Appendix 2. Exhibits for Timber Sale Contracts/Service Contracts

State Timber Sale Contract
No. 341-00-__

[Sale Name]__

(XB1)

EXHIBIT "*      "

FOREST ROAD SPECIFICATIONS

<table>
<thead>
<tr>
<th>SUBGRADE WIDTH</th>
<th>SURFACED WIDTH</th>
<th>POINT TO POINT</th>
<th>STATION TO STATION</th>
<th>DRAINAGE</th>
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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 5 feet out from the toe of the fill slope, or as directed by STATE. Clearing debris shall not be placed or permitted to remain in or under any road embankment sections. Clearing debris shall not be left lodged against standing trees.

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

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 classifications are as follows:

New construction - From the top of the cutslope to the toe of the fill.

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

CLEARING AND GRUBBING DISPOSAL. * Scatter through openings in the timber outside of the cleared right-of-way, except areas where end-haul is required.

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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 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 in lifts not to exceed 8 inches in depth.

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-risk site by STATE.

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.

DRAINAGE

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

Location: *( ) Intervisible but not greater than 750 feet.
*( ) As marked in the field.

GRADING

<table>
<thead>
<tr>
<th>Back Slopes</th>
<th>Fill Slopes</th>
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<tr>
<td>Rock</td>
<td>Vertical to 1/4:1</td>
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<tr>
<td>Common - side slopes 50% and over</td>
<td>*1/2:1</td>
</tr>
<tr>
<td>Common - side slopes less than 50%</td>
<td>*3/4:1</td>
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<tr>
<td>Common - turnpike (level) section</td>
<td>2:1</td>
</tr>
</tbody>
</table>

Top of cutslope shall be rounded.

*( ) LANDINGS. Landings shall be constructed 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 *____. Page *____.

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

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EXHIBIT "*__*

ROAD IMPROVEMENT INSTRUCTIONS

[NOTE: Use this separate page when instructions are too lengthy or detailed to be contained in the project work section.]
(XB3a)

EXHIBIT "*___"

ROAD CONSTRUCTION INSTRUCTIONS

[NOTE: Use this separate page when instructions are too lengthy or detailed to be contained in the project work section.]
EXHIBIT "*   *

LOGGING ROAD BRUSHING SPECIFICATIONS

REQUIREMENTS

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

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

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

[NOTE: Clearing widths must be filled in on the diagram.]
LOGGING ROAD BRUSHING SPECIFICATIONS

REQUIREMENTS

The minimum height of clearing shall be 15 feet, and the minimum width of clearing on the cutslope side(s) of the road shall be 5 feet beyond the top of the cutbank.

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

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

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

[NOTE: Clearing widths must be filled in on the diagram.]
EXHIBIT "*___"

END-HAULING REQUIREMENTS

<table>
<thead>
<tr>
<th>POINT TO POINT</th>
<th>STA. TO STA.</th>
<th>CONTAINMENT</th>
<th>WASTE AREA LOCATION</th>
<th>WASTE AREA TREATMENT</th>
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End-Haul Areas General Requirements

Material shall not be intentionally sidecast.

Clearing and grubbing debris shall be end-hauled.

When blasting is required, it shall be accomplished using timing devices, delayed charges, low intensity shots, or other suitable means to contain as much material as possible within the road prism.

Containment

(1) Full containment: The amount of 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.

(2) Average containment: The amount of material lost over the outside edge of the road shall not exceed *__ inches in depth measured perpendicular to the natural ground slope.

Trees 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 operator from the slope, by whatever means necessary, and end-hauled to a designated waste area.

Waste Area Location

(1) As shown on Exhibit A and as marked in the field.

(2) *

Waste Area Treatment

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

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

(3) *

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<table>
<thead>
<tr>
<th>TYPE OF ROCK</th>
<th>SIZE OF ROCK</th>
<th>COMPACTED DEPTH</th>
<th>POINT TO POINT</th>
<th>STATION TO STATION</th>
<th>APPRX. TOTAL TRUCK MEASURE VOLUME</th>
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<td>NO. OF JCTS.</td>
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<td>MISCELLANEOUS: [Riprap, drain rock, etc.]:</td>
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Additional rock for curve widening is required and has been included in the volume estimates.

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.

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ROAD SURFACING

<table>
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<tr>
<th>TYPE OF ROCK</th>
<th>SIZE OF ROCK</th>
<th>VOLUME PER STATION</th>
<th>POINT TO POINT</th>
<th>STATON TO STATION</th>
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<th>NO. OF JCTS.</th>
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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 "**__"  
CRUSHED ROCK SPECIFICATIONS

**Materials.** The material shall be fragments of rock or other hard, durable particles crushed to the required size and a filler of finely crushed stone, sand, or other finely divided mineral matter. The material shall be free from vegetation and lumps of clay.

