and Type**	**Location**	**Compacted Depth**	**Volume (CY) per**		**Number of Units**	**Curve Widening (CY)**	**Approx. Total (CY)**
Road Rock	Crushed 2"-0"	0+00 to 73+60	6 "	station	30	73.60	100	2,310
Turnouts	Crushed 2"-0"	Q to R	6 "	TO	20	10		200
Turnarounds	Crushed 2"-0"	TBD	6 "	TA	20	3		60

Application	**Rock Size and Type**	**Location**	**Approx. Total (CY)**
Culvert Backfill	Crushed 2"-0"	10+15	20
Culvert Backfill	Crushed 2"-0"	14+90	20
Culvert Backfill	Crushed 2"-0"	23+05	20
Culvert Backfill	Crushed 2"-0"	34+95	20
Culvert Backfill	Crushed 2"-0"	45+10	20
Culvert Backfill	Crushed 2"-0"	50+25	20
Junction Rock	Crushed 2"-0"	0+00	30
Energy Dissipator	Riprap 24"-12"	10+15	5
Energy Dissipator	Riprap 24"-12"	14+90	5
Energy Dissipator	Riprap 24"-12"	23+05	5
Energy Dissipator	Riprap 24"-12"	34+95	5
Energy Dissipator	Riprap 24"-12"	45+10	5
Energy Dissipator	Riprap 24"-12"	50+25	5
Improve Intersection	Crushed 2"-0"	52+45	50

ROAD SEGMENT:	S to T		STATIONS:	0+00 to 23+60				
Application	**Rock Size and Type**	**Location**	**Compacted Depth**	**Volume (CY) per**		**Number of Units**	**Curve Widening (CY)**	**Approx. Total (CY)**
Road Rock	Jaw-Run 4"-0"	0+00 to 23+60	9 "	station	50	23.60	60	1,240
Turnouts	Jaw-Run 4"-0"	S to T	9 "	TO	20	4		80
Turnarounds	Jaw-Run 4"-0"	TBD	9 "	TA	30	3		90

Application	**Rock Size and Type**	**Location**	**Approx. Total (CY)**
Culvert Backfill	Crushed 2"-0"	3+70	20
Junction Rock	Jaw-Run 4"-0"	0+00	30
Landing Rock	Jaw-Run 4"-0"	23+60	150

EXHIBIT E

ROAD SURFACING

ROAD SEGMENT:	U to V		STATIONS:	0+00 to 131+90				
Application	**Rock Size and Type**	**Location**	**Compacted Depth**	**Volume (CY) per**		**Number of Units**	**Curve Widening (CY)**	**Approx. Total (CY)**
Road Rock	Crushed 2"-0"	119+55 to 122+70	12 "	station	95	3.15	20	320
Road Rock	Crushed 2"-0"	127+80 to 131+90	9 "	station	51	4.10	10	220
Turnouts	Crushed 2"-0"	U to V	12 "	TO	30	1		30
Turnouts	Crushed 2"-0"	U to V	9 "	TO	20	1		20

Application	**Rock Size and Type**	**Location**	**Approx. Total (CY)**
Culvert Backfill	Crushed 2"-0"	16+35	20
Energy Dissipator	Riprap 24"-12"	16+35	5
Culvert Backfill	Crushed 2"-0"	31+60	20
Energy Dissipator	Riprap 24"-12"	31+60	5
Culvert Backfill	Crushed 2"-0"	32+50	20
Energy Dissipator	Riprap 24"-12"	32+50	5
Culvert Backfill	Crushed 2"-0"	44+55	20
Energy Dissipator	Riprap 24"-12"	44+55	5
Culvert Backfill	Crushed 2"-0"	47+70	20
Culvert Backfill	Crushed 2"-0"	66+40	20
Culvert Backfill	Crushed 2"-0"	76+60	20
Energy Dissipator	Riprap 24"-12"	76+60	5
Culvert Backfill	Crushed 2"-0"	79+15	20
Culvert Backfill	Crushed 2"-0"	81+75	20
Culvert Backfill	Crushed 2"-0"	85+20	20
Energy Dissipator	Riprap 24"-12"	85+20	5
Culvert Backfill	Crushed 2"-0"	92+30	20
Energy Dissipator	Riprap 24"-12"	92+30	5
Backfill:Removed Culvert	Crushed 2"-0"	93+10	40
Backfill:Removed Culvert	Crushed 2"-0"	94+90	40
Energy Dissipator:Drainage Ditch	Riprap 24"-12"	94+90	30

EXHIBIT E
ROAD SURFACING

ROAD SEGMENT:	W to X		STATIONS:	0+00 to 100+75				
Application	**Rock Size and Type**	**Location**	**Compacted Depth**	**Volume (CY) per**		**Number of Units**	**Curve Widening (CY)**	**Approx. Total (CY)**
Road Rock	Crushed 2"-0"	21+05 to 91+00	4 "	station	20	69.95	70	1,470
Road Rock	Jaw-Run 4"-0"	91+00 to 100+75	9 "	station	50	9.75	30	520
Turnouts	Crushed 2"-0"	W to X	4 "	TO	10	10		100
Turnouts	Jaw-Run 4"-0"	W to X	9 "	TO	20	2		40
Turnarounds	Crushed 2"-0"	TBD	4 "	TA	20	3		60
Turnarounds	Jaw-Run 4"-0"	TBD	9 "	TA	30	1		30

