# *PART III: EXHIBITS*

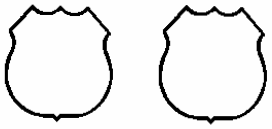


**OREGON DEPARTMENT OF FORESTRY**

**TIMBER SALE OPERATIONS PLAN**
(See Page 2 for instructions)

Date Received by STATE: _____

(5) State Brand Information (complete):



(1) Contract No.: 341-06-02

(2) Sale Name: Hambone

(3) Contract Expiration Date: October 31, 2007 Project Completion Dates: _____

(4) Purchaser: _____ _____

(6) Purchaser Representatives:

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

(7) State Representatives:

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

(8) Name of Subcontractors & Starting Dates:

| | | | |
|---|---|---|---|
| Projects: No(s) _____-_____ | Date: _____ | Phone: _____ |
| No(s) _____-_____ | Date: _____ | Phone: _____ |
| No(s) _____-_____ | Date: _____ | Phone: _____ |
| No(s) _____-_____ | Date: _____ | Phone: _____ |
| Logging: Felling _____ | Date: _____ | Phone: _____ |
| Yarding: _____ | Date: _____ | Phone: _____ |

(9) Comments: _____

_____

_____

_____

_____

_____

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

EXHIBIT B

INSTRUCTION SHEET FOR OPERATIONS PLAN

**SUBMIT ONE COPY OF PLAN TO STATE**

Operations shall be limited to the work shown in the plan until a revised plan or supplemental plan is submitted covering additional work. Compliance with this plan is not in lieu of compliance with any federal requirements related to the federal Endangered Species Act. If STATE has prepared a required Forest Practices Act (FPA) "Written Plan" for operations, PURCHASER shall comply with all provisions of the Written Plan.

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

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

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

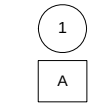
(7) The STATE representative will be designated when your plan is approved and is the person who will inspect and issue instructions regarding performance.

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

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

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

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




Cable landing, with numbers for sequence.

Tractor landing with alphabetical sequence.

_ _ _ _ _ Approximate setting boundary.

- - - - - - - - Spur truck roads.

Tractor yarding roads.

X Temporary stream crossings.

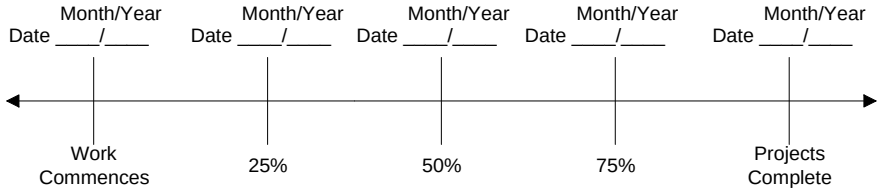
EXHIBIT B

OPERATIONS PLAN

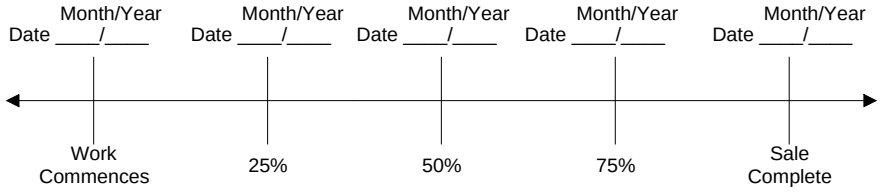
**Completion Timeline**

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

**Projects**




**Harvest & Other Requirements**




**The Federal Endangered Species Act (ESA) prohibits a person from taking any federally listed threatened or endangered species. Taking under the federal ESA may include alteration of habitat. STATE's approval of this plan does not certify that PURCHASER's operation under the plan is lawful under the federal ESA. As provided in the timber sale contract, PURCHASERS must comply with all applicable state, federal, and local laws.**

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

APPROVED: Date: _____

STATE OF OREGON - DEPARTMENT OF FORESTRY

_____

Title _____

SUBMITTED BY:
PURCHASER

_____

Title _____

Original: Salem
cc: District File
Purchaser

EXHIBIT C

**SCALING INSTRUCTIONS -- LOCATION APPROVAL -- BRAND INFORMATION**

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

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

(3) FROM: Astoria (04) Phone 503-325-5451
(State Forestry District)
Address 92219 Hwy. 202, Astoria, OR 97103

(4) PURCHASER: _____
Address _____

| (5) **MINIMUM SCALING SPECIFICATIONS** | | | **CLASS** | | |
|---|---|---|---|---|---|
| SPECIES | SCALING DIAMETER INCHES | *NET SCALE VOLUME | PER MBF | ** SUM | SUB |
| Conifers | -- | 10 | X | | |
| Hardwoods | -- | 10 | X | | |
| | | | | | |

* Apply minimum volume test to whole logs over 40' Westside; 20' Eastside.
** Sum (if indicated): see instructions and explain in Item (20).

(6) WESTSIDE SCALE: YES ☒ NO ☐
Actual taper all logs over 40' scaling length

(7) EASTSIDE SCALE: YES ☐ NO ☒
*Actual taper butt logs over 40' scaling length

(8) PENCIL BUCK YES ☐ NO ☒
back to Minimum Scaling Diameter _____

(9) ADD-BACK VOLUME -- YES ☒ NO ☐
Deductions due to delay

| (10) **APPROVED SCALING LOCATIONS** | **Species** | **Yard** | **Truck** |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

(11) NOTICE OF CANCELLATION OF BRAND:
Effective Date: _____

_____
State Forester's Representative

(12) SALE NAME Hambone
COUNTY Clatsop

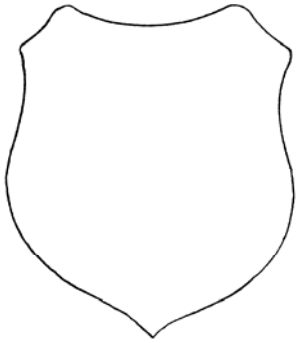
(13) STATE CONTRACT NUMBER 341-06-02

(14) SCALE: westside ☒ eastside ☐ cubic foot ☐

(15) STATE BRAND REGISTRATION NUMBER _____

(16) BUREAU BRAND CODE NUMBER _____

(17) STATE BRAND INFORMATION:
(COMPLETE)



(18) PAINT REQUIRED: YES ☒
COLOR Orange

| (19) SPECIAL SCALES |
|---|
| PEELABLE CULL (all species) |
| UTILITY/PULP (all species) |
| **NO DEDUCTIONS ALLOWED FOR MECHANICAL DAMAGE** |
| OTHER: _____ |
| OTHER: _____ |

(20) REMARKS: Any hardwood log that does not conform with the grading rules for a No. 4 Alder log or better, and does not meet the minimum requirements of 8 inches in gross scaling diameter and contains 20 net board feet, shall be scaled as a utility log.

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

(21) SIGNATURES:

_____
Purchaser or Authorized Representative Date

_____
State Forester Representative Date

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

Distribution: ORIGINAL: Salem / COPIES: TPSO (4), Purchaser, Operator, District, Mgmt. Unit

# EXHIBIT C

## INSTRUCTIONS FOR FORM 343-307 (rev. 5/01)

(1) Check appropriate box. REVISION NUMBER requires comments. CANCELLATION requires Item (21). Complete date.

(2) Designate Third Party Scaling Organization (TPSO). Send 4 copies to TPSO, 1 to purchaser, 1 to Salem, and keep such copies as to district needs.

(3) State District office, address and phone.

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

(5) Minimum Scaling Specifications. Review Section 2040 or 2045, "Log Removal," of the Contract. Species, or combined species can be separate entries. Information serves as a basis for scaling (see also Items (13) thru (17)), and is required to show existence on the sale. **PerM** (per MBF). **SUM** (lump sum material). **SUB** (submerchantable material. SUB, as used by the State, references that material containing at least 10 bf (net) but less than the lower merchantable net volume limit or grade requirements for other merchantable (PerM) entries. PerM, SUM, and Sub must be indicated by checking the appropriate column. Species with the same specifications and value are combined into one entry. PerM and Sub require scaling therefore complete specifications. SUM need not be scaled, hence no specifications. Loads containing only SUM are to be ticketed if so instructed in Item (19). Mixed loads of SUM, PERM and/or subspecies will always be scaled.

(6) Westside -- 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) Eastside -- actual taper/taper table segment scale. Special Service Rules on file with TPSO. See: Segment Scaling and Grading of Long Logs -- All Species -- State Forestry Department Scaling Practices (Eastside). Items with * follow U.S. Forest Service Eastside rules.

(8) Pencil Buck. Check NO if a westside sale, optional for eastside sales.

(9) Add-Back Volume. Add-Back is normally checked YES. Scaler records deductions (sap rot, weather checks, etc.) caused by an abnormal delay in removal. Enter separately on scale ticket. TPSO provides State with summaries that include this as a net volume by species. Salvage sales and certain other circumstances may require that "NO" be checked.

(10) Show scaling locations only applicable to TPSO. Not necessary to list markets. If all species are scaled at same location, enter "ALL."

(11) When logging is complete, recall branding hammers, date and sign where indicated, check CANCELLATION box at top of form, and send to TPSO.

(12) Enter sale name and county.

(13) Enter sale Contract number.

(14) Check Westside or Eastside log scale. Cubic foot refers to Northwest Log Rules Cubic Foot Scale.

(15) Oregon Forest Products Brand Registry Number (optional).

(16) DO NOT USE -- TPSO will fill in when applicable.

(17) Show one brand only. Complete drawing. If more than one brand is assigned to the sale, (1) make separate form for each brand, and (2) on each form, explain and show other brand(s) under REMARKS, Item 19.

(18) Check YES and designate orange.

(19) Special Scales. These are the Special Scales that will be applied. If "Other" is indicated, please describe. Give comments in Item (19).

(20) Use this space to designate weight conversion factors, or any other explanations to clarify scaling requirements. If additional scaling locations are approved, prepare another form showing all (old and new) locations. Check REVISION box at top of form and explain under remarks. Route as indicated.

(21) Require purchaser to sign and date completed form.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

| SUBGRADE WIDTH | SURFACED WIDTH | POINT TO POINT | STATION TO STATION | DRAINAGE |
|---|---|---|---|---|
| 16 feet | 12 feet | 1A to 1B | 0+00 to 21+40 | DITCH |
| 16 feet | 12 feet | 1C to 1D | 0+00 to 2+75 | DITCH |
| 14 feet | N/A | 2A to 2B | 0+00 to 5+65 | OUTSLOPE |
| 14 feet | N/A | 3A to 3B | 0+00 to 8+10 | OUTSLOPE |
| 14 feet | N/A | 3C to 3D | 0+00 to 6+50 | OUTSLOPE |
| 16 feet | 12 feet | I1 to I2 | 0+00 to 70+60 | DITCH |
| 16 feet | 12 feet | I3 to I4 | 0+00 to 51+55 | DITCH |

CLEARING. This work shall consist of clearing, removing, and disposing of all trees, snags, down timber, brush, surface objects, and protruding obstructions within the clearing limits.

Where clearing limits have not been staked, the clearing limits shall extend 10 feet back of the top of the cutslope and 10 feet out from the toe of the fill slope, or as directed by STATE. Clearing debris shall not be placed or permitted to remain in or under any road embankment sections. Clearing debris shall not be left lodged against standing trees.

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

GRUBBING. This work shall consist of the removal or digging out of stumps and protruding objects. All stumps shall be completely removed within the limits of required grubbing. Stumps overhanging cutslopes shall be removed. Grubbing debris shall not be placed or permitted to remain in or under any road embankment sections. Grubbing debris shall not be left lodged against standing trees.

GRUBBING CLASSIFICATION. New construction – From the top of the cutslope to the toe of the fill. Improvement and reconstruction – Four feet back from the shoulder of the subgrade of ditch, whichever is widest, or as marked in the field.

CLEARING AND GRUBBING DISPOSAL. Scatter through openings in the timber outside of the cleared right-of-way, except areas where end-haul is required. In areas where end-haul is required, clearing and grubbing debris shall be fully contained and hauled to a designated waste area.

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-engineered lines, grades, dimensions, and plans when provided.

All suitable excavated material shall be used where possible for the formation of fills, shoulders, and drainage structure backfill. Embankment materials shall be free of woody debris, brush, muck, sod, frozen material, and other deleterious materials. All fills and drainage structure backfill shall be machine compacted according to the specifications in Exhibit D.

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

Excess excavation shall not be sidecast where material will enter a stream course or where material will accumulate in areas deemed a high landslide hazard location by STATE.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

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 follows: 400 divided by the radius of the curve equals the amount of extra width, or as directed by STATE.