**Quality and Grading Requirements.** The stone base materials shall be crushed rock, including sand.

*( ) River gravel shall not be used. [Fracture of Gravel deleted]

*( ) River gravel shall conform to the specifications listed below under Fracture of Gravel.  
*( ) River gravel may be used for 3/4"-0" crushed rock and shall conform to the specifications listed below under Fracture of Gravel.

The material from which base material is produced or manufactured shall conform to the general requirements of Section 2630 of the "Standard Specifications for Highway Construction" prepared by the Highway Division, Oregon Department of Transportation, and shall meet the following test requirements:

**Hardness** - Test Method AASHTO T 96 35% Maximum

**Durability** - Test Method ODOT TM 208  
   Passing No. 20 Sieve: 30% Maximum
   Sediment Height: "________" Maximum

**Fracture of Gravel.** Base materials produced from river gravel shall be crushed as required to provide at least 1 mechanically fractured face to a prescribed minimum percentage of materials retained on a 1/4-inch sieve.

The minimum percentage of fractured material in the "1/4-inch plus" fraction of each designated size of material shall be as follows:

2½"-0", 2"-0", 1½"-0"  .......... ..........50%
1"-0", 3/4"-0", 1/2"-0"  .......... ..........70%

[NOTE: Fracture of Gravel requirements do not apply to quarry rock.]

[Grading requirements to follow.]

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EXHIBIT "*    

CRUSHED ROCK SPECIFICATIONS

[OPTIONS – PARAGRAPHS]

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

( ) A sample of the rock shall be supplied to STATE for testing and approval prior to crushing. The rock crusher must be calibrated to produce rock as specified in Exhibit *____. Rock must be accepted by STATE prior to any production by the crusher. Any rock crushed prior to such acceptance shall not be credited to the required rock quantity. Rock is to be stockpiled according to STATE instructions. Crushing equipment shall not be removed until all stockpiling and measurements have been accepted by STATE.

( ) The rock crusher shall be calibrated to produce rock as specified in 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.

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CRUSHED ROCK SPECIFICATIONS

Grading Requirements

For 3/4”-0”
- Passing 1” sieve 100%
- Passing 3/4” sieve 90-100%
- Passing 3/8” sieve 55-75%
- Passing 1/4” sieve 40-60%

Of the fraction passing 1/4” sieve, 40% to 60% shall pass the No. 10 sieve.

For 1½”-0”
- Passing 2” sieve 100%
- Passing 1½” sieve 95-100%
- Passing 3/4” sieve 55-75%
- Passing 1/4” sieve 35-50%

Of the fraction passing 1/4” sieve, 40% to 60% shall pass the No. 10 sieve.

For 2”-0”
- Passing 2½” sieve 100%
- Passing 2” sieve 95-100%
- Passing 1” sieve 55-75%
- Passing 1/4” sieve 30-45%

Of the fraction passing 1/4” sieve, 40% to 60% shall pass the No. 10 sieve.

For 2½”-0”
- Passing 3” sieve 100%
- Passing 2½” sieve 95-100%
- Passing 1¼” sieve 55-75%
- Passing 1/4” sieve 30-45%

Of the fraction passing 1/4” sieve, 40% to 60% shall pass the No. 10 sieve.

For 4”-0”
- Passing 4½” sieve 100%
- Passing 4” sieve 95-100%
- Passing 2” sieve 55-75%
- Passing 1/4” sieve 30-45%

For Jaw-Run
- Passing 6” sieve 100%
- Passing 3” sieve 45-65%

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

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.

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CRUSHED ROCK SPECIFICATIONS

<table>
<thead>
<tr>
<th>Grading Requirements</th>
<th>For 3/4&quot;-0&quot;</th>
<th>For 1½&quot;-0&quot;</th>
<th>For 2½&quot;-0&quot;</th>
<th>For 3&quot;-0&quot;</th>
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<td>3/4&quot; sieve retained on 3/8&quot; sieve</td>
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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.
The rock shall meet the quality and size specifications in Exhibit *.*. A sample of the rock must be supplied to STATE for testing and approval prior to rocking. 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 *.*. Deliver at least *.* cubic yards per 8-hour shift, unless otherwise approved by STATE. A penalty of $*.* 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 *.*. 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 *.*. The average depth for each road segment shall be the specified depth or greater. Surfacing areas shall be staked by STATE.