Application	**Rock Size and Type**	**Location**	**Approx. Total (CY)**
Culvert Backfill	Crushed 2"-0"	0+00	20
Energy Dissipator	Riprap "24-12"	0+00	5
Culvert Backfill	Crushed 2"-0"	0+25	20
Slope Stabilization	Riprap 48"-24"	0+10-0+35	30
Backfill	Pit-Run 6"-0"	0+10-0+35	10
Energy Dissipator	Riprap 24"-12"	0+85	5
Culvert Backfill	Crushed 2"-0"	1+50	20
Energy Dissipator	Riprap 24"-12"	1+50	5
Culvert Backfill	Crushed 2"-0"	2+20	20
Energy Dissipator	Riprap 24"-12"	2+20	5
Culvert Backfill	Crushed 2"-0"	3+75	20
Energy Dissipator	Riprap 24"-12"	3+75	5
Landing Rock	Jaw-Run 4"-0"	84+10	150
Landing Rock	Jaw-Run 4"-0"	89+60	150
Landing Rock	Jaw-Run 4"-0"	90+65	150
Landing Rock	Jaw-Run 4"-0"	100+75	150

ROAD SEGMENT:	Y to Z		STATIONS:	0+00 to 42+90				
Application	**Rock Size and Type**	**Location**	**Compacted Depth**	**Volume (CY) per**		**Number of Units**	**Curve Widening (CY)**	**Approx. Total (CY)**
Road Rock	Jaw-Run 4"-0"	0+00 to 1+00	9 "	station	50	1.00	10	60
Road Rock	Jaw-Run 4"-0"	40+20 to 42+90	9 "	station	52	2.70	10	150
Turnouts	Jaw-Run 4"-0"	Y to Z	9 "	TO	20	1		20
Turnouts	Jaw-Run 4"-0"	Y to Z	9 "	TO	20	1		20

Application	**Rock Size and Type**	**Location**	**Approx. Total (CY)**
Junction Rock	Jaw-Run 4"-0"	0+00	30
Landing Rock	Jaw-Run 4"-0"	21+50	150
Landing Rock	Jaw-Run 4"-0"	25+75	150
Landing Rock	Jaw-Run 4"-0"	36+75	150
Junction Rock	Jaw-Run 4"-0"	42+90	30

EXHIBIT E
ROAD SURFACING

ROAD SEGMENT:	AA to BB		STATIONS:	0+00 to 1+55				
Application	**Rock Size and Type**	**Location**	**Compacted Depth**	**Volume (CY) per**		**Number of Units**	**Curve Widening (CY)**	**Approx. Total (CY)**
Road Rock	Jaw-Run 4"-0"	0+00 to 1+55	9 "	station	52	1.55	10	90
Turnouts	Jaw-Run 4"-0"	AA to BB	9 "	TO	20	1		20
Turnarounds	Jaw-Run 4"-0"	0+00	9 "	TA	30	1		30
Application	**Rock Size and Type**	**Location**	**Approx. Total (CY)**					
Junction Rock	Jaw-Run 4"-0"	0+00	30					
Landing Rock	Jaw-Run 4"-0"	1+55	150					

ROAD SEGMENT:	CC to DD		STATIONS:	0+00 to 2+15				
Application	**Rock Size and Type**	**Location**	**Compacted Depth**	**Volume (CY) per**		**Number of Units**	**Curve Widening (CY)**	**Approx. Total (CY)**
Road Rock	Jaw-Run 4"-0"	0+00 to 2+15	9 "	station	51	2.15	10	120
Turnouts	Jaw-Run 4"-0"	CC to DD	9 "	TO	20	1		20
Turnarounds	Jaw-Run 4"-0"	TBD	9 "	TA	30	1		30
Application	**Rock Size and Type**	**Location**	**Approx. Total (CY)**					
Junction Rock	Jaw-Run 4"-0"	0+00	30					
Landing Rock	Jaw-Run 4"-0"	2+15	150					

ROAD SEGMENT:	EE to FF		STATIONS:	0+00 to 1+00				
Application	**Rock Size and Type**	**Location**	**Compacted Depth**	**Volume (CY) per**		**Number of Units**	**Curve Widening (CY)**	**Approx. Total (CY)**
Road Rock	Jaw-Run 4"-0"	0+00 to 1+00	9 "	station	50	1.00	10	60
Turnouts	Jaw-Run 4"-0"	EE to FF	9 "	TO	20	1		20
Application	**Rock Size and Type**	**Location**	**Approx. Total (CY)**					
Junction Rock	Jaw-Run 4"-0"	0+00	30					