DRAINAGE

Ditch. Construct "V" ditch 3 feet wide and to a depth of 1 foot below subgrade. Subgrade shall be crowned at 4 to 6 percent. Construct ditchouts away from subgrade at locations marked in the field.

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

TURNOUTS. Increase roadbed width an additional 8 feet for both subgrade and surfacing. Length shall be at least 50 feet, or as staked on the ground, plus 25-foot approaches at each end.

Location: Intervisible but not greater than 750 feet apart and as marked in the field.

| GRADING | Back Slopes | Fill Slopes |
|---|---|---|
| Rock | Vertical to 1/4:1 | Not steeper |
| Common - side slopes 50% and over | 3/4:1 | than 1½:1 |
| Common - side slopes less than 50% | 1:1 | |
| Common - turnpike (level) section | 2:1 | |

Top of cutslope shall be rounded.

LANDINGS. Landings shall be constructed as posted in the field, no less than 50 feet wide and no more than 70 feet wide. Surface is to be crowned for drainage, with general grade no more than 3 percent. Surface as shown on Exhibit D.

TURNAROUNDS. Increase subgrade width an additional 20 feet for a length of 20 feet at locations marked in the field.

SEASONAL WINTERIZATION. All unrocked roads or unfinished subgrades shall be waterbarred in accordance with specifications in Exhibit L, and blocked from vehicular traffic prior to November 1, annually and as directed by STATE.

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. Waste materials shall be sloped and compacted for drainage. Fills shall be thoroughly compacted in accordance with Exhibit D.

(2) Fill Armor and Energy Dissipator Construction. Where rock is used for fill armor, rock shall be placed and tamped at a 1½:1 slope, beginning at the fill toes. Where rock is used for an energy dissipator, rock shall be placed below the culvert outlet and embedded for a minimum of 3 feet, in accordance with Exhibit J.

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. Waste materials shall be sloped and compacted for drainage. Fills shall be thoroughly compacted in accordance with Exhibit D.

(2) Culvert Replacement, Culvert Installation, Fill Reconstruction, and Fill Removal. Existing culvert geometry shall be modified to provide for optimum drainage and culvert performance. Modifications may include, skewing the culvert and/or installing the pipe at gradients equal to or exceeding the drainage (or ditch) gradient. Where fill reconstruction or culvert replacement is specified, fills shall be excavated to natural stream course levels. All woody debris encountered during fill excavation shall be removed. All waste materials shall be hauled to nearby waste areas and shall be uniformly sloped and compacted for drainage. Waste materials shall be seeded and mulched in accordance with specifications in Exhibit K. Fill reconstruction backfill shall consist of select materials and may be obtained from borrow pits, as directed by STATE. Backfill materials shall be hauled in where necessary and thoroughly compacted in accordance with Exhibit D. Crushed rock shall be used for backfilling excavation trenches less than 3 feet deep. STATE may require the use of crushed rock for culvert bedding. Removed culverts shall be hauled to an approved refuse site off of STATE land.

(3) Additional Requirements for Bridge Construction and Type F Stream Fill Construction. Additional requirements are shown on Exhibits F and G.

(4) Drainage Ditches. Restore or construct ditchlines, including ditchouts, as directed by STATE. Clean out all culvert inlets and outlets for a 10-foot radius. Re-establish or construct culvert sediment basins. Waste materials from drainage ditches and sediment basins shall not be pulled across existing surfacing rock, but shall be placed in nearby waste areas and uniformly sloped and compacted for drainage, as directed by STATE. Damaged culvert inlets and/or outlets shall be repaired by opening them with a hydraulic jack, or cutting off the culvert end to allow for free passage of water at peak flow levels. Install a culvert marker at each newly installed culvert and at each existing culvert that could be reached by a grader blade.

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

(6) Subgrade Preparation and Application of Surfacing Rock.

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

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

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

(d) Process (grade and mix) the existing surfacing and added base rock. Provide for a crown of 4 to 6 percent (½ inch per foot), and compact in accordance with Exhibit D.

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

(7) Riprap Rock Use. Where rock is used for fill armor, rock shall be placed and tamped at a 1½ : 1 slope, beginning at the fill toes. When used for an energy dissipator, rock shall be placed below the culvert outlet and embedded for a minimum of 3 feet, in accordance with Exhibit J.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

| Segment | Station | Work Description |
|---|---|---|
| 1A to 1B | 5+00 | Construct turnout/landing combination on left side of road. |
| | 10+00 | Construct turnout/landing combination right side of road. |
| | 13+25 | Junction Point 1C. |
| | 16+70 | Construct turnout/landing on right side of road. |
| | 18+40 | Construct turnout/landing on right side of road. |
| | 21+40 | Point 1B landing. |

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

| Segment | Station | Work Description |
|---|---|---|
| I1 to I2 | 0+05 | Culvert replacement. Utilize 40 cubic yards of 1½”-0” crushed rock salvaged from highway approach for culvert bedding and backfill. |
| | 2+45 | Fill reconstruction. Utilize 70 cubic yards of 1½” -0” crushed rock for culvert bedding and backfill. Utilize 63 cubic yards of 4”-0” for base rock replacement. Utilize 31 cubic yards of 1”-0” for surface rock replacement. Utilize 80 cubic yards of 24”-6” riprap rock for fill armor/dissipator. |
| | 9+10 | Bridge construction: Remove fill and pipe arch culvert, develop stream channel, and install a bridge in accordance with specifications in Exhibits D and F. Utilize 200 cubic yards 36”-24” riprap rock for armor, 52 cubic yards of 24”-6” riprap rock for bridge footing, 4 cubic yards of 1”-0” rock for bridge footing, 89 cubic yards of 1”-0” rock for bridge deck and road surfacing course, and 82 cubic yards of 4”-0” rock for road base restoration. |
| | 9+60 | Culvert replacement. Utilize 20 cubic yards of 1½”-0” crushed rock for culvert bedding and backfill. |
| | 12+00 | Culvert replacement. Utilize 20 cubic yards of 1½”-0” crushed rock for culvert bedding and backfill. |
| | 16+00 | Culvert replacement. Utilize 20 cubic yards of 1½”-0” crushed rock for culvert bedding and backfill. |
| | 19+60 | Fill reconstruction. Utilize 70 cubic yards of 1½” -0” crushed rock for culvert bedding and backfill. Utilize 63 cubic yards of 4”-0” for base rock replacement. Utilize 31 cubic yards of 1”-0” for surface rock replacement. Utilize 80 cubic yards of 24”-6” riprap rock for fill armor/dissipator. |
| | 21+50 | Culvert replacement. Utilize 20 cubic yards of 1½”-0” crushed rock for culvert bedding and backfill. |
| | 34+55 | Culvert replacement. Utilize 20 cubic yards of 1½”-0” crushed rock for culvert bedding and backfill. |
| | 39+80 | Fill reconstruction. Utilize 70 cubic yards of 1½” -0” crushed rock for culvert bedding and backfill. Utilize 63 cubic yards of 4”-0” for base rock replacement. Utilize 31 cubic yards of 1”-0” for surface rock replacement. Utilize 30 cubic yards of 24”-6” riprap rock for fill armor/dissipator. |
| | 43+00 | Culvert replacement. Utilize 20 cubic yards of 1½”-0” crushed rock for culvert bedding and backfill. |
| | 45+80 | Culvert replacement. Utilize 20 cubic yards of 1½”-0” crushed rock for culvert bedding and backfill. |
| | 46+95 | Landing construction. Utilize 40 cubic yards of 4”-0” crushed rock for landing construction. |

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

| Segment | Station | Work Description |
|---|---|---|
| I1 to I2 | 50+40 | Fill reconstruction. Utilize 100 cubic yards of 1½" -0" crushed rock for culvert bedding and backfill. Utilize 63 cubic yards of 4"-0" for base rock replacement. Utilize 31 cubic yards of 1"-0" for surface rock replacement. Utilize 130 cubic yards of 24"-6" riprap rock for fill armor/dissipator. |
| I3 to I4 | 2+90 | Type F stream fill construction: Remove existing culvert/fill, develop the stream channel and install a pipe arch culvert in accordance with specifications in Exhibit D and G. Utilize 200 cubic yards 36"-24" riprap rock for armor and dissipator, 200 cubic yards of 1 ½"-0" rock for culvert bedding and backfill, 31 cubic yards of 1"-0" rock for road surfacing course, and 63 cubic yards of 4"-0" rock for road base restoration. |
| | 7+35 | Culvert replacement. Utilize 20 cubic yards of 1½"-0" crushed rock for culvert bedding and backfill. |
| | 9+80 | Fill reconstruction. Utilize 90 cubic yards of 1½" -0" crushed rock for culvert bedding and backfill. Utilize 63 cubic yards of 4"-0" for base rock replacement. Utilize 31 cubic yards of 1"-0" for surface rock replacement. Utilize 70 cubic yards of 24"-6" riprap rock for fill armor/dissipator. |
| | 13+10 | Fill reconstruction. Utilize 90 cubic yards of 1½" -0" crushed rock for culvert bedding and backfill. Utilize 63 cubic yards of 4"-0" for base rock replacement. Utilize 31 cubic yards of 1"-0" for surface rock replacement. Utilize 160 cubic yards of 24"-6" riprap rock for fill armor/dissipator. |
| | 19+50 | Culvert replacement. Utilize 20 cubic yards of 1½"-0" crushed rock for culvert bedding and backfill. |
| | 23+10 | Fill reconstruction. Utilize 90 cubic yards of 1½" -0" crushed rock for culvert bedding and backfill. Utilize 63 cubic yards of 4"-0" for base rock replacement. Utilize 31 cubic yards of 1"-0" for surface rock replacement. Utilize 150 cubic yards of 24"-6" riprap rock for fill armor/dissipator. |
| | 26+55 | Fill reconstruction. Utilize 70 cubic yards of 1½" -0" crushed rock for culvert bedding and backfill. Utilize 63 cubic yards of 4"-0" for base rock replacement. Utilize 31 cubic yards of 1"-0" for surface rock replacement. Utilize 100 cubic yards of 24"-6" riprap rock for fill armor/dissipator. |
| | 29+05 | Fill reconstruction. Utilize 100 cubic yards of 1½" -0" crushed rock for culvert bedding and backfill. Utilize 63 cubic yards of 4"-0" for base rock replacement. Utilize 31 cubic yards of 1"-0" for surface rock replacement. Utilize 260 cubic yards of 24"-6" riprap rock for fill armor/dissipator. |
| | 32+60 | Culvert replacement. Utilize 20 cubic yards of 1½"-0" crushed rock for culvert bedding and backfill. |

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

| Segment | Station | Work Description |
|---|---|---|
| I3 to I4 | 34+68 | Fill reconstruction. Utilize 90 cubic yards of 1½" -0" crushed rock for culvert bedding and backfill. Utilize 63 cubic yards of 4"-0" for base rock replacement. Utilize 31 cubic yards of 1"-0" for surface rock replacement. Utilize 150 cubic yards of 24"-6" riprap rock for fill armor/dissipator. |
| | 40+20 | Replace culvert. Utilize 20 cubic yards of 1½"-0" crushed rock for culvert bedding and backfill. Utilize 10 cubic yards of 24"-6" riprap rock to construct an energy dissipator. |
| | 42+00 | Install culvert in the existing fill to maintain the existing pond level. Utilize 20 cubic yards of 1½"-0" crushed rock for culvert bedding and backfill. |
| | 50+55 | Culvert replacement. Utilize 20 cubic yards of 1½"-0" crushed rock for culvert bedding and backfill. |

