

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Tillamook Field Office
4610 3rd Street
Tillamook, OR 97141

ORN04-TS-2021.0401
The Sentinel

Date: April 23, 2021

PROSPECTUS
SEALED BID

THIS IS A PROSPECTUS ONLY. ATTACHMENTS MAY NOT INCLUDE ALL EXHIBITS REFERRED TO IN THE CONTRACT. THE COMPLETE CONTRACT, INCLUDING ALL EXHIBITS, IS AVAILABLE FOR INSPECTION AT THE TILLAMOOK FIELD OFFICE.

NOTICE IS HEREBY GIVEN that the Bureau of Land Management will offer for sale timber as described herein for sealed bid, pursuant to Instructions to Bidders, as stated on Form No. 5440-9. **Sealed bids will be received by the District Manager, or representative, at the Northwest Oregon District Office, 1717 Fabry Road, S.E., Salem, Oregon until 4:00 p.m., Tuesday, May 25, 2021. Please call 503-375-5653 to make an appointment. Appointments are available from 8am - 4pm, M-F.** Sealed bids will be opened at 9:00 a.m. on Wednesday, May 26, 2021. Due to pandemic restrictions the opening will be limited to BLM employees. All bidders will be notified via phone call after all bids have been opened and a high bidder declared.

A WRITTEN BID on Form 5440-9 at not less than the appraised price on a unit basis per species and the required minimum bid deposit shall be required to participate in sealed bidding.

TO QUALIFY FOR PARTICIPATION in a sealed bid sale, the bidder must submit a bid in a sealed envelope for each tract offered that includes:

- 1. Two copies of the bid written on Form 5440-9, Deposit and Bid For Timber/Vegetative Resources. No bid for less than the advertised appraised price on a unit basis per species and total price can be considered.**
- 2. The required minimum bid deposit specified in the timber sale notice for the tract.**
- 3. A properly executed Independent Price Determination Certificate, Form 5430-11. A certification that the bid was arrived at by the bidder or offeror independently, and was tendered without collusion with any other bidder or offeror.**
- 4. A completed Form 5450-17, Export Determination.**
- 5. The sealed envelope must be clearly marked that it is a "Bid for Timber" together with the sale name and number, the time and date of sale and a contact name and phone number of the bidder.**

THIS TIMBER SALE NOTICE does not constitute the decision document for purposes of appeal of a forest management decision. Consistent with 43 CFR Subpart 5003.2(b), the date the BLM posts the forest management decision on the BLM's ePlanning website establishes the effective date of the decision for purposes of an administrative appeal. The decision was posted to the BLM's ePlanning website on March 10, 2021, referring to the Upper Willamina Forest Management Project DOI-BLM-ORWA-N040-2021-0001-EA.

AN ENVIRONMENTAL ASSESSMENT was prepared for The Sentinel Timber Sale, and a Finding of No Significant Impact has been documented. These documents are available for inspection as background at the Tillamook Field Office.

THE VOLUMES LISTED herein are estimates only. The sale volumes listed are based on 16-foot taper breaks which must be taken into consideration if comparisons are made with volume predictions based on other standards. The volumes based on 32-foot taper breaks are shown for comparison purposes. No sale shall be made for less than the advertised appraised price. The Purchaser shall be liable for the total purchase price, without regard to the amount bid per unit, even though the quantity of timber actually cut or removed or designated for taking is more or less than the estimated volume or quantity so listed.

THIS TIMBER SALE has been cruised based upon Eastside Scribner board foot measure. The minimum bid figures shown by species are dollars per thousand board feet (MBF). The minimum bid increment will be \$0.10 per MBF.

A PERFORMANCE BOND in an amount not less than 20 percent of the total purchase price will be required for all contracts of \$2,500 or more. A minimum performance bond of not less than \$500 will be required for all installment contracts less than \$2,500.

PRE-AWARD QUALIFICATIONS. The high bidder may be required to furnish information to determine the ability to perform the obligations of the contract. If the high bidder is determined not qualified, responsible or refuses to respond within fifteen (15) days of a request for information pertaining to qualifications, the contract may be offered and awarded for the amount of the high bid to the highest of the bidders who is qualified, responsible, and willing to accept the contract.