ROAD SEGMENT:	GG to HH		STATIONS:	0+00 to 15+25				
Application	**Rock Size and Type**	**Location**	**Compacted Depth**	**Volume (CY) per**		**Number of Units**	**Curve Widening (CY)**	**Approx. Total (CY)**
Road Rock	Jaw-Run 4"-0"	0+00 to 15+25	4 "	station	20	15.25	20	330
Turnouts	Jaw-Run 4"-0"	GG to HH	4 "	TO	10	3		30
Turnarounds	Jaw-Run 4"-0"	TBD	4 "	TA	20	2		40
Application	**Rock Size and Type**	**Location**	**Approx. Total (CY)**					
Junction Rock	Jaw-Run 4"-0"	0+00	30					
Landing Rock	Jaw-Run 4"-0"	15+25	150					

EXHIBIT E
ROAD SURFACING

ROAD SEGMENT:	II to JJ		STATIONS:	0+00 to 5+90				
Application	**Rock Size and Type**	**Location**	**Compacted Depth**	**Volume (CY) per**		**Number of Units**	**Curve Widening (CY)**	**Approx. Total (CY)**
Road Rock	Jaw-Run 4"-0"	0+00 to 5+90	9 "	station	51	5.90	20	320
Turnouts	Jaw-Run 4"-0"	II to JJ	9 "	TO	20	1		20
Turnarounds	Jaw-Run 4"-0"	TBD	9 "	TA	30	2		60

Application	**Rock Size and Type**	**Location**	**Approx. Total (CY)**
Junction Rock	Jaw-Run 4"-0"	0+00	30
Landing Rock	Jaw-Run 4"-0"	3+90	150
Landing Rock	Jaw-Run 4"-0"	5+90	150

Total Rock	2”-0” Crushed Stockpile	2”-0” Crushed Roads	4”-0” Jaw-Run Roads	48”-24” Rip-Rap Slope Stability	24”-12” Rip-Rap Energy Dissapator	6”-0” Pit-Run
28,055 CY	7,000 CY	11,850 CY	9,030 CY	30 CY	135 CY	10 CY

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

Additional rock for curve widening is required and has been included in the volume estimates.

Turnouts, turnarounds, landings and junctions shall be rocked concurrently with the road.

End-dumping of riprap shall not be allowed, unless otherwise approved in writing by STATE.

Any additional turnarounds or turnouts created during any operation associated with this timber sale shall be rocked at PURCHASER's expense and as instructed by STATE.

For typical cross section, turnout and turnaround see Forestry Department Drawing Nos. 351-C, 351-D and TOTA-1 at the Forestry Department district office.

EXHIBIT E

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 - 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, for 2”-0” rock specifications, 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 E

CRUSHED ROCK SPECIFICATIONS

Sieve size	Percent Passing
	2 inch
2.5	100
2	95-100
1	60-80
1/4 or #4	45-60
#10	20-40
#40	5-20
#200	0-5

For 6"-0" Pit-Run	Passing	10" sieve	100%
	Passing	6" sieve	60-85%
	Passing	3" sieve	30-50%
	Passing	¼ " sieve	10% maximum
For 4”-0” Jaw-Run	Passing	4" sieve	95%
	Passing	2” sieve	40-60%
	Passing	¼ " sieve	10% maximum

For 24"-12" Riprap 50 percent or more of the material shall measure at least 24 inches in one dimension. Material shall be clean, well graded, and free of 2"-0" fines.

For 48” – 24” Riprap 50 percent or more of the rock shall be at 48 inches in one dimension.100% of the rock shall be at least 24 inches in one dimension.

Control of riprap and pit-run gradation shall be by visual inspection by STATE. Pit-run shall be reasonably free of organic material and shall not contain an excessive amount of oversized (cobbles or boulders) or undersized (clay, silt or sand) particles.

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

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. STATE shall be given 24 hours' notice

Rock accountability shall be determined by depth measurement and the following methods, as directed by STATE.

Depth Measurement. Rock shall be spread and compacted according to the depths specified in Exhibit E. 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 E. 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. The conversion from compacted yardage to truck yardage is 1.3 multiplied by the compacted yardage equals truck yardage.

Junctions shall have a surfaced area of at least 20 square yards each at the associated rock depths specified in Exhibit.

Turnouts shall have a surfaced area of at least 44 square yards each at the depths shown in Exhibit E.

Landings shall have a minimum surfaced area of at least 315 square yards each and the amounts shown in Exhibit E.

Curve Surfacing. Extra surface width shall be required for the inside of all curves as follows: 400 divided by the radius of the curve equals the amount of extra width to be surfaced at the depths shown in Exhibit E.

Stockpiles shall have rectangular bottoms and tops to the specified lengths. The top shall be flat across its area (0% grade) and no point less than the minimum height specification. Pile sides shall be smooth from top to toe at the specified slope if required.