Junctions shall have a surfaced area of at least *.* square yards each at the compacted depths specified in Exhibit *.*.

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

Landings shall have a surfaced area of at least *.* square yards each at the depths shown in Exhibit *.*.

**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.
ROCK ACCOUNTABILITY

The rock shall meet the quality and size specifications in Exhibit *____. A sample of the rock must be supplied to STATE for testing and approval prior to rocking. 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 depth measurement. STATE shall be given 24 hours' notice prior to rocking.

**Depth Measurement.** Rock shall be spread and compacted according to the depths specified in Exhibit *__. 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 *__. The average depth for each road segment shall be the specified depth or greater. Surfacing areas shall be staked by STATE.

Junctions shall have a surfaced area of at least *____ square yards each at the compacted depths specified in Exhibit *____.

Turnouts shall have a surfaced area of at least *____ square yards each at the depths shown in Exhibit *__.

Landings shall have a surfaced area of at least *____ square yards each at the depths shown in Exhibit *__.

**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 *_______.

Rev. 6/97
The rock shall meet the quality and size specifications in Exhibit *__. A sample of the rock must be supplied to STATE for testing and approval prior to rocking. 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 rock checking. 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 *__. Deliver at least *____ cubic yards per 8-hour shift, unless otherwise approved by STATE. A penalty of $*____ 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.

Rev. 1/92
Pit-Run Rock. Pit-run surfacing rock shall be spread on roads with a crawler tractor and continuously walked-in. Rock spreading shall begin at nearest point from the rock source and progress toward the end of the project, unless otherwise approved in writing by STATE. (*Compaction shall be accomplished by using one or more of the approved equipment options listed below:) (*Compaction shall be accomplished by using the approved equipment listed below or others approved by STATE:)

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

(*) Rock shall be crowned at 4 to 6 percent unless otherwise specified.

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 6 inches in depth. When more than 1 layer is required, each shall be shaped and compacted before the succeeding layer is placed. Any irregularities or depressions that develop during compaction of the top layer shall be corrected by loosening the material at these places and adding or removing material until the surface is smooth and uniform. 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:) (*Compaction shall be accomplished by using the approved equipment listed below or others approved by STATE:)

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

(*) Rock shall be crowned at 4 to 6 percent unless otherwise specified.
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:)

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

*( ) Rock shall be crowned at 4 to 6 percent unless otherwise specified.

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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." A minimum 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:)

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

*( ) Rock shall be crowned at 4 to 6 percent unless otherwise specified.

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Rev. 5/99
EXHIBIT "* ___"

COMPACTION AND PROCESSING REQUIREMENTS

Pit-Run Rock. Pit-run surfacing rock shall be spread on roads with a crawler tractor and continuously walked-in. Rock spreading shall begin at nearest point from the rock source and progress toward the end of the project, unless otherwise approved in writing by STATE. (*Compaction shall be accomplished by using one or more of the approved equipment options listed below:) (*Compaction shall be accomplished by using the approved equipment listed below or others approved by STATE:)

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

*() Rock shall be crowned at 4 to 6 percent unless otherwise specified.

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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 6 inches in depth. When more than 1 layer is required, each shall be shaped and compacted before the succeeding layer is placed. Any irregularities or depressions that develop during compaction of the top layer shall be corrected by loosening the material at these places and adding or removing material until the surface is smooth and uniform. Each layer shall be compacted with a minimum of 3 passes over the entire width and length of the road. 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:) (*Compaction shall be accomplished by using the approved equipment listed below or others approved by STATE:)

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

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Rev. 5/99
EXHIBIT "* ** "

COMPACATION EQUIPMENT OPTIONS

( ) Smooth-Wheel Power Rollers. Smooth-wheel power rollers shall either be of the 3-wheel type, weighing not less than 10 tons, or of the tandem type, 2-wheel or 3-wheel, weighing not less than 8 tons. Smooth-wheel rollers shall provide compression of 325 pounds per lineal inch of width of rear wheels or drum.

( ) Pneumatic-Tired Rollers. Pneumatic-tired rollers shall be of the double-axle type equipped with pneumatic tires of equal size and type. The spacing between the sidewalls of adjacent tires shall not exceed 5 inches; the rear tires shall be staggered with relation to the front tires. The rolling width of the unit shall be not less than 60 inches exclusive of the power unit. The roller shall be so constructed that the contact pressure is uniformly distributed on all of the tires. The tires shall be inflated to maintain the air pressure in the several tires within a total tolerance of 5 pounds per square inch. The roller shall be so constructed that the total weight is between 1,000 and 2,000 pounds per tire. The actual operating weight of the rollers shall be as ordered by STATE.