EXHIBIT D

ROAD SURFACING

| **ROAD SEGMENT: 1A to 1B** | | | | **POINT TO POINT** | | **Sta. to Sta.** | | **TOTAL VOLUME (CY)** |
|---|---|---|---|---|---|---|---|---|
| **Application** | **Rock Size and Type** | **Location** | **Depth of Rock (inches)** | 1A to 1B | | 0+00 to 21+40 | | |
| | | | | **Volume (CY) per** | | **Number of** | | |
| Base Rock | 4"-0" Crushed | 0+00-21+40 | 8 | station | 50 | stations | 21.4 | 1,070 |
| Turnouts | 4"-0" Crushed | 5+00, 10+00, 16+70, 18+40 | 8 | turnout | 22 | turnouts | 4 | 88 |
| Curve Widening | 4"-0" Crushed | various | | various | | | | 110 |
| Junction | 4"-0" Crushed | 0+00 | 8 | junction | 20 | junctions | 1 | 20 |
| Turnout/Landing | 6”-0” Pit Run | 5+00, 10+00, 16+70, 18+40 | | turnout/ landing | 50 | turnout/ landing | 4 | 200 |
| Landing Rock | 6”-0” Pit Run | 21+40 | | landing | 80 | landings | 1 | 80 |
| Total Rock for Road Segment: | | **1A to 1B** | | | | | | 1,568 |
| **ROAD SEGMENT: 1C to 1D** | | | | **POINT TO POINT** | | **Sta. to Sta.** | | **TOTAL VOLUME (CY)** |
| **Application** | **Rock Size and Type** | **Location** | **Depth of Rock (inches)** | 1C to 1D | | 0+00 to 2+75 | | |
| | | | | **Volume (CY) per** | | **Number of** | | |
| Base Rock | 4"-0" Crushed | 0+00-2+75 | 8 | station | 50 | stations | 2.75 | 138 |
| Junction | 4"-0" Crushed | 0+00 | 8 | junction | 20 | junctions | 1 | 20 |
| Landing Rock | 6”-0” Pit Run | | | landing | 50 | landings | 1 | 50 |
| Total Rock for Road Segment: | | **1C to 1D** | | | | | | 208 |
| **ROAD SEGMENT: 2A to 2B** | | | | **POINT TO POINT** | | **Sta. to Sta.** | | **TOTAL VOLUME (CY** |
| **Application** | **Rock Size and Type** | **Location** | **Depth of Rock (inches)** | 2A to 2B | | 0+00 to 5+65 | | |
| | | | | **Volume (CY) per** | | **Number of** | | |
| Base Rock | 4"-0" Crushed | 0+00-0+50 | 6 | station | 40 | stations | 0.5 | 20 |
| Junction | 4"-0" Crushed | 0+00 | 6 | junction | 10 | junctions | 1 | 10 |
| Total Rock for Road Segment: | | **2A to 2B** | | | | | | 30 |
| **ROAD SEGMENT: 3A to 3B** | | | | **POINT TO POINT** | | **Sta. to Sta.** | | **TOTAL VOLUME (CY** |
| **Application** | **Rock Size and Type** | **Location** | **Depth of Rock (inches)** | 3A to 3B | | 0+00 to 8+10 | | |
| | | | | **Volume (CY) per** | | **Number of** | | |
| Base Rock | 4"-0" Crushed | 0+00-0+50 | 6 | station | 40 | stations | 0.5 | 20 |
| Junction | 4"-0" Crushed | 0+00 | 6 | junction | 10 | junctions | 1 | 10 |
| Total Rock for Road Segment: | | **3A to 3B** | | | | | | 30 |

EXHIBIT D

ROAD SURFACING

| ROAD SEGMENT: I1 to I2 | | | | POINT TO POINT | | Sta. to Sta. | | |
|---|---|---|---|---|---|---|---|---|
| Application | Rock Size and Type | Location | Depth of Rock (inches) | I1 to I2 Volume (CY) per | | 0+00 to 70+60 Number of | | TOTAL VOLUME (CY) |
| Leveling Rock | 1"-0" Crushed | 0+00 – 70+60 | | | | | | 200 |
| Surfacing | 1"-0" Crushed | 0+00 - 60+40 | 2 | station | 13 | stations | 60.4 | 785 |
| Turnouts | 1"-0" Crushed | | 2 | turnout | 10 | turnouts | 11 | 110 |
| Landing | 4"-0" Crushed | 46+95 | 1 | landing | 40 | landings | 1 | 40 |
| Junctions | 1"-0" Crushed | | 2 | junction | 10 | junctions | 3 | 30 |
| Culvert Bed/Backfill | 1½"-0" Crushed | 0+05 | N/A | culvert | 40 | culverts | 1 | 40 |
| Culvert Bed/Backfill | 1½"-0" Crushed | 9+60 | N/A | culvert | 20 | culverts | 1 | 20 |
| Culvert Bed/Backfill | 1½"-0" Crushed | 12+00 | N/A | culvert | 20 | culverts | 1 | 20 |
| Culvert Bed/Backfill | 1½"-0" Crushed | 16+00 | N/A | culvert | 20 | culverts | 1 | 20 |
| Culvert Bed/Backfill | 1½"-0" Crushed | 21+50 | N/A | culvert | 20 | culverts | 1 | 20 |
| Culvert Bed/Backfill | 1½"-0" Crushed | 34+55 | N/A | culvert | 20 | culverts | 1 | 20 |
| Culvert Bed/Backfill | 1½"-0" Crushed | 43+00 | N/A | culvert | 20 | culverts | 1 | 20 |
| Culvert Bed/Backfill | 1½"-0" Crushed | 45+80 | N/A | culvert | 20 | culverts | 1 | 20 |
| Culvert Bed/Backfill fills | 1½"-0" Crushed | 2+45 | N/A | culvert | 70 | culverts | 1 | 70 |
| Fill Armor/Dissipator | 24"-6" Riprap | 2+45 | N/A | fill | 80 | fills | 1 | 80 |
| Base Rock, Fills | 4"-0" Crushed | 2+45 | 10 | fill | 63 | fills | 1 | 63 |
| Surface Rock, Fills | 1"-0" Crushed | 2+45 | 5 | fill | 31 | fills | 1 | 31 |
| Culvert Bed/Backfill fills | 1½"-0" Crushed | 19+60 | N/A | culvert | 70 | culverts | 1 | 70 |
| Fill Armor/Dissipator | 24"-6" Riprap | 19+60 | N/A | fill | 80 | fills | 1 | 80 |
| Base Rock, Fills | 4"-0" Crushed | 19+60 | 10 | fill | 63 | fills | 1 | 63 |
| Surface Rock, Fills | 1"-0" Crushed | 19+60 | 5 | fill | 31 | fills | 1 | 31 |
| Culvert Bed/Backfill fills | 1½"-0" Crushed | 39+80 | N/A | culvert | 70 | culverts | 1 | 70 |
| Fill Armor/Dissipator | 24"-6" Riprap | 39+80 | N/A | fill | 30 | fills | 1 | 30 |
| Base Rock, Fills | 4"-0" Crushed | 39+80 | 10 | fill | 63 | fills | 1 | 63 |
| Surface Rock, Fills | 1"-0" Crushed | 39+80 | 5 | fill | 31 | fills | 1 | 31 |
| Culvert Bed/Backfill fills | 1½"-0" Crushed | 50+40 | N/A | culvert | 100 | culverts | 1 | 100 |
| Fill Armor/Dissipator | 24"-6" Riprap | 50+40 | N/A | fill | 130 | fills | 1 | 130 |
| Base Rock, Fills | 4"-0" Crushed | 50+40 | 10 | fill | 63 | fills | 1 | 63 |
| Surface Rock, Fills | 1"-0" Crushed | 50+40 | 5 | fill | 31 | fills | 1 | 31 |
| Bridge & Approach Surfacing | 1"-0" Crushed | 9+10 | N/A | bridge approach surfacing | 89 | bridge | 1 | 89 |
| Approach Surfacing | 4"-0" Crushed | 9+10 | N/A | approach surfacing | 82 | bridge | 1 | 82 |
| Bridge Footing | 1"-0" Crushed | 9+10 | N/A | bridge footing | 4 | bridge | 1 | 4 |
| Bridge Footing | 24"-6" Riprap | 9+10 | N/A | bridge footing | 52 | bridge | 1 | 52 |
| Total Rock for Road Segment: | | **I1 to I2** | | | | | | 2,778 |

EXHIBIT D

ROAD SURFACING

| ROAD SEGMENT: I3 to I4 | | | | POINT TO POINT | | Sta. to Sta. | | |
|---|---|---|---|---|---|---|---|---|
| Application | Rock Size and Type | Location | Depth of Rock (inches) | I3 to I4 Volume (CY) per | | 0+00 to 51+55 Number of | | TOTAL VOLUME (CY) |
| Leveling Rock | 1"-0" Crushed | 0+00 – 51+55 | N/A | | | | | 200 |
| Surfacing | 1"-0" Crushed | 0+00 - 47+66 | 2 | station | 13 | stations | 47.66 | 620 |
| Turnouts | 1"-0" Crushed | | 2 | turnout | 10 | turnouts | 6 | 60 |
| Junctions | 1"-0" Crushed | | 2 | junction | 10 | junctions | 4 | 40 |
| Culvert Bed/Backfill | 1 1/2"-0" Crushed | 7+35, 19+50, 32+60, 40+20, 42+00, 50+55 | N/A | culvert | 20 | culverts | 6 | 120 |
| Dissipator | 24”-6” Riprap | 40+20 | N/A | culvert | 10 | culverts | 1 | 10 |
| Culvert Bed/Backfill, fill | 1 1/2"-0" Crushed | 2+90 | N/A | pipe arch | 70 | pipearch | 1 | 200 |
| Fill Armor/Dissipator | 36”-24" Riprap | 2+90 | N/A | fill | 200 | fills | 1 | 200 |
| Base Rock, Fills | 4”-0” Crushed | 2+90 | 10 | fill | 63 | fills | 1 | 63 |
| Surface Rock, Fills | 1"-0" Crushed | 2+90 | 5 | fill | 31 | fills | 1 | 31 |
| Culvert Bed/Backfill, fill | 1 1/2"-0" Crushed | 9+80 | N/A | culvert | 70 | culverts | 1 | 70 |
| Fill Armor/Dissipator | 24”-6” Riprap | 9+80 | N/A | fill | 90 | fills | 1 | 90 |
| Base Rock, Fills | 4”-0” Crushed | 9+80 | 10 | fill | 63 | fills | 1 | 63 |
| Surface Rock, Fills | 1"-0" Crushed | 9+80 | 5 | fill | 31 | fills | 1 | 31 |
| Culvert Bed/Backfill, fill | 1 1/2"-0" Crushed | 13+10 | N/A | culvert | 90 | culverts | 1 | 90 |
| Fill Armor/Dissipator | 24”-6” Riprap | 13+10 | N/A | fill | 160 | fills | 1 | 160 |
| Base Rock, Fills | 4”-0” Crushed | 13+10 | 10 | fill | 63 | fills | 1 | 63 |
| Surface Rock, Fills | 1"-0" Crushed | 13+10 | 5 | fill | 31 | fills | 1 | 31 |
| Culvert Bed/Backfill, fill | 1 1/2"-0" Crushed | 23+10 | N/A | culvert | 90 | culverts | 1 | 90 |
| Fill Armor/Dissipator | 24”-6” Riprap | 23+10 | N/A | fill | 150 | fills | 1 | 150 |
| Base Rock, Fills | 4”-0” Crushed | 23+10 | 10 | fill | 63 | fills | 1 | 63 |
| Surface Rock, Fills | 1"-0" Crushed | 23+10 | 5 | fill | 31 | fills | 1 | 31 |
| Culvert Bed/Backfill, fill | 1 1/2"-0" Crushed | 26+55 | N/A | culvert | 70 | culverts | 1 | 70 |
| Fill Armor/Dissipator | 24”-6” Riprap | 26+55 | N/A | fill | 100 | fills | 1 | 100 |
| Base Rock, Fills | 4”-0” Crushed | 26+55 | 10 | fill | 63 | fills | 1 | 63 |
| Surface Rock, Fills | 1"-0" Crushed | 26+55 | 5 | fill | 31 | fills | 1 | 31 |
| Culvert Bed/Backfill, fill | 1 1/2"-0" Crushed | 29+05 | N/A | culvert | 100 | culverts | 1 | 100 |
| Fill Armor/Dissipator | 24”-6” Riprap | 29+05 | N/A | fill | 260 | fills | 1 | 260 |
| Base Rock, Fills | 4”-0” Crushed | 29+05 | 10 | fill | 63 | fills | 1 | 63 |
| Surface Rock, Fills | 1"-0" Crushed | 26+05 | 5 | fill | 31 | fills | 1 | 31 |
| Culvert Bed/Backfill, fill | 1 1/2"-0" Crushed | 34+68 | N/A | culvert | 90 | culverts | 1 | 90 |
| Fill Armor/Dissipator | 24”-6” Riprap | 34+68 | N/A | fill | 150 | fills | 1 | 150 |
| Base Rock, Fills | 4”-0” Crushed | 34+68 | 10 | fill | 63 | fills | 1 | 63 |
| Surface Rock, Fills | 1"-0" Crushed | 34+68 | 5 | fill | 31 | fills | 1 | 31 |
| Total Rock for Road Segment: | | | **I3 to I4** | | | | | 3,528 |

**Total Rock**

| 36"-24" | 24”-6” | 6”-0” | 4”-0” | 1½"-0" | 1"-0" | TOTAL |
|---|---|---|---|---|---|---|
| 400 | 1,292 | 330 | 2,321 | 1,320 | 2,479 | 8,142 |

Roads shall be uniformly graded and approved by STATE prior to rocking. For typical cross section, see Forestry Department Drawing Nos. 351-C and 351-D at the Forestry Department district office.