EXHIBIT E

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. If segment is to be rocked, 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 or in the case of a sheepsfoot roller, the roller "walks out". 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 ditched, crowned, outsloped, or insloped at 4 to 6 percent as specified in the "Forest Roads Specifications" table in Exhibit D.

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
I to J, K to L, M to N, S to T, U to V, 119+55 to 122+70, CC to DD, EE to FF, GG to HH, 0+00 to 0+50, II to JJ,	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	COMPACTION EQUIPMENT OPTIONS
K to L, 1+50 to 2+10	Crawler Tractor

EXHIBIT E

COMPACTION AND PROCESSING REQUIREMENTS

Crushed and Jaw-Run 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 ditched, crowned, outsloped, or insloped at 4 to 6 percent as specified in the "Forest Roads Specifications" table in Exhibit D.

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
A to B, C to D, E to F, G to H, I to J, 0+00 to 1+00, K to L, M to N, O to P, Q to R, S to T, U to V, 119+55 to 122+70, W to X, 21+05 to 100+75, Y to Z, 0+00 to 1+00 and 40+20 to 42+90, AA to BB, CC to DD, EE to FF, 0+00 to 1+00, GG to HH, II to JJ	Vibratory Roller

Existing Crushed and Pit-Run Rock. The existing rock shall be unearthed to a minimum depth of 4 inches or to 1 inch below the bottom of potholes, whichever is greater. The existing rock shall then be uniformly mixed and moistened or dried to a uniform moisture content suitable for maximum compaction and compacted. Any irregularities or depressions that develop during compaction shall be corrected by loosening the material at these places and adding or removing material until the surface is smooth and uniform. The existing rock shall be compacted with a minimum of 3 passes over the entire width and length of the road. Compaction shall be accomplished by using the approved equipment listed below or others approved by STATE:

Existing crushed rock shall be compacted and processed after completion of all project work and log hauling, unless otherwise approved in writing by STATE.

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

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
A to B, C to D, E to F, G to H, O to P, Q to R, W to X, 21+05 to 91+00, Y to Z, AA to BB, GG to HH	Vibratory Roller

EXHIBIT E

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.

Rubber-Tired Skidders. A rubber-tired skidder weighing a minimum of 20,000 pounds shall be operated over the fill layers so that the entire layered surface comes in contact with the tires. Skidders with oversized tires (high flotation) are not acceptable for compaction.

Tampingfoot Compactors. Tampingfoot compactors shall exert a minimum pressure of 250 pounds per square inch on the ground area in contact with the tamping feet. The compactor shall cover a minimum width of 60 inches per pass and weigh a minimum of 16,000 pounds.

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

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.

Grid Rollers. Pit-run rock shall be processed by grid roller fully equipped with 32,000 pounds or more of ballast weights. Twenty passes shall be made with a grid roller over the entire length and width of the road, unless STATE requires fewer passes. A grader weighing at least 20,000 pounds shall work the pit-run surface during grid rolling so that all pit-run rock comes in contact with the grid roller. Grid rolling shall be performed when the subgrade is dry and firm. Road surface shall be uniformly shaped and graded prior to and during grid rolling.

Loaded Dump Trucks. Dump trucks shall be routed over the entire cross section of the road surface. Loaded trucks shall cover all of the subgrade with a minimum of three passes.

Crawler Tractors. A dozer/track-type tractor weighing a minimum of 45,000 pounds as directed by STATE shall be operated over the pit-run or jaw-run rock so that the entire surface comes in contact with the tracks.

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 quarry floor, 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.
   (e) Oversize material location

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. 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.

4. Where overburden removal limits have not been marked, they shall extend for a distance of at least 20 feet beyond the developed rock source. Overburden removal limits, when marked, are designated by orange right-of-way boundary tags. Overburden shall be hauled to a designated waste area. Overburden shall be spread evenly, grass seeded, and compacted at the waste area and woody debris stacked separately. Areas of overburden removal shall be inspected for completeness and approved by STATE prior to drilling or rock removal.

5. PURCHASER shall conduct the Operations relative to the disposal of waste material in such manner that silt, rock, debris, dirt, or clay shall not be washed, conveyed, or otherwise deposited in any stream. All waste shall be deposited at an approved "waste disposal site."

6. The quarry floor shall be developed to provide drainage away from the quarry. All quarry and stockpile site drainage ditches shall be developed and maintained. Drainage ditches shall not discharge into streams.

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

8. The STATE shall be notified two working days prior to the beginning of drilling operations. Working days shall be defined as Monday through Friday, 6:00 a.m. to 2:30 p.m.

9. 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 (full containment). Each low intensity shot shall be shot into the previous shots' void in order to contain all the material in 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 purchaser 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.

EXHIBIT F

ROCK QUARRY DEVELOPMENT AND USE

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 and can be utilized as Energy Dissapator Rip-Rap and Slope Stability Rip-Rap shall be piled in the vicinity of the quarry as directed by STATE.

12. Oversized material that is produced or encountered during development and quantities exceed the amount needed for Energy Dissipator Rip-Rap and Slope Stability Rip-Rap shall be broken down and utilized for crushing.