Each pneumatic-tired roller shall be drawn by equipment having sufficient power and sufficient weight, under normal conditions, to pull the roller at a minimum speed of 5 miles per hour, or may be self-propelled to obtain a minimum speed of 5 miles per hour.

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

( ) Vibratory Compactors. Vibratory compactors shall consist of multiple or gang type compacting units or pads with a minimum variable width of 2 feet. It shall be self-contained and capable of compacting material as required.

( ) Rock Trucks. Rock spreading shall begin at the nearest point to the rock source and progress toward the end of the project. Rock trucks shall be routed over the entire cross section of rock layers.
EXHIBIT "*__"

COMPACTION EQUIPMENT OPTIONS

( ) 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.

( ) Grid Rollers. Pit-run rock shall be processed by grid rolling with a Hyster Grid Roller Model D or equivalent, 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.

( ) 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. A minimum of 10 passes shall be made with the grader and vibratory grid compactor over the entire length of the road, unless STATE requires fewer passes.

( ) Crawler Tractors. D-7 Caterpillar or equivalent (*or larger).

[Provide additional or different specifications, if necessary.]

[OPTIONS]

( ) 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.
ROCK PIT DEVELOPMENT AND USE

(1) 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.”

(2) Where overburden removal limits have not been staked, they shall extend for a distance of at least 20 feet beyond the developed rock source. Overburden and woody debris 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. Prior to drilling or rock removal, completion of overburden removal shall be approved (*in writing) by STATE.

(3) The rock pit floor shall be developed to provide drainage away from the rock pit. Rock pit drainage ditches shall be developed and maintained. Benches shall be constructed at intervals of 40 feet or less in height and shall be a minimum of 20 feet in width. Any gravel or talus slopes shall be left with a working face at an angle of 60 degrees or less. There shall be a minimum of 1 bench with an access road to it. Said bench shall be easily accessible with tractors.

(4) Blasting shall be accomplished using timing devices, delay charges, low intensity shots, or other suitable means to contain as much material as possible in the rock pit prism.

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

[SELECT ONE OF THE 6's]

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

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

(7) 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 the pit area. The plan shall include, but not be limited to:

(a) Location of benches and roads to benches.

(b) Disposal site for debris and overburden.

(8) Upon completion of use, the pit site and access roads 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. Rock pit access roads shall be blocked upon completion of rock pit use as directed by STATE. Rock pit roads shall be waterbar constructed to provide drainage as specified in Exhibit *____ and be blocked as directed by STATE.

Rev. 5/99
CULVERT SPECIFICATIONS

All culvert materials shall be furnished and installed by PURCHASER, unless otherwise specified in the contract. Culverts shall be constructed of corrugated galvanized iron or steel, (*or aluminized steel,) (*or corrugated aluminum alloy,) and shall conform to the material and fabricating requirements of Sections 2410 and 2420 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. Corrugated polyethylene culverts may be used for sizes up to 36 inches in diameter.

The joints between bands and pipe of unlike material shall be coated with an approved bituminous material.

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.)

(*Camber shall be incorporated into all culvert trench beds by increasing the lower half of the trench bed slope 1 percent.)

(*Culverts less than 36 inches in diameter shall be installed with the lock seam on the inlet end placed within 45 degrees of the bottom of the trench.)

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. If tamping is required, the trench shall be excavated wide enough to permit working on each side of pipe. Bedrock shall be excavated as required to provide a uniform foundation for the full length of the culvert.

[OPTION - SELECT ONE OF THE "BEDDING" PARAGRAPHS](*A bedding of granulated material or job-excavated soil 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.)

(*A bedding of job-excavated granulated soil 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.)

Tamping (when required) shall be done in 8-inch lifts, 1 pipe diameter each side of the pipe to 85 percent density or over, and to the minimum fill height as specified below. Additional fill shall be embankment material.

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.

Rev. 5/99
EXHIBIT "__" 

CULVERT SPECIFICATIONS

Minimum height of cover over top of culvert to subgrade when road is to be rocked shall be as follows:
12" for aluminized steel culverts 18" to 36", 18" for aluminized steel culverts 42" to 96", (*12" for aluminum culverts 12" to 42", 24" for aluminum culverts 48" to 96"), and 12" for polyethylene culverts (add 6" for roads which will not be rocked). Minimum vertical cover for other steel (or aluminum) designs shall be as specified by STATE.