LOG EXPORT AND SUBSTITUTION: All timber sales, including timber from Federal rights-of-ways, shall be subject to the restrictions relating to the export and substitution of unprocessed timber from the United States in accordance with P.L. 94-165 and 43 CFR 5400 and 5420, as amended.

LOG EXPORT AND SUBSTITUTION RESTRICTIONS: Excepting Port-Orford-cedar, all timber offered for sale hereunder is restricted from export from the United States in the form of unprocessed timber and is prohibited from being used as a substitute for exported private timber. The BLM has revised the log export restrictions special provision to reduce the log branding and painting requirements. The new requirements include branding of one end of all logs with a scaling diameter of over 10 inches. All loads of 11 logs or more, regardless of the diameter of the logs, will have a minimum of 10 logs branded on one end. All logs will be branded on loads of 10 logs or less. One end of all branded logs will be marked with yellow paint. At the discretion of the Contracting Officer, the Purchaser may be required to brand and paint all logs. The Purchaser shall bear any increased costs for log branding and painting.

CONTRACT TERMINATION: A revised Special Provision has been added to the contract which enables the Contracting Officer to suspend the contract to facilitate protection of certain plant or animal species, and/or to modify or terminate the contract when necessary to: (1) Comply with the Endangered Species Act or to prevent incidental take of northern spotted owls in accordance with management direction in the Record of Decision (ROD) and Resource Management Plan (RMP), or; (2) Comply with a court order, or; (3) Protect species which were identified for protection through survey and manage and/or protection buffer standards and guidelines or management direction established in the ROD and RMP.

ADDITIONAL INFORMATION concerning this timber sale tract is available at the above District Office. A copy of the timber sale contract is also available for inspection at the District Office. The prospectus for this/these sale(s) is also available online at: <https://www.blm.gov/programs/natural-resources/forests-and-woodlands/timber-sales>. The prospectus includes maps and tables that cannot be made Section 508 compliant. For help with its data or information, please contact the Tillamook Field Office at 503-815-1103.

TIMBER SALE NOTICE

NORTHWEST OREGON DISTRICT
TILLAMOOK FIELD OFFICE
COLUMBIA MASTER UNIT

Sale Date: May 26, 2021

CONTRACT NO.: ORN04-TS-2021.0401, The Sentinel Timber Sale, Lump Sum
YAMHILL COUNTY, OREGON: O&C: **Sealed Bid**
BID DEPOSIT REQUIRED: **\$196,300.00**

All timber designated for cutting on: SW¹/₄, NW¹/₄SE¹/₄, **Sec. 31**; T. 2 S., R. 5 W.; SE¹/₄SW¹/₄, SW¹/₄SE¹/₄, **Sec. 16**; NE¹/₄SE¹/₄, **Sec. 20**; Lot 2, Lot 10, Lot 11, Lots 13 thru 24, **Sec. 21**; T. 2 S., R. 6 W., WM., Oregon.

THIS TIMBER SALE HAS BEEN CRUISED BASED UPON EASTSIDE SCRIBNER MEASURE.

Minimum bid figures shown by species are dollars per thousand board feet (MBF). The minimum bid increment will be \$0.10 per MBF.

Approx. No. Merchantable Trees	Est. Vol. MBF 32' Log	Species	Est. Vol. MBF 16' Log	Appraised Price Per MBF	Estimated Volume Times Appraised Price
21,436	6,243.0	Douglas-fir	7,795.0	\$245.80	\$1,916,011.00
604	220.0	grand fir	272.0	\$92.00	\$25,024.00
2,295	196.0	red alder	270.0	\$32.70	\$8,829.00
996	36.0	bigleaf maple	55.0	\$21.30	\$1,171.50
82	18.0	western redcedar	26.0	\$443.70	\$11,536.20
25,413	6,713.0	Totals	8,418.0		\$1,962,571.70

LOG EXPORT AND SUBSTITUTION RESTRICTIONS: All timber offered for sale hereunder is restricted from export from the United States in the form of unprocessed timber and also prohibited from substitution of exported private timber.