# EXHIBIT D

## ROCK ACCOUNTABILITY

Subgrades must be approved by STATE prior to rocking. Rocking must be done only when weather conditions are acceptable to STATE, and must be suspended when muddy water could enter streams from runoff.

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

Rock Checking. All rock spreading shall be done only when a STATE representative is present. STATE shall issue a receipt for each load delivered, and rock shall be measured without allowance for shrinkage or shakedown during hauling. Total truck measure volume for each road segment shall be as shown on Exhibit D. Deliver at least 600 cubic yards per 8-hour shift, unless otherwise approved by STATE. A penalty of $10 for each 10 cubic yards which are not delivered during a single shift shall be billed, and payment shall be required prior to final acceptance of the project by STATE.

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

Depth shall be determined in the most compacted area of the surface cross section. If additional rock is required because of insufficient depth, it shall be added by truck measure to those areas that were slighted. The conversion from compacted yardage to truck yardage is 1.3 multiplied by the compacted yardage equals truck yardage.

The depth of compacted aggregates shall not vary more than 1 inch from the depth specified in Exhibit D. The average depth for each road segment shall be the specified depth or greater. Surfacing areas shall be staked by STATE.

Load Records. Notify STATE before spreading the rock and maintain a record of all rock delivered for spreading. Make the record available for STATE inspection. A report listing the amount of rock delivered the prior month must be submitted no later than the 15th of each month.

EXHIBIT D

COMPACTION AND PROCESSING REQUIREMENTS

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 visible deformation ceases, or in the case of a sheepsfoot roller, the roller "walks out." A minimum of 3 passes shall be made over the entire width and length of the road. A pass is defined as traveling a road section in one direction and then back over that same section again. Compaction shall be accomplished by using one or more of the approved equipment options listed below:

| ROAD SEGMENT | COMPACTION EQUIPMENT OPTIONS |
|---|---|
| All road segments that require rock surfacing. | 1 |

Fills. Embankments and fills shall be placed in (approximately) horizontal layers not more than 8 inches in depth. Each layer shall be separately, and thoroughly, compacted. Compaction equipment shall be operated over the entire width of each layer until visible deformation of the layers ceases or, in the case of a sheepsfoot roller, the roller "walks out." At least of 3 passes shall be made over the entire width and length of each layer. A pass is defined as traveling a fill layer in one direction and then back over that same layer again.

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

| ROAD SEGMENT | COMPACTION EQUIPMENT OPTIONS |
|---|---|
| All road segments | 1, 2 or 3, and 4 |

Crushed Rock. The rock shall be uniformly mixed and spread in layers on the approved roadbed. Each layer of crushed rock shall be moistened or dried to a 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. A pass is defined as traveling a road section in one direction and then back over that same section again. Compaction shall be accomplished by using one or more of the approved equipment options listed below:

| ROAD SEGMENT | COMPACTION EQUIPMENT OPTIONS |
|---|---|
| All road segments requiring crushed rock | 1 |

EXHIBIT D

COMPACTION EQUIPMENT OPTIONS

(1) Vibratory Rollers. The drum shall have a smooth surface, a diameter not less than 48 inches, a width not less than 58 inches, and a turning radius of 15 feet or less. Vibration frequency shall be regulated in steps to 1400, 1500, and 1600 VPM, corresponding to engine speeds of 1575, 1690, and 1800 RPM. The centrifugal force developed shall be 7 tons at 1600 VPM. It shall be activated by a power unit of not less than 25 horsepower. The vibratory roller shall be self-propelled and operated at speeds ranging from 0.9 mile to 1.8 miles per hour, as directed by STATE.

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

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

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

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

# EXHIBIT E

## CULVERT SPECIFICATIONS

All culvert materials shall be furnished and installed by PURCHASER, unless otherwise specified in the Contract. All 18 inch diameter culverts shall be constructed of double-walled polyethylene, or corrugated aluminized Type 2 steel. All culverts 24 inches in diameter and larger shall be constructed of corrugated aluminized Type 2 steel. All culverts shall conform to the material and fabricating requirements of the "Standard Specifications for Highway Construction" prepared by the Highway Division of the Oregon State Department of Transportation. Corrugation types and shapes other than those meeting the above minimum Highway requirements, shall be approved in writing by STATE.

All culverts 24 inches in diameter or greater shall have 1:1 beveled inlets.

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 stipulated in special instructions.

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

Culvert grade shall slope away from ditch grade at least 2 percent unless otherwise specified.

The foundation and trench walls for all culverts shall be free from logs, stumps, limbs, stones over 3 inches, and other objects which would dent or damage the pipe during installation or use. The culvert trench shall be excavated wide enough to permit compaction and working on each side of the pipe. Tamping shall be done in 6-inch lifts, 1 pipe diameter each side of the pipe to 95 percent density or over. Bedrock shall be excavated as required to provide a uniform foundation for the full length of the culvert.

A bedding of granulated material or crushed rock as specified shall be placed to provide a wide band of support and to transmit the load from above evenly over the entire length of the pipe.

Backfill shall consist of granulated material, crushed rock, or job-excavated soil free of stumps, limbs, rocks, or other objects which would damage the pipe.

Transporting of the pipe shall be done carefully. Dragging or allowing free fall from trucks or into trenches shall not be permitted.

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 pipe corrugations, and shall engage a minimum of 4 corrugations, 2 on each side of the pipe joint.

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

Fill heights, if not shown on a road plan and profile, shall be in accordance with those shown in Drawing No. 2094, “Fill Height Tables”, prepared by the Highway Division of the Oregon State Department of Transportation. Any deviation must be approved by STATE.

Minimum height of cover over top of culvert to subgrade when road is to be rocked shall be as follows: 12" for culverts 18” to 36” and 18” for culverts 42” to 96” (add 6" for roads which will not be rocked). Minimum vertical cover for other designs shall be as specified by STATE.

EXHIBIT E

CULVERT SPECIFICATIONS

Lengths of individual culvert sections shall be not less than 10 feet, unless otherwise provided for in special instructions.

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

Following are the minimum standard gauges for pipe and coupling bands. Some culverts may require different gauges and may be found in the culvert listing.

| | | | Band Widths (") | | | Hugger Band Widths (") | |
|---|---|---|---|---|---|---|---|
| Dia. | Pipe Gauge | Band Gauges | Annular | Helical | Dimpled | Annular | Helical |
| 12-15 | 16 | 16 | 7 | 12 | 12 | 13 1/8 | 10 1/2 |
| 18-24 | 16 | 16 | 12 | 12 | 12 | 13 1/8 | 10 1/2 |
| 30-36 | 16 | 16 | 12 | 12 | 12 | 13 1/8 | 10 1/2 |
| 42 | 14 | 16 | 12 | 12 | NA | 13 1/8 | 10 1/2 |
| 48 | 14 | 16 | 24 | 24 | NA | 13 1/8 | 10 1/2 |
| 54 | 14 | 16 | 24 | 24 | NA | 13 1/8 | 10 1/2 |
| 60 | 12 | 16 | 24 | 24 | NA | 13 1/8 | 10 1/2 |
| 66-72 | 12 | 16 | 24 | 24 | NA | 13 1/8 | 10 1/2 |
| 78 | 12 | 16 | 24 | 24 | NA | 13 1/8 | 10 1/2 |
| 84 | 12 | 16 | 24 | 24 | NA | 14 3/4 | 10 1/2 |
| 90-120 | 12 | 16 | 26 | 26 | NA | NA | NA |

Culverts larger than 60” in diameter shall have 3” x 1” corrugations.

Polyethylene culverts shall be double walled and meet the requirements of AASHTO M-294-901, Type S.

The intake ends of culverts in fills less than 3 feet shall be marked by driving white fiberglass posts within 6 inches of the downgrade side. Posts shall be a minimum of 6 feet long and 2 ½ inches wide, with the spade driven 2 feet into the ground.

Tamping is required.

All removed culverts shall be hauled to an approved refuse site off of STATE land.

EXHIBIT E

CULVERT LIST

| CULVERT NO. | DIAMETER (Inches) | LENGTH (Feet) | MATERIAL TYPE | ROAD SEGMENT POINT TO POINT | STATION |
|---|---|---|---|---|---|
| 1 | 18 | 40 | CPP | 1A to 1B | 13+70 |
| 2 | 18 | 65 | CPP | I1 to I2 | 0+05 |
| 3 | 24 | 55 | CSP al. ctd.* | I1 to I2 | 2+45 |
| 4 | 18 | 55 | CPP | I1 to I2 | 9+60 |
| 5 | 18 | 38 | CPP | I1 to I2 | 12+00 |
| 6 | 18 | 38 | CPP | I1 to I2 | 16+00 |
| 7 | 36 | 52 | CSP al. ctd.* | I1 to I2 | 19+60 |
| 8 | 18 | 44 | CPP | I1 to I2 | 21+50 |
| 9 | 18 | 45 | CPP | I1 to I2 | 34+55 |
| 10 | 24 | 46 | CSP al. ctd.* | I1 to I2 | 39+80 |
| 11 | 18 | 38 | CPP | I1 to I2 | 43+00 |
| 12 | 18 | 38 | CPP | I1 to I2 | 45+80 |
| 13 | 24 | 80 | CSP al. ctd.* | I1 to I2 | 50+40 |
| 14 | 128x83 | 60 | CSPA al. ctd.** | I3 to I4 | 2+90 |
| 15 | 18 | 35 | CPP | I3 to I4 | 7+35 |
| 16 | 24 | 50 | CSP al. ctd.* | I3 to I4 | 9+80 |
| 17 | 24 | 70 | CSP al. ctd.* | I3 to I4 | 13+10 |
| 18 | 18 | 45 | CPP | I3 to I4 | 19+50 |
| 19 | 24 | 72 | CSP al. ctd.* | I3 to I4 | 23+10 |
| 20 | 24 | 55 | CSP al. ctd.* | I3 to I4 | 26+55 |
| 21 | 24 | 85 | CSP al. ctd.* | I3 to I4 | 29+05 |
| 22 | 18 | 38 | CPP | I3 to I4 | 32+60 |
| 23 | 36 | 68 | CSP al. ctd.* | I3 to I4 | 34+68 |
| 24 | 18 | 38 | CPP | I3 to I4 | 40+20 |
| 25 | 18 | 38 | CPP | I3 to I4 | 42+00 |
| 26 | 18 | 38 | CPP | I3 to I4 | 50+55 |

* Culverts shall have 1:1 step beveled inlets.
** Pipe arch Culvert No. 14 shall have 1:1 step bevels on both inlet and outlet ends.

EXHIBIT F

BRIDGE CONSTRUCTION SPECIFICATIONS

BRIDGE DESIGN. PURCHASER shall design and construct one shop assembled "U80, 80 ton GVW", prefabricated steel bridge superstructure, complete with a W-beam guardrail system. The bridge shall have a span long enough to preserve a minimum natural stream channel width of 22 feet under the bridge. The bridge shall be delivered in 2 modules with bolt-up connections. The road and bridge location(s), alignment and elevations are shown on Page 3 of this exhibit.

36"-24" riprap rock armor shall be used to protect stream banks, retain road approach embankments and prevent scour of the bridge and roadway. The bridge superstructure shall be designed in accordance with AASHTO Standard Specifications for Highway Bridges, 17th Edition – 2002. Backwalls shall be placed and have a positive connection joining the backwalls to the modular bridge sections, to retain roadway embankment(s). Backwalls shall be made of galvanized steel.

The bridge deck running surface width shall be 16 feet between the guardrails. The steel decking shall be galvanized corrugated steel and shall be placed perpendicular to the direction of travel. The deck shall have a positive connection joining the deck panels to the modular bridge sections. A weathering steel side dam shall be furnished and extended at least 6 inches above the top of the deck. A lift of 1"-0"crushed rock shall be applied as a running surface. The rock shall be applied to a depth of 4 inches above the top of the highest corrugation. Compaction of the rock shall be with a roller without using vibrations from the drum.

All structural steel shall be of domestic (USA) manufacture and shall conform to the requirements of ASTM Specification A588 Weathering Steel with exterior surfaces of girders being blast cleaned prior to shipment to assure uniform weathering.

Any spread footings used for bridge construction shall be constructed of reinforced Class 4,000 concrete and pre-cast off site. Reinforcing steel shall conform to ASTM A 706, No. 6 Grade 40 minimum and utilized in accordance with industry standards. The design shall include a graded footing foundation constructed with a 24"-6" riprap rock base and a 1"-0" crushed rock leveling course.