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

The ends of each culvert shall be free of logs and debris which would restrict the free flow of water. Culverts in Type F streams must allow free passage of fish as provided in the Oregon Forest Practice Rules. 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 into waters of the State shall be provided with a downspout or other approved slope protection device.

Following are the minimum standard gauges for pipe and coupling bands. All other designs shall be in accordance with the minimum requirements of the Highway Division (Drawing Nos. 2091-A and B), or as approved by STATE.

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<tr>
<th>Dia.</th>
<th>Pipe Gauge (&quot;</th>
<th>Band Gauges</th>
<th>Band Widths (&quot;)</th>
<th>Hugger Band Widths</th>
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<tbody>
<tr>
<td></td>
<td>Aluminum</td>
<td>Steel</td>
<td>Aluminum</td>
<td>Steel</td>
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<td>12-15</td>
<td>16</td>
<td>16</td>
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<td>18-24</td>
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<td>30-36</td>
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<td>60</td>
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<td>66-72</td>
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<td>84</td>
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<td>90-120</td>
<td>8</td>
<td>12</td>
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Aluminized steel culverts larger than 60" in diameter shall have 3" x 1" corrugations.

Polyethylene culverts between 3" to 10" in diameter shall meet the requirements of AASHTO M-252-851. Polyethylene culverts between 10" to 36" in diameter shall be double walled and meet the requirements of AASHTO M-294-901, Type S.

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

Rev. 5/99
EXHIBIT "XE1-a"

CULVERT SPECIFICATIONS

[USED MOSTLY BY ASTORIA]

All culvert materials shall be furnished and installed by PURCHASER, unless otherwise specified in the contract. Culverts shall be constructed of corrugated, double-walled polyethylene, unless use of other culvert materials with an equivalent life expectancy is approved in writing by STATE. Pipe and fittings shall be made of polyethylene compounds which meet or exceed the requirements of Type III, Category 4 or 5, Grade P33 or P34, Class C per ASTM D-1248 with the applicable requirements defined in ASTM D-1248. Double-walled polyethylene pipe shall meet the requirements of AASHTO M-294-901, Type S. Clean, reworked material may be used.

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.)

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. If tamping is required, the trench shall be excavated wide enough to permit working on each side of pipe. Bedrock shall be excavated as required to provide a uniform foundation for the full length of the culvert.

A bedding of granulated material or job-excavated soil 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.

Transporting of the pipe shall be done carefully. Dragging or allowing free fall from trucks or into trenches shall not be permitted. Damage to bituminous coating shall be repaired before the pipe is covered.

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.

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

Tamping (when required) shall be done in 8-inch lifts, 1 pipe diameter each side of the pipe to 85 percent density or over, and to the minimum fill height as specified below. Additional fill shall be embankment material.

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.

Rev. 5/99
Minimum height of cover over top of culvert to subgrade when road is to be rocked shall be 12 inches for polyethylene culverts (add 6” for roads which will not be rocked). Minimum vertical cover for other steel or aluminum designs shall be as specified by STATE.

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

The ends of each culvert shall be free of logs and debris which would restrict the free flow of water. Culverts in Type F streams must allow free passage of fish as provided in the Oregon Forest Practice Rules. 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 into waters of the State shall be provided with a downspout or other approved slope protection device.

This specification applies to high density polyethylene corrugated pipe with an integrally formed smooth interior.

This specification is applicable to nominal sizes 4- to 36-inch diameter. Requirements for test methods, dimensions, and markings are those found in AASHTO Designations M-252 and M-294-901, Type S.

Rev. 1/96
EXHIBIT "*___"

CULVERT LIST

<table>
<thead>
<tr>
<th>CULVERT NO.</th>
<th>DIAMETER (Inches)</th>
<th>LENGTH (Feet)</th>
<th>ROAD SEGMENT POINT TO POINT</th>
<th>STATION</th>
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[OPTIONS - PARAGRAPHS]

( ) The intake ends of culverts shall be marked by driving or placing steel posts within 6 inches of the downgrade side. Posts shall be painted with a rust-resistant paint and be a minimum of 5 feet long, with the spade driven 2 feet into the ground.

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

( ) All culverts shall be constructed of (*corrugated,) double-walled polyethylene.

( ) Tamping is required.

( ) All metal culverts scheduled for replacement shall (*become property of PURCHASER and) be removed from State land.