13. The quarry site shall be left in a condition free from overburden and debris. Access roads to the quarry, benches, and the quarry floor shall be cleared of unused shot rock and dirt at the termination of use. Access roads shall be waterbarred to provide drainage as specified in Exhibit I and blocked as specified in Exhibit J and/or as directed by STATE. Unused shot rock material that is produced shall be piled in the vicinity of the quarry as directed by STATE. Dirt, overburden, and reject material shall be hauled to designated waste area.

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.

15. Apply seed and fertilizer to the waste area as specified in Exhibit L.

EXHIBIT G

CULVERT SPECIFICATIONS

All culvert materials shall be furnished and installed by PURCHASER, unless otherwise specified in the Contract. Corrugated polyethylene culverts shall be double-walled and meet the requirements of AASHTO M-294-11, Type S, or ASTM F2648. Corrugated aluminized Type 2 steel culverts shall meet the requirements of AASHTO M-36-03. A manufacturer's certification that the product was manufactured, tested and supplied in accordance with this specification shall be furnished to STATE upon request. Dragging or allowing free fall from trucks or into trenches shall not be permitted.

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.

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.

Culverts shall be located according to the alignment and grade as shown on the Plan and Profile, and/or as staked in the field, or as specified in special instructions. The STATE Representative shall determine final culvert location and stake the location in the field prior to installation.

Cross drain culverts on road grades in excess of 3 percent shall be skewed at least 30 degrees from perpendicular to the road centerline, except that cross drain culverts at the low point of dips in roads shall not be skewed. Culvert grade shall slope away from ditch grade at least 5 percent unless otherwise specified.

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. Bedrock shall be excavated as required to provide a uniform foundation for the full length of the culvert.

The ends of each culvert shall be free of logs and debris which would restrict the free flow of water. The inlet end of relief culverts shall be provided with a sediment catch 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 riprap, Construct lead-off ditches away from culvert outlets where the slope gradient restrict the free flow of water.

A bedding of crushed rock as specified in Exhibit E 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. Minimum bedding depth shall be 6 inches.

Tamping with a tamping foot compactor is required on all culverts as specified in Exhibit E. Tamping shall be done in 4-inch lifts, 1 culvert diameter each side of the culvert to 95 percent density or over. Backfill shall consist of crushed rock as specified in Exhibit E.

Minimum height of cover over the top of culvert to subgrade when road is to be rocked shall be 12 inches. The inlet end of culverts shall be marked by installing a 5 foot log, rust-resistant painted steel fence post two feet into the ground within 6 inches of the inlet on the downgrade side.

All culverts and culvert markers scheduled for replacement or removal shall become property of the PURCHASER and shall be removed from STATE land in the same project period in which replacement or removal occurs.

EXHIBIT G

CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	ROAD SEGMENT Point to Point	STATION
1	18	40	A to B	48+65
2	18	30	A to B	99+05
3	18	30	A to B	105+60
4	18	40	A to B	113+10
5	18	30	A to B	116+20
6	18	40	A to B	147+40
7	18	30	A to B	150+25
8	18	30	A to B	156+45
9	18	30	E to F	18+65
10	18	60	E to F	24+70
11	18	40	Q to R	10+15
12	18	40	Q to R	14+90
13	18	40	Q to R	23+05
14	18	40	Q to R	34+95
15	18	60	Q to R	45+10
16	18	40	Q to R	50+25
17	18	40	S to T	3+70
18	24	30	U to V	16+35
19	18	30	U to V	31+60
20	24	30	U to V	32+50
21	24	30	U to V	44+55
22	18	30	U to V	47+70
23	24	30	U to V	66+40
24	24	30	U to V	76+60
25	18	30	U to V	79+15
26	18	30	U to V	81+75

EXHIBIT G

CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	ROAD SEGMENT Point to Point	STATION
27	18	30	U to V	85+20
28	24	40	U to V	92+30
29	18	40	W to X	0+00
30	24	40	W to X	0+25
31	24	50	W to X	1+50
32	24	50	W to X	2+20
33	18	40	W to X	3+75