PURCHASER is responsible for performing all necessary Site Investigation(s). Site Investigation(s) shall be made prior to any project design and shall include, but not be limited to:

(1) Sub-surface exploration.

(2) Determination of the depth and orientation of stream bedload, erodible rock (soft, decomposed or fractured) and scour resistant bedrock foundation materials.

(3) Determination of the scour potential and bearing capacity of bedrock foundation materials.

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

EXHIBIT F

BRIDGE CONSTRUCTION SPECIFICATIONS

BRIDGE CONSTRUCTION

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

(2) Remove existing embankment and culvert to accommodate the work area for bridge construction. Existing embankment(s) shall be excavated to the natural stream course level. All woody debris encountered during excavation shall be removed. Excavated debris and materials unsuitable for embankment construction shall be end hauled to the designated waste area, as shown on Exhibit A. The existing, removed culvert shall be hauled to an approved refuse site off of STATE land.

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

(4) Construct the bridge and the bridge approach embankments in accordance with approved bridge plans. Bridge approach embankments shall consist of select materials, hauled in where necessary, and shall be thoroughly compacted in accordance with Exhibit D.

(5) Utilize 200 cubic yards of 36"-24" riprap rock for road approach embankment protection and for upstream bank protection. Apply riprap as shown on page 3 and 4, as directed by STATE. Riprap rock shall be placed and tamped at a 1½:1 slope, beginning at the toe(s).

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

(7) Upon completion of the above required work, apply, process, and compact surfacing rock in accordance with Exhibit D. Utilize 82 cubic yards of 4"-0" crushed rock for bridge approach surfacing base restoration and 89 cubic yards of 1"-0" crushed rock for deck surfacing and road surfacing, to provide for a smooth and uniform transition from the existing road surfacing, restored road surfacing and the bridge deck/running surface. Compact crushed rock in accordance with Exhibit D, except for the crushed rock on the bridge deck. **Do not use vibrations to compact the rock on the deck.**

(8) PURCHASER is responsible for scheduling, supervision and certification of the bridge construction work, including, but not limited to:

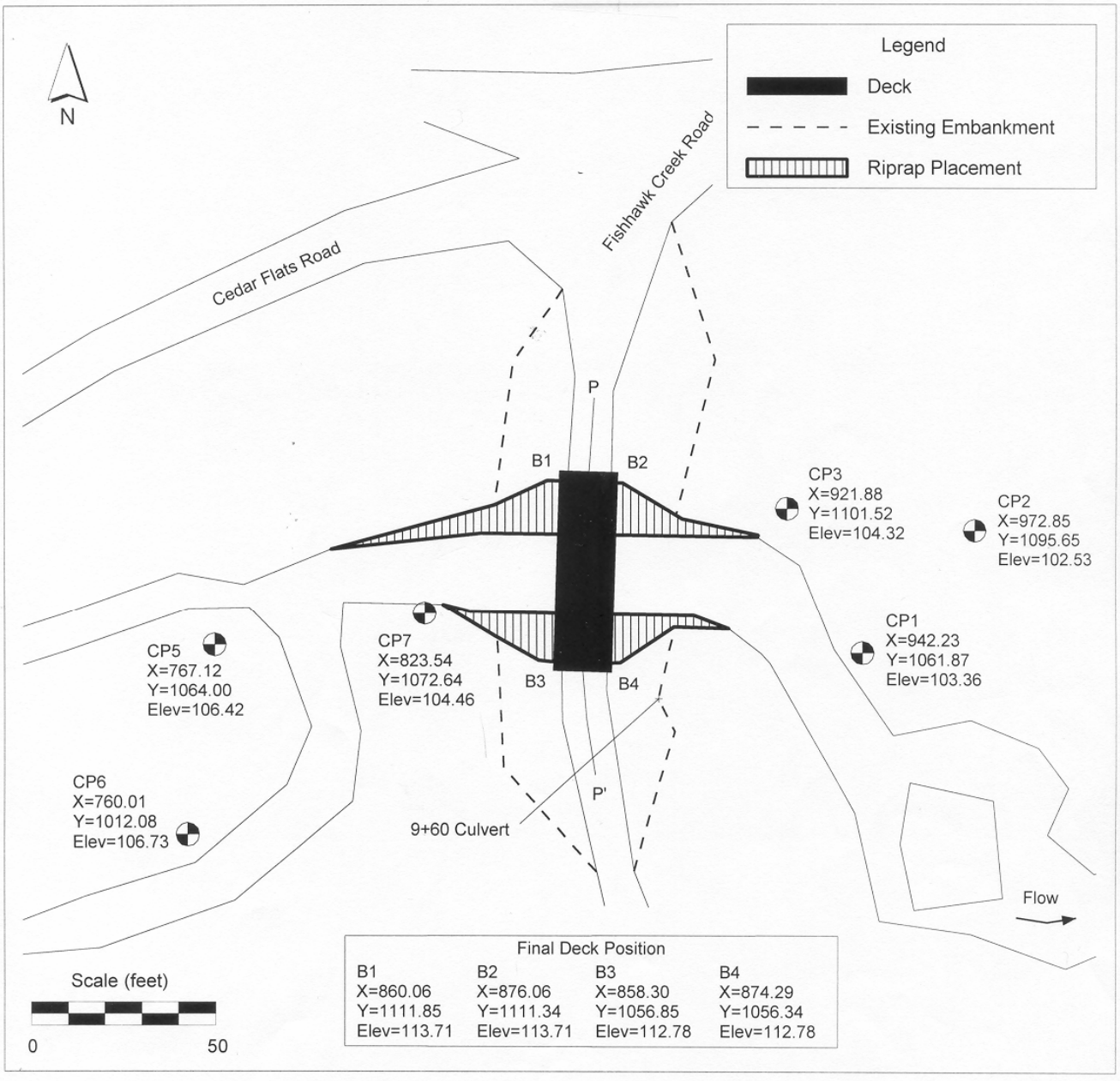
(a) Coordination of the site investigation(s), bridge design and bridge construction work.

(b) Performing any necessary field surveys and staking.

(c) Scheduling and supervision of construction work.

(d) Upon completion of the project, the engineer shall issue written certification that construction work was completed in accordance with the approved Bridge Plans.

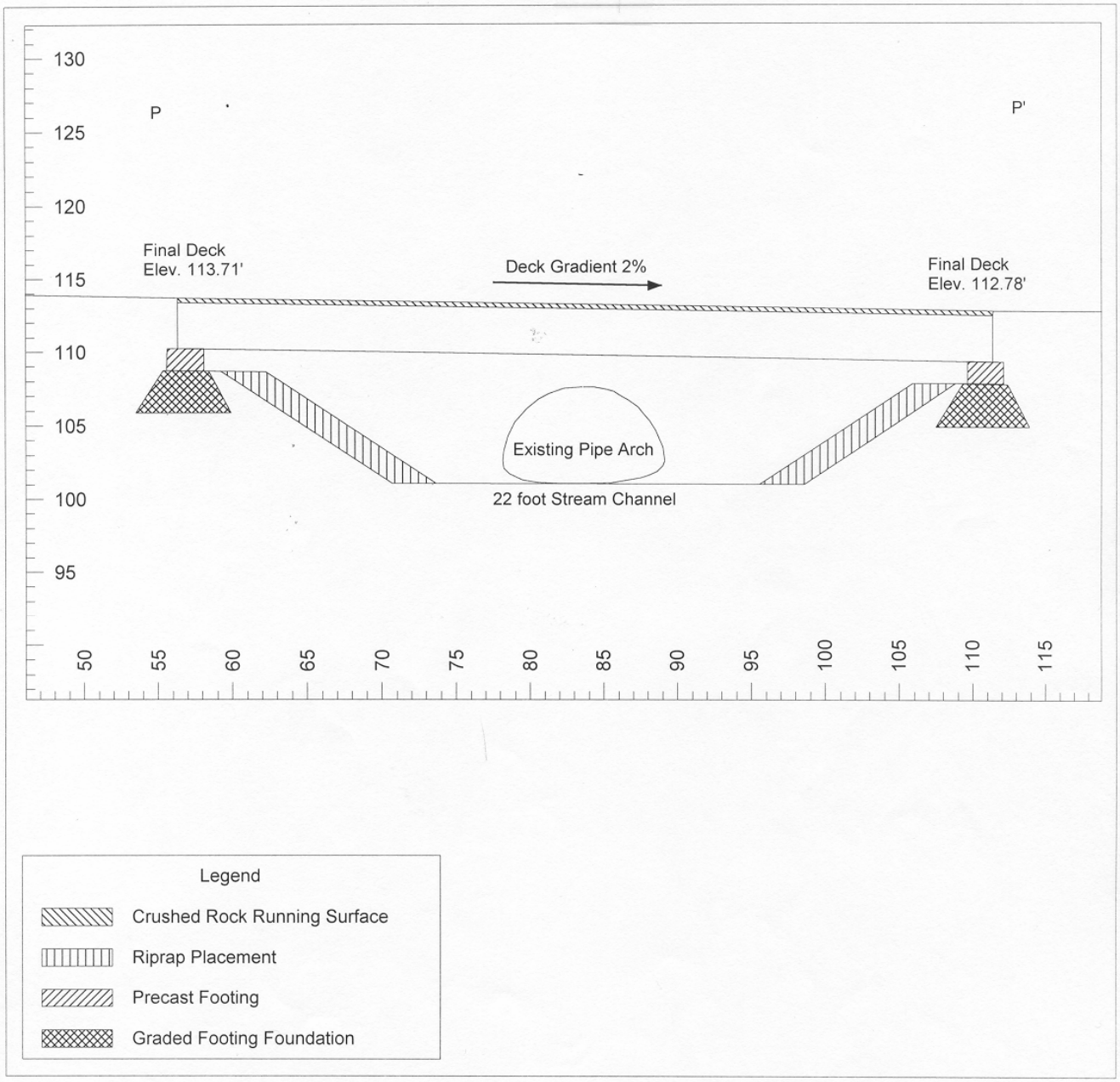
EXHIBIT F
BRIDGE CONSTRUCTION SPECIFICATIONS




**Oregon Department of Forestry**
**Astoria District**
**Engineering Unit**

**Point I1 to Point I2**
**Station 9+10**
**Fishhawk Creek**
**NW1/4, Section 30, T6N, R7W, W. M.**
**Clatsop County, Oregon**

EXHIBIT F
BRIDGE CONSTRUCTION SPECIFICATIONS




**Oregon Department of Forestry**
**Astoria District**
**Engineering Unit**

**Point I1 to Point I2**
**Station 9+10**
**Fishhawk Creek**
**NW1/4, Section 30, T6N, R7W, W. M.**
**Clatsop County, Oregon**

# EXHIBIT G

## PIPE ARCH INSTALLATION SPECIFICATIONS

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

(2) Work shall be conducted only during periods of low water flows and between July 1 and August 31, annually. STATE shall be notified a minimum of 48 hours prior to beginning work. STATE has prepared the required FPA “Written Plan” for this work. Oil Spill response materials shall be on site before the work begins.

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

(4) Excavated debris and soil materials unsuitable for fill construction shall be hauled to the Waste Areas as shown on Exhibit A. All woody debris encountered during excavation shall be removed and hauled to the waste area. The existing culvert shall be hauled to an approved refuse site off of STATE land.