( ) Half rounds shall be installed within 72 hours of culvert installation, unless otherwise approved in writing by STATE.
WATERBAR SPECIFICATIONS

EXHIBIT "**"

WATERBAR SPECIFICATIONS FOR CROSS DITCHING
[Sale Name] EXHIBIT "**"
PURCHASER shall take precautions necessary to protect the watershed from damage and to prevent pollution to the water supply. Precautions shall include, but not be limited to, the following regulations.

**Laws, Rules, and Regulations.** Comply with Oregon laws and with the rules and regulations of the Oregon State Board of Health relative to protection of watersheds and sanitation of public water supply.

**Debris in Streams.** Prevent, insofar as possible, logs, chunks, and other debris, resulting from logging and road building operations, from being deposited in streams. If such material should become deposited in streams, immediately remove the material to restore normal stream flow, using necessary care to prevent unnecessary damage to the stream channel and banks.

**General Sanitary Conditions.** Do not create any conditions which may permit breeding of flies or mosquitoes. Machinery, equipment, soil, and fuel storage shall not be located near streams. Waste oil shall be removed from the watershed. Camping shall not be permitted.

**Privies.** Place a clean, sanitary, and usable privy at each landing and other main points of operation and require all personnel to use the privies. Privies shall be placed at locations approved by STATE not closer than 100 feet to any stream. The privies shall be constructed as follows, unless other types are approved by STATE prior to being placed in use:

The housing shall be waterproof and flyproof, and the toilet shall be equipped with a seat and cover. A receptacle shall be provided for all refuse and the privy shall be equipped with a separate urinal draining into the receptacle. The receptacle shall be not less than 45-gallon capacity and the refuse shall be removed from the receptacle and disposed of off the watershed area. The receptacle shall be vented through the roof of the privy housing.

**Pit type privies shall not be permitted on the watershed.**

**Personnel.** Persons with a history of typhoid fever, amoebic dysentery, or infectious hepatitis shall not be employed on the watershed. All personnel shall be required to use the privies. PURCHASER shall verbally instruct all personnel employed on the watershed in the required sanitary precautions to be observed and shall give each such person a copy of these regulations.

**Overnight Camping Prohibited.** No person shall remain on the watershed overnight, unless authorized in writing by STATE.
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 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. (*OPTION: 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) (*)is *are) applied in dry form.

**Application Rates for Seed (*and Fertilizer)**

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

<table>
<thead>
<tr>
<th>Species</th>
<th>Lb./Acre</th>
<th>Mixture</th>
<th>Pure Live Seed</th>
<th>Poison and/or Repellent</th>
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</thead>
<tbody>
<tr>
<td>Highland Bentgrass</td>
<td>12</td>
<td>40%</td>
<td>98%</td>
<td>0</td>
</tr>
<tr>
<td>Annual Ryegrass</td>
<td>9</td>
<td>30%</td>
<td>98%</td>
<td>0</td>
</tr>
<tr>
<td>Perennial Ryegrass</td>
<td>9</td>
<td>30%</td>
<td>98%</td>
<td>0</td>
</tr>
</tbody>
</table>

(*Fertilizer: Chemical analysis shall be 16-20-0 and shall be applied at the rate of 300 pounds per acre.)

[NOTE: Delete fertilizer language in ( ) if fertilizer is not being used.]
EXHIBIT "*___"

FABRIC SPECIFICATIONS

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

(1) Grab Tensile 300 lbs. ASTM D1682
(2) Modulus Load at 10% Elongation 140 lbs. ASTM D1682
(3) Mullen Burst 600 lbs. ASTM D751
(4) Width – 12.5 feet

INSTALLATION REQUIREMENTS - fabric shall be installed according to the following requirements:

(1) Typical cross section:

(2) Subgrade surface shall be leveled and smoothed to remove humps and depressions which exceed 6 inches in height and depth. Small pieces of woody debris shall be removed or pushed below subgrade surface. Light vegetation (grass, weeds, leaves, and fine woody debris) may be left in place.

(3) Fabric shall be installed directly on the prepared surface. Longitudinal and traverse joints shall be overlapped at least 3 feet.

(4) Surfacing course material shall be placed to the designated thickness in one lift and spread in the direction of fabric overlap. Hauling and spreading equipment shall not be operated on the fabric until the total thickness of surfacing course material is placed.

(5) Torn, punctured, or separated sections of the fabric shall be repaired by installing a fabric patch over the break prior to placing the surfacing course material. The patch shall be at least 4 feet larger in horizontal dimensions than the break to be repaired.