CRUISE INFORMATION: The timber volumes for the harvest units were based on a variable plot cruise for estimating the board foot volume of trees. Plots were measured using a 40 basal area factor (BAF) for unit 2, and a 20 (BAF) in all other harvest units. None of the total sale volume is salvage material. For merchantable Douglas-fir trees the average DBHOB is 17.5 inches; the average gross merchantable log contains 80 bf (board feet); the total gross volume is approximately 8,060 MBF; and 97% recovery is expected.

CUTTING AREA: Five (5) units totaling approximately two hundred ninety-five (295) acres, of which forty-five (45) acres shall be regeneration harvest and two hundred fifty (250) acres shall be partial cut harvest. In addition, approximately eight (8) acres of right-of-way shall be cut. Acres shown on Exhibit A have been computed using S1 mobile mapper and Trimble R1 GNSS receiver. Acreage was calculated based on Global Positioning System traverse procedures including differential correction.

DURATION OF CONTRACT: Contract length will be 36 months for cutting and removal of timber.

OPTIONAL CONTRIBUTION (Sec. 42.mm.): The Purchaser will have the option of performing Coarse Woody Debris or contributing forty-three thousand one hundred thirty-one and 05/100 dollars (\$43,131.05) in lieu thereof. The option must be declared *prior* to contract execution.

LOCATION: The contract area is located approximately eight (8) air miles west of Yamhill, Oregon. Starting on Oregon Route 47, in Yamhill, head west on NW Moores Valley Road for 1.4 miles. Continue straight onto NW Oak Ridge Road and continue for 3.6 miles. Turn left onto NW Fairdale Road and continue for 4 miles. Turn left onto NW Flying M Road and continue for .2 miles. Turn left onto Lower Kutch Road and continue for approximately 1 mile where you will encounter Unit 5 of the Timber Sale. Consult a project location map.

ACCESS AND ROAD MAINTENANCE:

Access is provided Yamhill County, Weyerhaeuser Company, System Global Timberlands LLC, the Oregon Department of Forestry (ODF), and the Bureau of Land Management (BLM) controlled roads. All BLM controlled roads used in conjunction with this sale will be maintained by the Purchaser. Purchaser will be required to pay a rockwear obligation of ten thousand nine hundred seventy-six and 24/100 dollars (\$10,976.24) to the Government and spread **705 CY** crushed rock on BLM roads for maintenance.

In the use of Weyerhaeuser Company controlled roads, under Right-of-Way Agreement No. S-805 (OR044601) and as shown on Exhibit E, the Purchaser will be required to enter into a license agreement which requires: (a) Purchaser maintenance of all Weyerhaeuser controlled roads, except the 2-5-29.0 (Seg. A1-F5, H-I4, K1-M2), (b) Purchaser pay a road use obligation fee of twenty seven thousand eight and 00/100 dollars (\$27,008.00), (c) Purchaser pay a rockwear fee of forty one thousand one hundred eighty seven and 92/100 dollars (\$41,187.92), (d) Purchaser pay a maintenance fee of fifty three thousand eight hundred thirty seven and 72/100 dollars (\$53,837.72), (e) Purchaser provide proof of insurance with limit of \$1,000,000/\$1,000,000/\$1,000,000 and a performance bond of \$10,000. Prior to the use of said roads, the Purchaser shall furnish the Authorized Officer a copy of the executed license agreement.

In the use of System Global Timberlands LLC owned roads, under Right-of-Way Agreement No. S-682I (OR068011) and as shown on Exhibit E, the Purchaser will *not* be required to pay any fees for the use of the road and shall *not* be required to enter into a license agreement with System Global Timberlands LLC. Purchaser maintenance shall be required for all System Global Timberlands LLC owned roads used in conjunction with this timber sale.

In the use of the Oregon Department of Forestry controlled roads, under Cooperative Right-of-Way Agreement (OR056542) and as shown on Exhibit E, the Purchaser will *not* be required to pay any fees for the use of the road and shall *not* be required to enter into a license agreement with ODF. Purchaser maintenance shall be required for all ODF controlled roads used in conjunction with this timber sale.

In the use of the Barney Reservoir Joint Ownership Commission (BRJOC) controlled roads, as shown on Exhibit E, the Purchaser will be required to enter into a separate agreement with the BRJOC for the use of BRJOC controlled roads and drafting of water. Purchaser maintenance shall be required for all BRJOC controlled roads used in conjunction with this timber sale.