Total Length By Diameter	
18 INCH (feet)	24 INCH (feet)
890	330

EXHIBIT H

TYPICAL EMBEDDED ENERGY DISSIPATOR

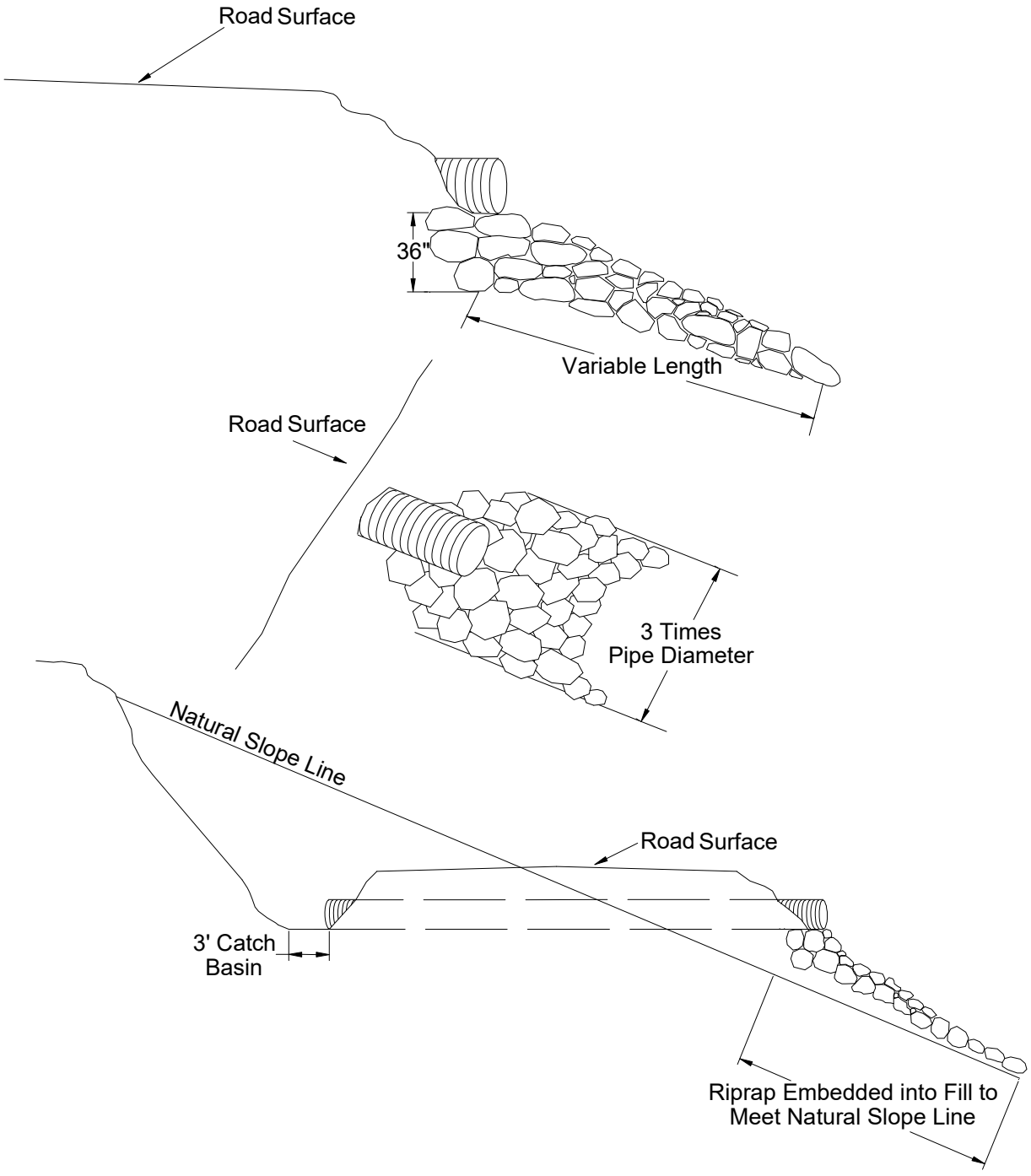
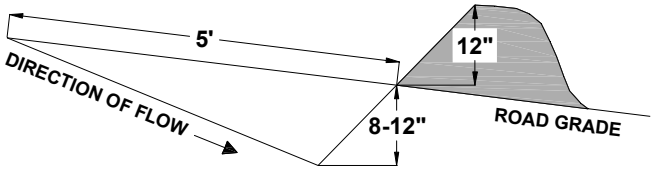


EXHIBIT I

WATERBAR SPECIFICATIONS

PROFILE

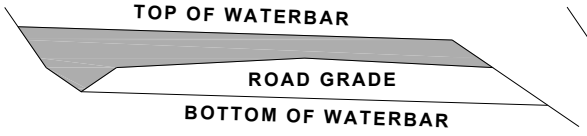
DITCHED AND OUTSLOPED



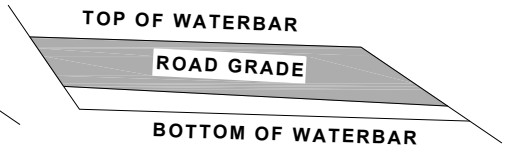
SPACING OF WATERBARS	
ROAD GRADE	DISTANCE
< 6 %	400'
6 - 10 %	200'
11 - 15 %	150'
> 15 %	100'