Fabric failures resulting after rock placement and as evidenced by subgrade pumping or roadbed distortion shall be corrected. Correction measures shall consist of: (1) removing at least three-quarters the depth of surfacing course material in the affected area, (2) placing a fabric patch over the affected area with a minimum 4-foot overlap around the circumference of the area, and (3) replacing enough rock to cover the patch and blend in with the rest of the road.
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 1½ to 2½ inches. This rate requires between 2 and 3 tons of dry mulch per acre.

*Added 7/99*
NOTE - 1"x1" L
12" O.C. DRILL
HOLES TO FASTEN FENCE WIRE

20'-0"
PLAN VIEW
(3-10'-0"x7'-0" UNITS)

2½'x2'x5'-0" LONG

SECTION @ A-A
13 FORMED RAILS
END BARRIER
ROAD SURFACE

NOTE: TWO COATS OF RUST RESISTANT PAINT, YELLOW CROMITE OR EQUAL.

SECTION @ B-B
SCALE 1"=1'-0"

SECTION C-C
½"x2"x2"x2'-0" L
3½"
7½"
½"x2"x2" Bolts
½"x2"x2"x2'-12" welded to 3 center rails

SECTION D-D
½"x3"x8" angle welded to C
Formed rail
4 - ½"x2"x2" Bolts
18" C.C.
2½"x2½" welded to 3 center rails
6-½"x2½"x2½" angle welded to C

SECTION E-E

SECTION F-F
See Section "D-D"

FORMED RAIL

FORMED RAIL

OREGON STATE BOARD OF FORESTRY
SALEM, OREGON

METAL CATTLE GUARD
SCALE: AS NOTED
**PLAN VIEW**

- 13 FORMED RAILS REQ'D.
- 2"x1½" x 5'9" LONG
- 1¼" x 1" ANGLE
- SEE NOTE

**SECTION A-A**

- 3/4" DOWEL PIN
- 3/4" DOWEL PIN
- END BARRIER
- ROAD SURFACE
- ground line

**SECTION B-B**

- SCALE ¼" = 1' = 8"
- 13 FORMED RAILS
- NOTE: (2) TWO COATS RUST
- RESISTANT PAINT, YELLOW CROMITE, OR EQUAL.

**SECTION C-C**

- SCALE 1" = 1' = 8"
- Formed rail
- ¼"x2" x 2" L x 2'0"
- 1/2" x 2" BOLTS
- 1/2" x 2" BOLTS

**SECTION E-E**

- CLEAN-OUT PANEL DETAILS

**SECTION F-F**

- BAR 2½" x 2½" x 2½" WELD TO CENTER 3 RAILS
- BAR 3¼" x 2¼"
- 2½" x 2½" L - WELD TO CENTER 3 RAILS AS SPREADER

**OREGON STATE BOARD OF FORESTRY**

**SALEM, OREGON**

**METAL CATTLE GUARD**

**SCALE AS NOTED**
NOTE: 1" x 1" L 12" O.C. DRILL HOLES TO FASTEN FENCE WIRE

PLAN VIEW

SECTION @ A-A

SECTION @ B-B
Scale: 1/4" = 1 ft

NOTE: 2" STD. PIPE OR 2" x 1" H I

LENGTH VARIABLE

SET IN CONCRETE

END BARRIER

GROUND LINE

13 FORMED RAILS

NOTE: (2) - TWO COATS RUST RESISTANT PAINT, YELLOW CROMITE, OR EQUAL

STATE OF OREGON - DEPARTMENT OF FORESTRY
SALEM, OREGON

METAL CATTLE GUARD

SECTION - E-E
Scale: 1" = 1 ft

SCALE: AS NOTED
FORM MATERIAL LIST

ESTIMATED CONCRETE 3 CUBIC YARDS
4 PCS. OF 2" x 12" x 16'0"     S4S
2 PCS. OF 2" x 12" x 16'0"     S4S END TIES
4 PCS. OF 2" x 10" x 16'0"     S4S
2 PCS. OF 2" x 8" x 18'0"     S4S
2 PCS. OF 2" x 4" x 16'0"     S4S
6 PCS. OF #4-1/2" RE-BAR 15'0" LONG
30 PCS. OF #3-3/8" RE-BAR 1'4" LONG
4 PCS OF 3/4" x 9" DOWEL PINS (STEEL)

STATE OF OREGON - DEPARTMENT OF FORESTRY
SALEM, OREGON

CONCRETE FOUNDATION
FOR:
METAL CATTLE GUARD
52-IN. AND 60-IN. CLASSIC GATES

Heavy Duty “Classic” Gates are famous for their strength. Use them with confidence for your toughest corralling job. The heavy duty steel horizontal rails, with their exclusive pentagonal design, will take an amazing amount of abuse from crowding cattle, then spring back to their original shape. The heavy duty 180° swing hinges are the best in the industry, and standard equipment on all gates. They are made of ¼-in. x 3-in. steel, and are easily adaptable to round and square wooden posts, or welded to steel posts. Two latches are available: a double-pin slide with lever for maximum gate strength, or a 24-in. chain with keeper. Vertical stays are welded to each side of the gate, at each rail, for added strength.