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

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

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

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

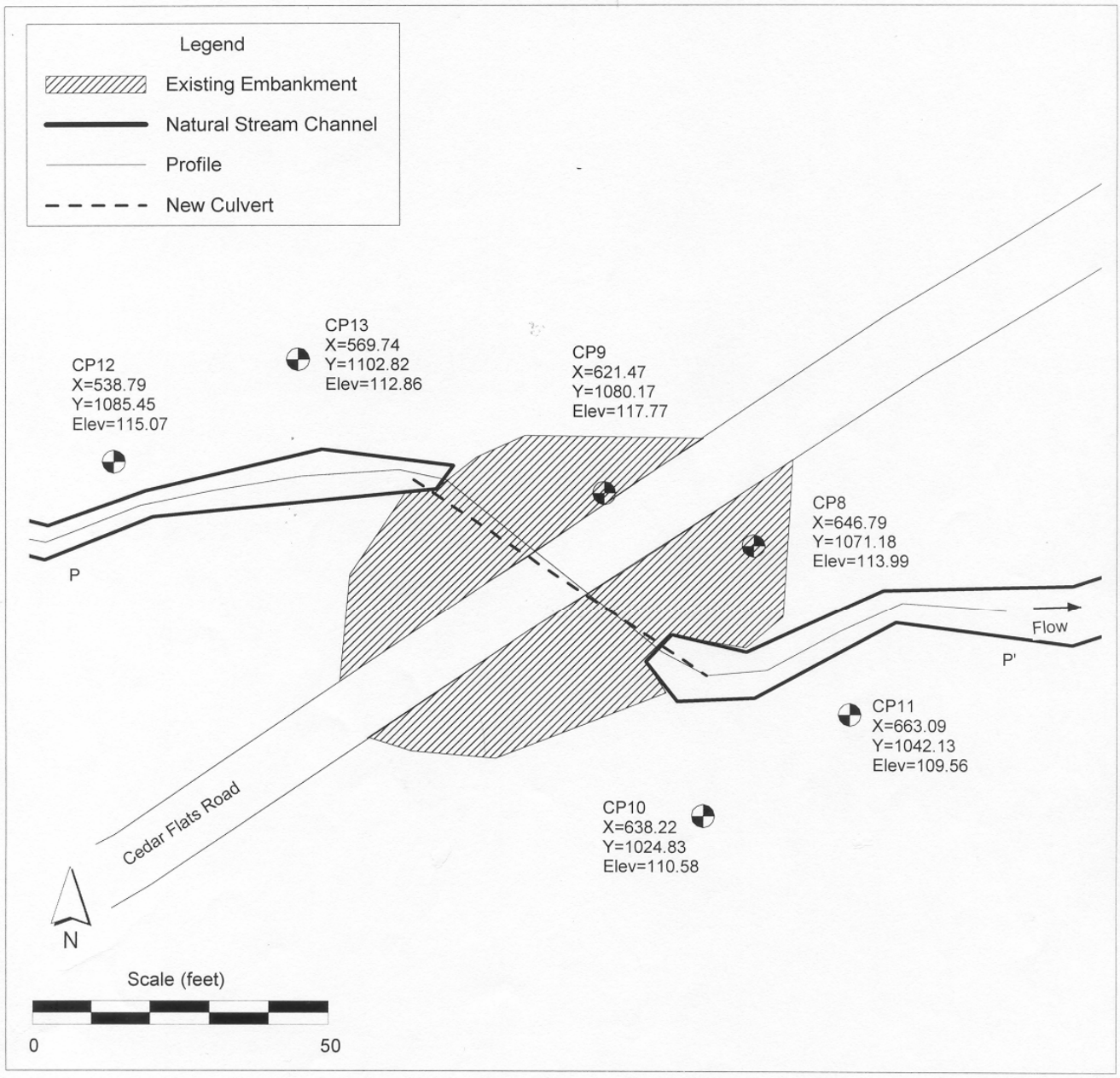
(9) Remove additional fill and logs or woody debris for the development of the new pipe arch bed. The new pipe arch bed will **NOT** be the same location as the existing culvert bed. The new pipe arch bed inlet and outlet coordinates are designated on Exhibit G.

(10) Develop the stream channel for a distance of 50 feet upstream of the inlet of the pipe arch and 25 feet downstream of the outlet, as directed by STATE. The stream channel width will be 8.5 feet and stream channel banks shall be sloped at 2:1. Use 36”-12” riprap rock to establish the stream channel elevation and construct an energy dissipater at the culvert outlet. The riprap rock shall be placed and embedded, as directed by STATE

(11) Native (excavated) stream sediment material shall be placed in the pipe arch barrel to a minimum depth of 18 inches to simulate and form the stream bed as directed by STATE. 36”-24” riprap rock shall be placed and embedded at the outlet of the new pipe arch to establish the stream channel elevation and allow additional stream sediment materials to settle in the barrel of the pipe.

(12) Fill reconstruction backfill shall consist of select materials. Riprap rock shall be placed and tamped at a 1½:1 slope for a minimum thickness of 2 feet beginning at the toes. Applied 4”-0” crushed rock will be processed and compacted in accordance with Exhibit D.

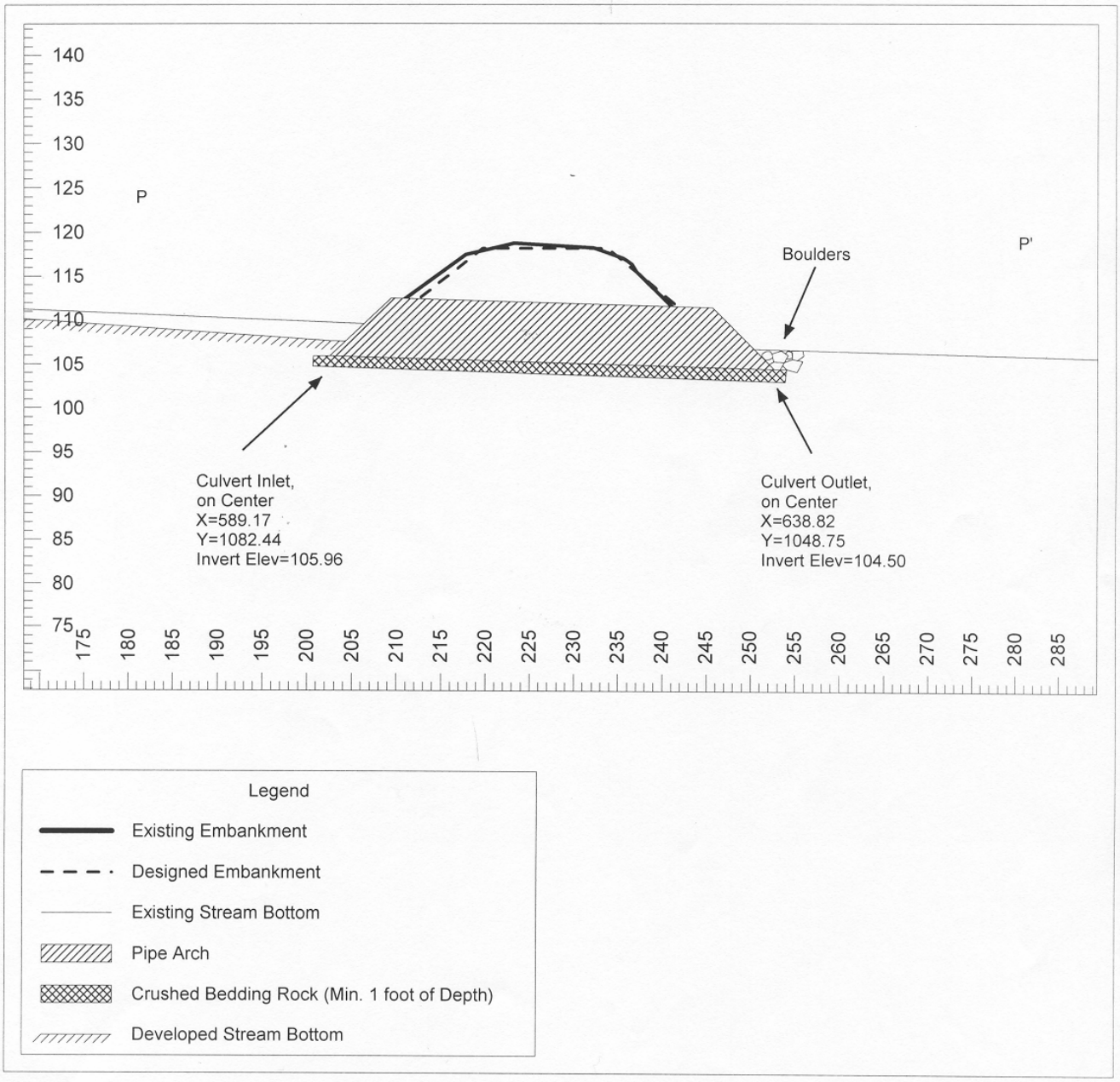
EXHIBIT "G"
PIPE ARCH INSTALLATION SPECIFICATIONS




**Oregon Department of Forestry**
**Astoria District**
**Engineering Unit**

**Point I3 to Point I4**
**Station 2+90**
**Fishhawk Creek Tributary**
**NW1/4, Section 30, T6N, R7W, W. M.**
**Clatsop County, Oregon**

EXHIBIT "G"
PIPE ARCH INSTALLATION SPECIFICATIONS




Legend

- Existing Embankment
- Designed Embankment
- Existing Stream Bottom
- Pipe Arch
- Crushed Bedding Rock (Min. 1 foot of Depth)
- Developed Stream Bottom

**Oregon Department of Forestry**
**Astoria District**
**Engineering Unit**

**Point I3 to Point I4**
**Station 2+90**
**Fishhawk Creek Tributary**
**NW1/4, Section 30, T6N, R7W, W. M.**
**Clatsop County, Oregon**

State Timber Sale
No. 341-06-02
Hambone

# EXHIBIT H

## ROCK QUARRY DEVELOPMENT AND USE

(1) PURCHASER shall prepare a written development plan for the pit area. The plan shall be submitted to STATE for approval prior to conducting any operation in pit area. The plan shall include, but not be limited to:

- (a) Location of benches and roads to benches.
- (b) Disposal site for woody debris, overburden and reject material.
- (c) Time lines for rock quarry use.
- (d) Erosion Control measures.

(2) PURCHASER shall schedule and coordinate quarry and stockpile usage with other existing or planned STATE contracts.

(3) Pit site shall be left in a condition free from overburden and debris. Access roads to the pit, and the pit floor, shall be cleared at the termination of use. Overburden shall be removed for a distance of 20 feet beyond the developed rock source.

(4) PURCHASER shall conduct the operation 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.

(5) Pit face shall be developed in a uniform manner.

(6) Proper winterization and storm-water control measures such as water barring, drainage, utilization of filter bales, mulching and/or blocking access shall be utilized and such measures maintained to protect the watershed and project work, as directed by STATE.

(7) PURCHASER shall notify STATE 5 days prior to the start of quarry development activities.

(8) All quarry backslopes shall be left in a stable condition.

(9) The quarry floor shall be developed to provide for drainage away from the quarry. All quarry and stockpile site drainage ditches shall be maintained. Quarry access roads shall be cleared and blocked upon completion of quarry use as directed by STATE.

# EXHIBIT I

## PIT-RUN AND RIPRAP ROCK SPECIFICATIONS

GRADING REQUIREMENTS

| | | | |
|---|---|---|---|
| For 6"-0" Pit-Run | Passing | 10" sieve | 100% |
| | Passing | 6" sieve | 65% |

For 24”-6” Riprap A minimum of 50 percent of the material shall measure a minimum of 24 inches, measured in one dimension. Material shall be clean, well graded, and free of 2”-0” fines.

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

Control of gradation shall be by visual inspection by STATE.