CROSS SECTION

DITCHED



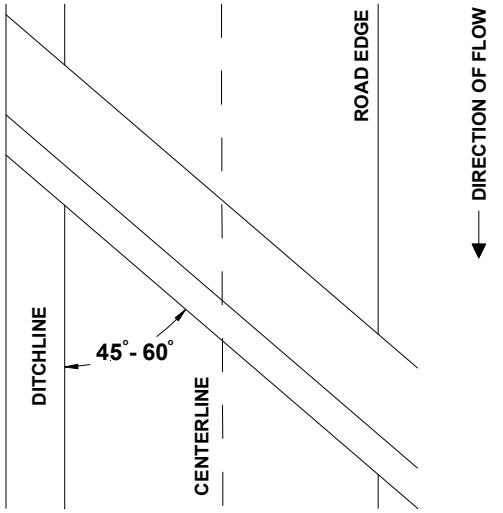
OUTSLOPED



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

PLAN VIEW

DITCHED



OUTSLOPED

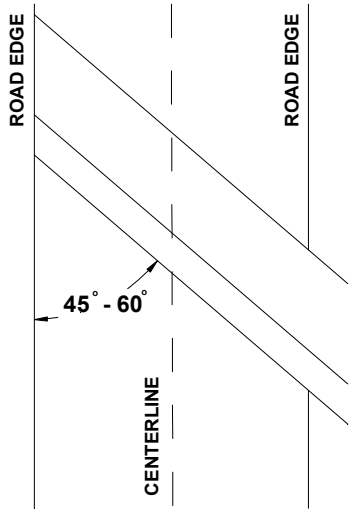
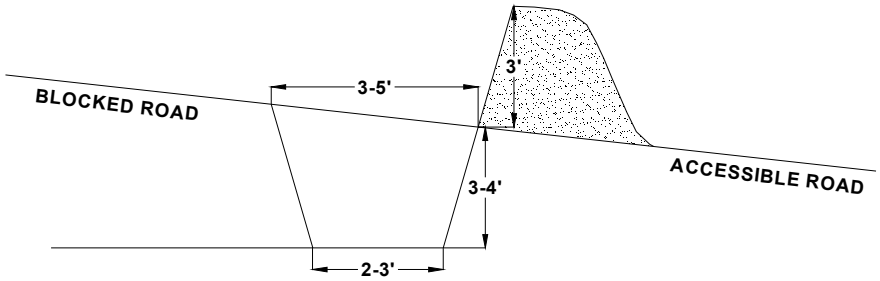


EXHIBIT J

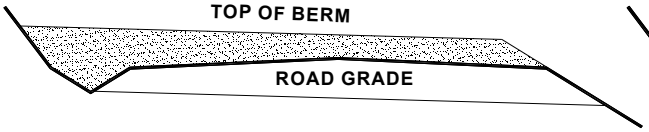
TANK TRAP SPECIFICATIONS

PROFILE
DITCHED AND OUTSLOPED



CROSS SECTION

DITCHED



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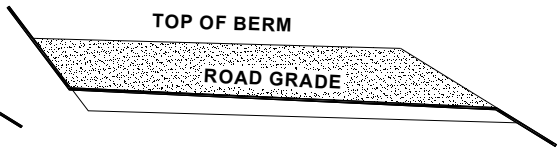
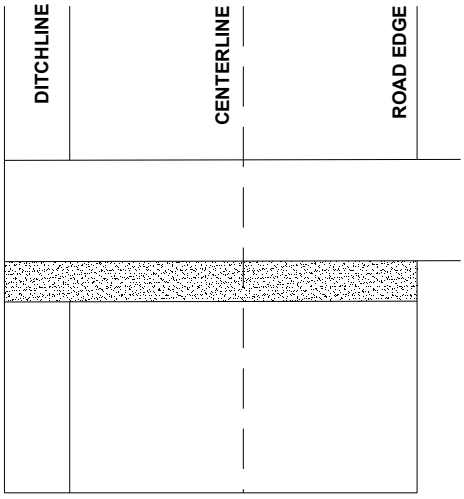
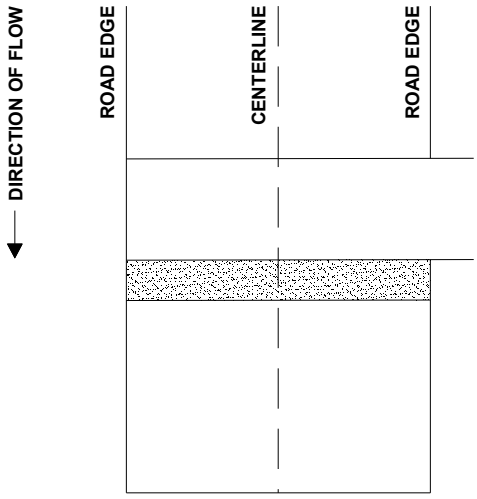


CONSTRUCT DITCHOUT THRU ANY EXISTING BERM.
CROSS DRAINAGE GRADIENT MINIMUM 3%

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 K

SPECIFICATIONS FOR LANDING SLASH PILING

Piling Slash: All piles shall be as compact as possible. Piles shall be built to a height of 3 to 4 feet and then covered to prevent water from reaching the Slash. Each pile shall be covered with polyethylene plastic sheeting. State shall supply the materials used for covering the Slash. Additional woody debris shall be piled on top of the covered piles to complete the piling, as directed by STATE.