SPECIFICATIONS

Height — 52 in.
Frame — 1.66-in. O.D. Tube
Horizontal Rails — 5 Pentagonal
Hinges — ¼-in. x 3-in. - 180° Swing
Latch — Double-Pin Slide with Lever, or 24-in. Chain with Keeper
Stays — 1-8 ft. & 10 ft., 2-12 ft. & 14 ft., 3-16 ft., 4-18 ft. & 20 ft.

LEVER LATCH

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WEIGHTS

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52 IN. CLASSIC GATES

Chain latch price

WEIGHTS

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Refer to Price Sheet for order numbers of Chain Latch & 60 in. Gates.

60 IN. CLASSIC GATES
**ELEVATION**

Scale: 1/4" = 1'0"

- 30 gal. barrel to R.R. Iron
- COUNTERBALANCE
- 2 - 7/8" x 24" # hinge plates w/ washers
- 12" No. 3 rebars welded to sides of R.R. Rail

**PLAN VIEW**

- Barrel welded to R.R. Iron
- COUNTERBALANCE
- 2 - 7/8" x 24" # hinge plates w/ washers
- Fill with concrete interlaced with No. 2 rebars (4 to 8 pcs.)

**HINGE PLATE**

- "Zerk" grease fittings
- Weld to plate
- Not less than 75# R.R. Iron
- 7/8" bolt
- 2 - 7/8" x 24" # hinge plates
- 4 - 1/2" braces (45 deg.) weld
- Not less than 75# R.R. Iron

**PERSPECTIVE**

Paint with two coats of rust resistant paint and one coat of fluorescent red paint.

**STATE OF OREGON - DEPARTMENT OF FORESTRY**

**SALEM, OREGON**

**COUNTERBALANCED RAILROAD IRON ROAD GATE**

**SCALES:** As noted

**OSBF DRAWING NO. 306-C**

10-20-75 W. HAYES
DETAILS FOR STEEL TUBE GATE

SCALE: AS NOTED
DATE: 6-1-89

LATCH DETAIL

LOCK-PIN WITH CROSS-PIN

HINGE DETAIL

KEY

1- 6" Dia. Steel Well Casing
2- 1" Thick Steel Flat Stock
3- 3/4" Steel Round Stock
4- Concrete Base
5- Concrete-Filled Post
6- 3/4" Shackle With Welded On Nut/Pin
7- Turnbuckle
8- 1" Dia. x 13" Steel Bolt With Welded On Nut
9- 2" Dia. x 7 1/2" Steel Tube With A 3" Dia. Washer Welded On Each End; The Tube Is Welded On To The End Of The Cross Member
10- 1 1/8" Steel Flat Stock Welded On Ends Of Well Casing As A Cap/Plate
11- Guylines: Min. 3/8" Dia. Wire Rope; Ends Secured With Welded On Line Clamps
12- Guyline Anchors: Guylines Are To Be Secured To Something Solid And Permanent; Trees Greater Than 6" In Dia Are Acceptable.
Typical Culvert Slotted Standpipe Detail

Slot Dimensions:
2" x 8", 12" apart

Note:
- Slots shall be cut completely around standpipe.
- All cuts made on standpipe shall be painted with a rust preventative paint.
CABLE GATE DETAIL

- PVC FLEX PIPE (WHITE COLOR)
- 1" steel cable
- Concrete filled
- Grade
- Set in concrete

Weld top & bottom to post

1/4" plate steel 2" wide

2 clamps - each end of 1" cable to form eyelet

Weld nuts after assembly to discourage removal
GATE PLAN

[Diagram with dimensions and annotations]

Weld chain to shaft

Construct of $\frac{1}{4}$" plate steel

Weld box to post

8" I.D. pipe minimum $\frac{1}{4}$" thickness

LOCK DETAIL

[Diagram with dimensions and annotations]

Drill for standard padlock

Minimum diameter 1"

1" minimum D.I.A. shaft

Weld after assembly

5"