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EXHIBIT J

TYPICAL EMBEDDED ENERGY DISSIPATOR

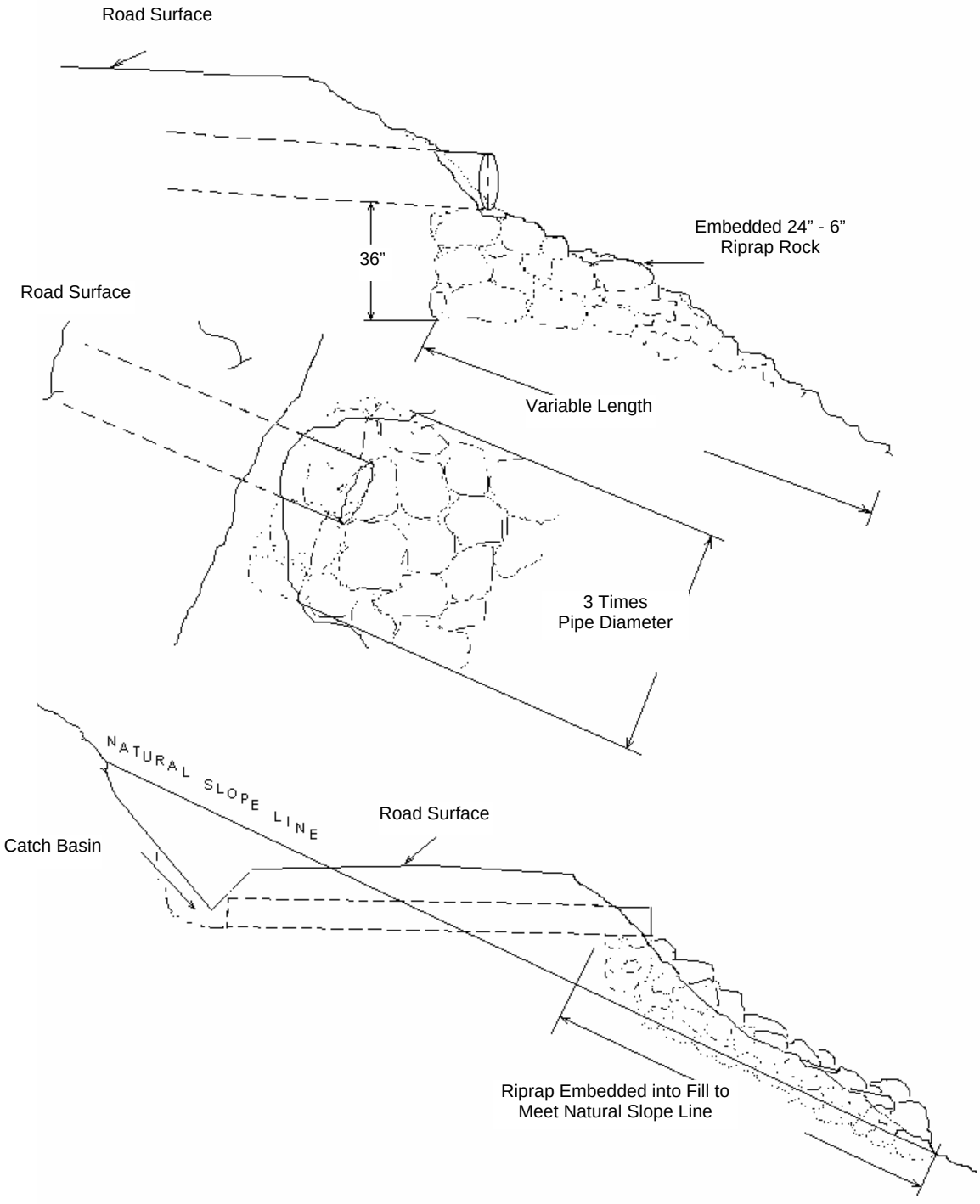

EXHIBIT K

GRASS SEEDING AND MULCHING

This work shall consist of furnishing and placing required grass seed, and straw mulch.

Seeding Seasons. Seeding shall be performed only from March 1 through June 15 and August 15 through October 31. Seeding materials shall not be applied during windy weather or when the ground is excessively wet or frozen. Work shall be performed during each specified seeding season on all completed and previously untreated sections. PURCHASER shall notify STATE 24 hours prior to seeding.

Application Methods for Grass Seed

Dry Method. Hand-operated seeding devices may be used when seed is applied in dry form.

Application Rates for Seed

Seed listed below shall be applied at the following rate per acre: 100 lbs.

| SPECIES | MIXTURE | PURE LIVE SEED | POISON AND/OR REPELLENT | GERMINATION |
|---|---|---|---|---|
| Annual Rye | 26% | 95% | 0 | >90% |
| Orchard Grass | 25% | 95% | 0 | >90% |
| New Zealand White Clover | 17% | 95% | 0 | >90% |
| Perennial Rye | 15% | 95% | 0 | >90% |
| Birdsfoot Trifoil | 07% | 95% | 0 | >90% |
| Red Clover | 06% | 95% | 0 | >90% |
| Alsike Clover | 04% | 95% | 0 | >90% |

Seeding and Mulching

Apply grass seed and straw mulch to all waste areas, and all bare soils resulting from road improvement work in Project Nos. 1 and 2.

Applied straw mulch shall be a minimum of 2 inches deep and provide a uniform cover.

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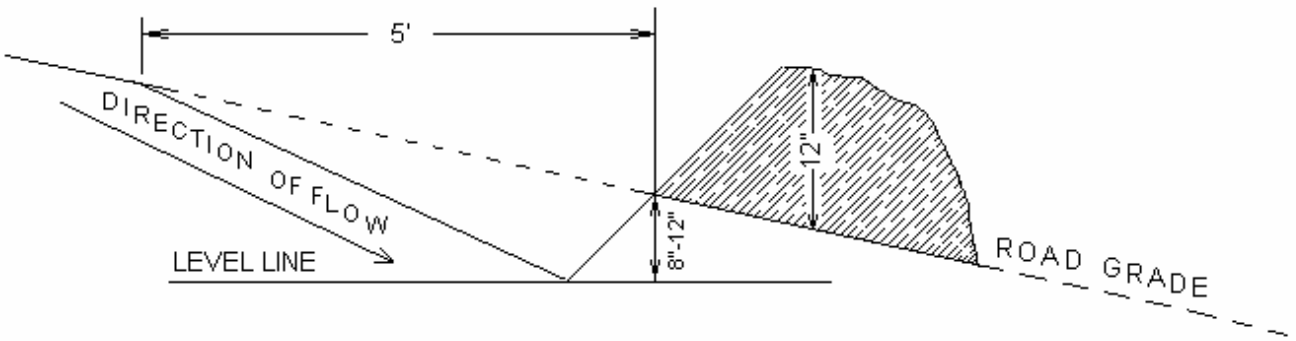
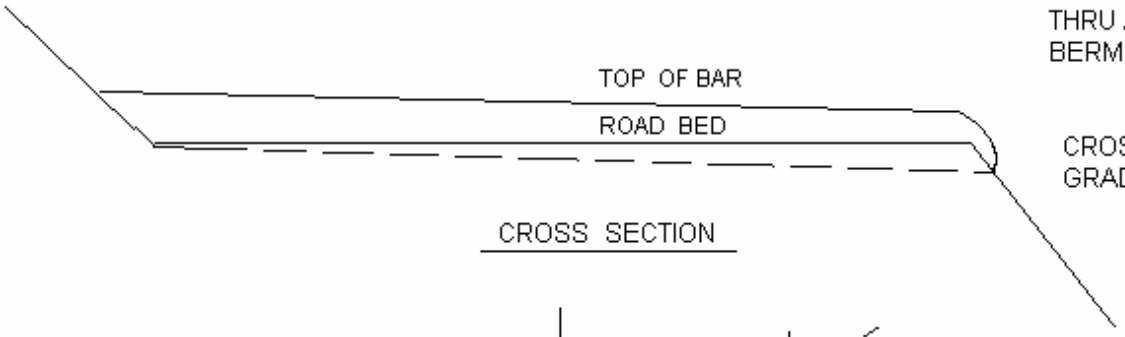
EXHIBIT L

# WATERBAR SPECIFICATIONS




PROFILE

CONSTRUCT DITCH THRU ANY EXISTING BERM.

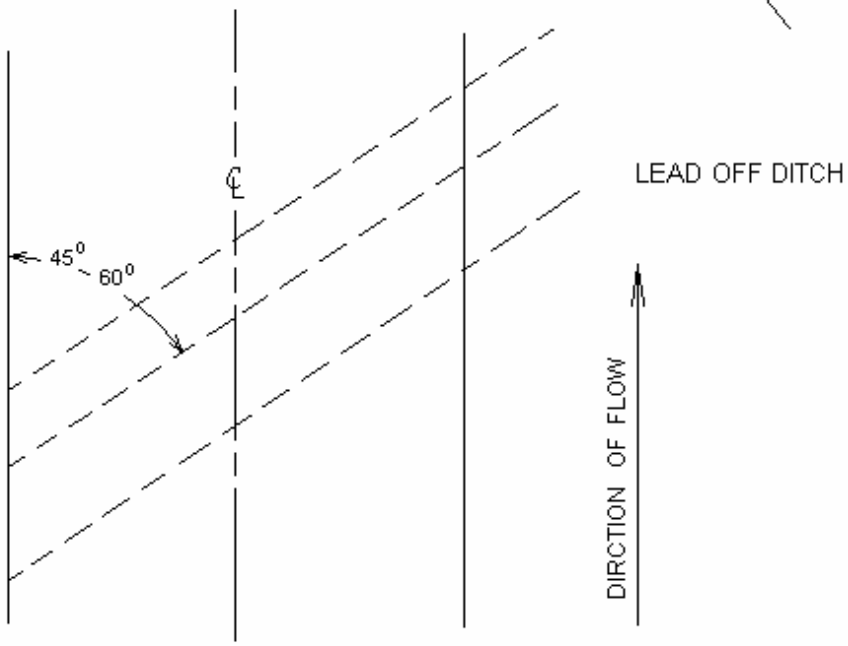



CROSS DRAINAGE GRADIENT MINIMUM 3%

CROSS SECTION

SPACING OF WATERBARS:

AS DIRECTED BY STATE.




PLAN VIEW

WATERBAR SPECIFICATIONS
FOR CROSS DITCHING #298

State Timber Sale Contract
No. 341-06-02
Hambone

EXHIBIT M

PAVED HIGHWAY APPROACH SPECIFICATIONS

PURCHASER shall reconstruct and pave the Fishhawk Creek Road highway approach, on road segment I1 to I2, from Station 0+00 to 1+00. PURCHASER shall notify STATE 48 hours before beginning work and again after completing work. The work area during operations shall be protected in accordance with the current Manual on Uniform Traffic Control Devices for Streets and Highways, US Department of Transportation, and the Oregon Department of Transportation supplements.

PROJECT REQUIREMENTS AND GENERAL SPECIFICATIONS

(1) Remove Rock. Remove the crushed rock and wash fines form the existing paved highway approach.

(2) Saw Existing Asphalt. Saw and remove the existing asphalt to facilitate the replacement of the culvert at Station 0+05.

(3) Culvert Replacement. Replace the existing culvert in accordance to specifications in Exhibit C. Utilize salvaged rock for culvert backfill material.

(4) Road Base Preparation. Starting at the end of the existing asphalt; cut, shape, and compact in accordance with Exhibit D, for extension of the paved approach. All removed crushed rock shall be salvaged and used for road project work.

(5) Paved Highway Approach.

(a) All materials and workmanship shall be in accordance with 1996 Oregon Standard Specifications for Highway Specifications. The asphalt utilized shall be Class C asphalt pavement.

(b) Apply an asphalt patch to the affected area of the culvert replacement with a minimum pavement depth of three inches.

(c) Station 0+00 to 0+40: The existing asphalt approach shall be overlaid with asphalt pavement, including the tapers. The minimum running surface width shall be 12 feet. The minimum pavement depth is 1.5 inches.

(d) Station 0+40 to 1+00: Apply asphalt pavement, provide a minimum running surface width of 12 feet and minimum pavement depth of three inches.

EXHIBIT N

SPECIFICATIONS FOR BRUSH AND SLASH SHOVEL PILING

Description of Work to be Done

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

Clearing - Brush, logging slash, and other debris shall be cleared from planting sites and piled in windrows or piled so that 80 percent or more of the soil organic layer is exposed. All woody vegetation (other than conifer trees) is defined as brush in this exhibit.

Piles - shall be located at least 75 feet apart and shall be no more than 75 feet long. Piles shall be located inside the project area designated for piling and shall be more than 75 feet from any edge or standing conifer tree. Piles shall be built to a height of 3 to 4 feet and then covered to prevent water from reaching the slash. 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. Logs and chunks which are suitable for firewood shall be piled separately from slash, near roads and landings and alongside the road in locations designated by STATE.

Conifer Trees - shall be saved, unless otherwise directed by STATE.

Skid Trails - shall be ripped to a depth of 12 inches.

Residual Logs – An average of 600 cubic feet of hard conifer logs per acre. Log shall contain a minimum of 10 cubic feet of volume and be no shorter than 6 feet in length. Two logs per acre shall be at least 24 inches in diameter, on the large end, where available. Hard conifer logs must be in decay class one or two as indicated by intact bark and original wood color. Trees or logs shall be left well distributed across the unit.

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

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

EXHIBIT N

SPECIFICATIONS FOR BRUSH AND SLASH SHOVEL PILING

Equipment Type, Equipment Operation, and Conduct of Work

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

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

- Excavator-shovel: Bucket shall be a hydraulically controlled, 4 to 5-foot wide, "clamshell-style bucket with rake arms," with a 360-degree continuous rotation, and tooth length on rake arm shall be greater than 14 inches long, unless otherwise approved in writing by STATE. “Clamshell-style bucket with rake arms” shall be hydraulically controlled to operate bucket in a horizontal position (**fixed position: positive control**) for piling slash.

- Log Loader – shovel: Bucket shall be a hydraulically controlled, 4 to 5 foot wide, “clamshell-style bucket with rake arms,” with a 360-degree continuous rotation, and tooth length on rake arm shall be greater than 14 inches long, unless other wise approved in writing by STATE. “Clamshell-style bucket with rake arms” shall be hydraulically controlled to operate bucket in a vertical position (**free swinging**) for piling slash.

| Equipment | Rate | Hours | Appraised Value |
|---|---|---|---|
| Excavator | $ 120.00 / hour | 143.7 | $17,244 |
| Log Loader | $ 87.50 / hour | 197.1 | $17,244 |

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

Support - including transport, other equipment, replacements, supplies, maintenance, and repairs shall be furnished as required to complete work; and shall be furnished without cost to STATE, other than as agreed under the contract terms.