Placement of Piles: Piles shall be placed in a location to minimize damage from burning to standing green trees, snags, and culverts. Piles shall be placed as follows:

(a) No less than 50 feet from any snag, green tree, or culvert, unless otherwise approved by STATE.

(b) Cull log segments suitable for firewood shall be piled separately from Slash at a distance of no closer than 50 feet from the Slash piles.

EXHIBIT L

SEEDING AND FERTILIZING

This work shall consist of preparing seedbeds and furnishing and placing required seed and fertilizer.

Seeding Seasons. Seeding shall be performed only from March 1 through June 15 and August 15 through October 15. 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 24 hours prior to seeding.

Soil Preparation. Areas to be seeded that have been damaged by erosion or other causes shall be restored prior to seeding. All areas to be seeded shall be finished and then cultivated to provide a reasonably firm, but friable seedbed. A minimum of 1/2 inch of surface soil shall be in a loose condition.

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 amounts and mixtures specified. Hand-operated seeding devices may be used when seed and fertilizer are applied in dry form.

Application Rates for Seed and Fertilizer

Seed listed below shall be applied at the following rates per acre:

SPECIES	Lb./Acre	MIXTURE	PURE LIVE SEED	Repellent
Fine Fescue	12	40%	98%	0
Annual Ryegrass	6	20%	98%	0
Perennial Ryegrass	9	30%	98%	0
White Dutch Clover	3	10%	98%	0

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.

Seeding will be considered acceptable when all other specified requirements in Exhibits L have been completed and a healthy, uniform, close stand of grass has been established, unless otherwise approved in writing by STATE.

EXHIBIT M

MULCHING

This work shall consist of furnishing and placing required mulch. Mulch shall consist of straw that is free of noxious weeds.

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 3/4 to 1 ¼ inches. This rate requires between 1 and 1 ½ tons of dry mulch per acre.

EXHIBIT N

TEST HOLES SITE DIGGING REQUIREMENTS

1) PURCHASER shall notify STATE a minimum of 48 hours prior to beginning any operations. A STATE representative shall be present during test holes digging to monitor results, issue instructions, and determine test hole locations and depths. The representative also shall certify hours of operation or acceptance of work when required under contract.

2) Work scheduling shall provide for continual operation until contract work is completed, unless interrupted by poor weather, fire closures, or other uncontrollable circumstances, equipment breakdowns shall be repaired without undue delay, and provision shall be made for replacement of equipment to prevent prolonged delays. Testing operations shall not be allowed from October 1 to April 30, or during any other period when operations might damage sites or affect stream flows. Any exception to these instructions must be authorized in writing by **STATE**.

3) 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.

4) Test holes shall be dug to determine mass attitudes of rock strata, depths of overburden and other pertinent information.

5) Access road construction may be required. Access roads shall be constructed by the PURCHASER using an excavator. All routes and location of access roads shall be flagged and approved by STATE prior to construction. Hours required to build access roads shall count towards the 20-hour total.

6) Upon completion of test hole digging at each site, waterbar all access roads as specified in Exhibit I and reestablish drainage ditches, as directed by STATE.

State Timber Sale Contract
TL-341-2021-W00752-01
Cruisin Murphy

WRITTEN PLAN FOR PROJECT WORK

PROTECTED RESOURCE: High Landslide Hazard Location.

LOCATION: Segment K to L, stations 2+20 to 3+65
NE ¼, SW ¼, Sec. 14, T2S, R7W, W.M., Tillamook County, Oregon.

Activity: New Road Construction across High Landslide Hazard Location.

Protection measures:

- Road construction will be performed only during dry weather conditions.
- Road subgrade will be no wider than necessary.
- Subgrade will be constructed using “full bench” techniques. No sidecast will occur.
- Excavation of road prism will be accomplished with an excavator.
- Excavated material will be hauled to a stable, designated waste area away from streams, spread and compacted.
- Berm will be left on outside edge of road during excavation to ensure 100% containment.
- Newly exposed soil will be seeded.

Date: March 2, 2020
Prepared by: James Neuman

"STEWARDSHIP IN FORESTRY"

PART IV: OTHER INFORMATION

WRITTEN PLAN

SALE NAME: **Cruisin Murphy**, TL 341-2021-W00752-01

PROTECTED WATERS: **Cruiser Creek, Elkhorn Creek (large Type-F)** and one unnamed small Type-F tributary.

Definitions: Stream buffer: at least 100 feet horizontal distance from the high water mark on each side of the stream.

LOCATION: Sections 6, & 7 in T2S R6W, W.M. Tillamook County.

Activity: Cable lines across stream.

Protection measures:

- All trees in the RMA are reserved from cutting.
- Cable yarding lines will be pulled out of the RMA prior to rigging the next yarding road.
- If trees or logs fall or slide into a stream channel they will not be limbed, bucked, or removed without prior approval from ODF.
- Cable lines will be an average of at least 150 feet apart where they extend over or through the Type F stream and buffer.

Date: 01/02/2020

Prepared by: Harold Stevens