Work Scheduling - work shall be accomplished only during dry weather conditions, and started within 14 calendar days after completion of yarding activities on Areas 1, 2 and 3. Operations shall provide for continual operation until contract work is completed, unless interrupted by poor weather, fire closures, or other uncontrollable circumstances. Equipment breakdowns shall be repaired without undue delay, and provision shall be made for replacement of equipment to prevent prolonged delays. Piling operation shall not be allowed when operations might damage sites or affect stream flows. Any exception to these instructions must be authorized in writing by STATE.

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

# *PART IV: OTHER INFORMATION*

State Timber Sale Contract
No. 341-06-02
Hambone

## FOREST PRACTICES ACT "WRITTEN PLAN"
## For Project No. 1, Cedar Flats Road Improvement
## Hambone Timber Sale

**Portions of Section 24, 25, 30, T6N, R7W, W.M.**
**Clatsop County, Oregon.**

**Protected Resources:** Unnamed small Type N streams crossed with fills exceeding 15 feet in height. The fills are located on Cedar Flats Road, designated as I3 to I4, at stations 13+10, 19+50, 23+10, and 29+05. A "written plan" is required for construction/reconstruction of any fill over 15 feet high.

**Current Condition:** The existing road fills were inspected during a Road Maintenance Inventory. Upon completion of the inventory, the existing culverts were determined to be in poor condition and in need of replacement.

**Structure Design:** Drainage analysis and estimated flows were calculated for each crossing. The culverts were sized according to the results of the flow calculations. All culverts will be 16 gage aluminized steel in order to meet FPA requirements and improve pipe materials service life. A 1:1 beveled pipe inlet will be required to improve hydraulic efficiency and debris passage.

**Resource Protection Measures:**

1) Work will be performed only during dry weather periods, low water stream flows and between May 1 and October 31, annually. In addition, in-stream work will be conducted between July 1 and August 31, annually.

2) 24"-6" riprap rock will be used to armor both the inlet and outlet fill slopes to minimize erosion.

3) Machine activity in stream channels will be minimized. All excavation and riprap rock placement will be performed using a minimum 1½ cubic yard track mounted excavator.

4) Selected native earth materials free from woody debris will be used for backfilling. Fill material will be thoroughly compacted with specialized compaction equipment.

5) Excavated waste materials will be hauled to approved waste areas and left in a stable condition.

6) Straw mulch shall be applied to all exposed areas and bare soils. Applied mulch shall be a minimum of 2 inches deep and provide uniform cover.

I, the undersigned, submit this written plan in compliance with the requirements in the Forest Practices Act regarding the operations conducted when constructing a fill over 15 feet high. I agree to the protection measures listed on this plan:

Submitted: _____ Date:
Purchaser/Operator Contract Representative

Attachment: Exhibit A
Original: Salem
Copies: Operator, Contractor, District File, Salem, Engineering Unit, Jewell Unit

State Timber Sale Contract
No. 341-06-02
Hambone

# FOREST PRACTICES ACT "WRITTEN PLAN"
# For Project No. 2, Fishhawk Creek Road Bridge Construction
# Hambone Timber Sale

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

**Protected Resources**: Fishhawk Creek, a medium Type F fisheries resource, located in the NW¼ of Section 30, T6N, R7W, W.M., Clatsop County, Oregon. A written plan is required for any activities within 100 feet of any Type F streams.

**Situation:** A large pipe arch culvert stream crossing located on Fishhawk Creek Road is deteriorating. Resource management objectives for this stream crossing project include providing cost effective long-term access, meeting or exceeding FPA requirements, enhancement of fisheries habitat, and protection of water quality and riparian areas. Current FPA guidelines contained in the Draft Oregon Road/Stream Crossing Restoration Guide: Spring 1999 were used as minimum standards for developing alternative stream crossing solutions.

**Drainage Area and Bridge Design**: The stream crossing structure will be a modular steel bridge which provides for a 22-foot wide waterway under the bridge.

| | |
|---|---|
| Existing Stream Gradient: | 2% |
| Size of Watershed: | 640 acres |
| Minimum Stream Width: | 22 feet |
| Stream Bed Material: | Sand, Gravel, Cobble |
| 50-Year Peak Flow/Mi.$^2$ : | 300 cfs |
| 50-Year Peak Flow: | 300 cfs |
| Flow Capacity of Structure: | 2,007 cfs |
| | 174 ft$^2$ wetted cross sectional area |
| | 39 ft wetted perimeter (w/ 3 ft clearance) |

**Practices:**

- Machine activity in stream channels will be minimized.
- In stream work shall be conducted during periods of low water flows and between July 1 and August 31, annually.
- Minimum 2 cubic yard track mounted excavator type equipment shall be used for embankment excavation, stream channel development and riprap placement.
- Excavated embankment materials will be hauled to approved waste areas, sloped for drainage and left in a stable condition.
- Erosion control measures shall be applied to all exposed excavation areas, bare soils and waste materials.
- Riprap rock will be used to armor embankments and stream banks.
- De-watering of the construction site during removal of the pipe arch and development of the stream channel will be accomplished by use of cofferdams, temporary diversion ditches, and/or drainage structures.
- An erosion-control plan will be developed and followed to prevent sediment from entering the stream during construction work.
- A combination of steel bridge components and riprap rock will be used to construct backwalls and embankment armor to protect the road embankments and stream banks.
- Use of pre cast concrete footing components will be preventing contamination of water from mixing and pouring concrete on site.
- Oil Spill response materials shall be on site before the work begins.

State Timber Sale Contract
No. 341-06-02
Hambone

# FOREST PRACTICES ACT "WRITTEN PLAN"
# For Project No. 2, Fishhawk Creek Road Bridge Construction
# Hambone Timber Sale

I, the undersigned, submit this written plan in compliance with the requirements in the Forest Practices Act regarding the operations conducted within 100 feet of Type F streams. I agree to the protection measures listed on this plan.

Submitted: _____ Date:
Purchaser/Operator Contract Representative

Attachment: Exhibit A
Original: Salem
Copies: Operator, Contractor, District File, Salem, Engineering Unit, Jewell Unit

State Timber Sale Contract
No. 341-06-02
Hambone

# FOREST PRACTICES ACT "WRITTEN PLAN"
# For Project No. 2, Cedar Flats Road Pipe Arch Installation
# Hambone Timber Sale

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

**Protected Resources**: Tributary of Fishhawk Creek, a small Type F fisheries resource, located in the NW¼ of Section 30, T6N, R7W, W.M., Clatsop County, Oregon. A written plan is required for any activities within 100 feet of any Type F streams.

**Situation:** A galvanized-steel-culvert stream crossing located on Cedar Flats Road is deteriorating and is a partial blockage to fish. Resource management objectives for this stream crossing project include providing cost effective long-term access, meeting or exceeding FPA requirements, enhancement of fisheries habitat, and protection of water quality and riparian areas.

**Drainage Area and Structure Design**: The existing culvert will be replaced with a 128"x83"X60', 12 gage aluminized steel pipe arch, embedded 18", with step beveled ends. The stream crossing will utilize a streambed simulation strategy and preserve a natural stream channel (waterway), a minimum of 8 feet wide. The stream crossing meets and exceeds the requirements of the FPA for type F stream crossings. It will take sufficient time and flow conditions for the predicted stream-bed to develop inside and above the stream crossing.

| | |
|---|---|
| Existing Stream Gradient: | 7% |
| Size of Watershed: | 164 acres |
| Minimum Stream Width: | 8 feet |
| Stream Bed Material: | Sand, Gravel, Cobble |
| 50-Year Peak Flow/Mi.$^2$: | 200 cfs |
| 50-Year Peak Flow: | 51 cfs |
| Flow Capacity of Structure: | 168 cfs |

**Practices:**

- Machine activity in stream channels will be minimized.
- In stream work shall be conducted during periods of low water flows and between July 1 and August 31, annually.
- Minimum 2 cubic yard track mounted excavator type equipment shall be used for embankment excavation, stream channel development and riprap placement.
- Excavated embankment materials will be hauled to approved waste areas, sloped for drainage and left in a stable condition.
- Erosion control measures shall be applied to all exposed excavation areas, bare soils and waste materials.
- Riprap rock will be used to armor embankments and stream banks.
- Native (excavated) stream sediment materials shall be placed in the pipe arch barrel. Excavated boulders or riprap rock shall be placed and embedded at the outlet of the new pipe arch to facilitate the development of the stream channel inside the barrel of the pipe arch culvert.
- The de-watering of the installation area during development of the pipe arch bed and stream channel will be accomplished by use of cofferdams, temporary diversion ditches, and/or drainage structures.
- An erosion-control plan will be developed and followed to prevent sediment from entering the stream during construction work.

State Timber Sale Contract
No. 341-06-02
Hambone

# FOREST PRACTICES ACT "WRITTEN PLAN"
# For Project No. 2, Cedar Flats Road Pipe Arch Installation
# Hambone Timber Sale

I, the undersigned, submit this written plan in compliance with the requirements in the Forest Practices Act regarding the operations conducted within 100 feet of Type F streams. I agree to the protection measures listed on this plan.

Submitted: _____ Date:
Purchaser/Operator Contract Representative

Attachment: Exhibit A
Original: Salem
Copies: Operator, Contractor, District File, Salem, Engineering Unit, Jewell Unit

State Timber Sale Contract
No. 341-06-02
Hambone

# FOREST PRACTICES ACT "WRITTEN PLAN"
# For Harvesting Hambone Timber Sale

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

**Protected Resources:**
The following streams are located in Section 25 of T6N, R8W, & Section 30 of T6N, R7W, W.M., Clatsop County, Oregon.

Area 1 Fishhawk Creek, is designated as a medium, Type F stream 5 to 10 feet wide, where it runs east and away from the southern sale boundary of Area 1.
Area 2 Fishhawk Creek, is designated as a large, Type F stream 10 to 15 feet wide, where it runs south east and away from the northern sale boundary of Area 2
Area 3 Fishhawk Creek, is designated as a large, Type F stream 10 to 15 feet wide, where it runs south east and away from the southern sale boundary of Area 3

**Specific Site Characteristics:**
Fishhawk Creek: The streambed is approximately 12 feet wide, with moderate streambank slopes. Streamside vegetation is dominated by mature alder, with a significant component of conifer trees, which are located within the flood plain. Portions of the 100 foot RMA for Fishhawk Creek are located on the upland side of Highway 202 and are dominated by leaning hardwoods and conifer that pose a threat to public safety.

**Tree and Vegetation Retention:**
FPA defines the RMA width of a medium Type F stream as 70 feet. The timber sale boundary for Area 1 is posted at least 100 feet from the Type F stream. There are several Type N streams that run adjacent to the sale area that are tributaries to Fishhawk Creek. These Type N streams have 50 foot wide posted stream buffers.
The FPA defines the RMA width of a large, Type F stream at 100 feet. The timber sale boundary for Area 3 is along the north side of Hwy 202. Fishhawk Creek is adjacent to the south side of Hwy 202. Approximately 1150 feet of the Area 3 timber sale boundary is posted within 100 feet of Fishhawk Creek. However, these trees are located on the upland side of Hwy 202, and leaning over the highway. These trees contribute little benefit to the stream and will be felled and removed for public safety, as approved per the attached letter from ODOT. The timber sale boundary for Area 2 is posted at least 100 feet from Fishhawk Creek.

**Practices:**
Along the Type F stream mentioned above, as well as any live streams within the timber sale, the following practices are required, under the timber sale contract, to protect the streams and streamside areas:

- No trees will be felled within stream buffers(RMA's), except trees north of Highway 202 which will be felled to mitigate public safety hazards.
- Trees adjacent to the stream buffers (RMA's) will be felled away from or parallel to the streams to prevent trees from entering the aquatic areas.
- No ground based logging equipment will be permitted within the RMA's nor within 50 feet of any stream.
- When cable logging is conducted nearby the RMA's, logging lines may cross, but will not be lowered into the RMA's during yarding, except during rigging.
- The cable lines must be pulled out of the RMA's when changing corridors.

I, the undersigned, submit this written plan in compliance with the requirements in the Forest Practices Act regarding the operations conducted within 100 feet of Type F streams. I agree to the protection measures listed on this plan:

Submitted: _____ Date: _____
Purchaser/Operator Contract Representative

Attachments: Logging Plan Map
Copies: Operator, Contractor, District File, Salem, Engineering Unit, Jewell Unit