Road usage obligations and rockwear fees have been calculated using timber volumes based on the actual BLM timber sale cruise volume. Additional fees for road use obligation, maintenance, and rockwear will be calculated at the agreed upon rates (in the license agreement) for additional timber volume for non-BLM controlled roads. Additional fees for rockwear will be calculated at the current rate for additional timber volume for BLM controlled roads and be charged to the Purchaser. Purchaser maintenance shall include frequent blading and shaping or road surface; ditch, culvert, and catch basin cleaning; removal of minor slides and other debris. Roads shall be left in a condition to withstand adverse weather at the end of the seasonal operations.

Purchaser shall also spread **285 CY** crushed rock on non-BLM roads as needed and instructed by the Authorized Officer.

ROAD CONSTRUCTION AND RENOVATION: The Purchaser will be required to do all work set forth below. The Purchaser shall supply all material unless otherwise indicated.

1. New Road Construction:

- Road 2-6-21.3 East (Sta. 0+00 - +322): 322 feet, 14-foot ditched/crowned subgrade, Natural surfacing, Clearing and Grubbing, Spread/Place Spot Rock as marked.
- Road 2-6-21.3 West (Sta. 0+00 – 6+07): 607 feet, 14-foot ditched/crowned subgrade, Rocked surfacing, Clearing and Grubbing, Construct turnaround and lead off ditch as marked, Spread a 9” lift of 6” Jaw Run Rock (Sta. 0+00 – 6+07), Spread a 4” lift of 1 ½”-0” Rock (Sta. 0+00 – 6+07), Spread/Place Spot & Bedding Rock as marked, Install 1 Poly Pipe, Install 1 Metal “T” Post as marked.
- Road 2-6-21.4 (Sta. 0+00 – 7+50): 750 feet, 14-foot outsloped subgrade, Natural surfacing, Clearing and Grubbing, Construct turnaround, turnout, and waste area as marked.
- Road 2-6-21.4 (Sta. 7+50 – 17+60): 1,010 feet, 14-foot ditched/crowned subgrade, Natural surfacing, Clearing and Grubbing, Construct turnaround/roadside landing, ditchout, turnout, and landing as marked, Spread/Place Spot & Bedding Rock as marked, Install 1 Poly Pipe, Install 1 Metal “T” Post as marked.
- Road 2-6-21.5: 587 feet, 14-foot outsloped subgrade, Natural surfacing, Clearing and Grubbing, Construct turnaround and landing as marked.
- Road 2-6-21.6: 1,720 feet, 14-foot ditched/crowned subgrade, Rocked surfacing, Clearing and Grubbing, Construct turnout, turnarounds, waste areas, curve widening, and landing as marked, Spread a 9” lift of 6” Jaw Run Rock (Sta. 0+00 – 17+20), Spread a 4” lift of 1 ½”-0” Rock (0+00 – 17+20), Spread/Place Spot & Bedding Rock as marked, Place Rip-Rap for fill armor as marked, Install 7 Poly Pipes, Install 6 Metal “T” Posts as marked.
- Road 2-6-21.7 (Sta. 0+00 – 17+35): 1,735 feet, 14-foot ditched/crowned subgrade, Natural surfacing, Clearing and Grubbing, Construct ditchouts, turnarounds, waste area, and landing as marked, Spread Spot Rock as marked.
- Road 2-6-21.7 (Sta. 17+35 – 21+00): 365 feet, 14-foot outsloped subgrade, Natural surfacing, Clearing and Grubbing.
- Road 2-6-21.8: 436 feet, 14-foot outsloped subgrade, Rocked surfacing, Clearing and Grubbing, Construct landing as marked, Spread a 9” lift of 6” Jaw Run Rock (0+00 – 4+36), Spread a 4” lift of 1 ½”-0” Rock (0+00 – 4+36), Spread Spot Rock as marked.
- Road 2-6-21.9: 2,995 feet, 14-foot ditched/crowned subgrade, Rocked surfacing, Clearing and Grubbing, Construct turnaround, turnouts, waste area, ditchouts, lead-off ditches, and landing as marked, Spread a 9” lift of 6” Jaw Run Rock (0+00 – 29+95), Spread a 4” lift of 1 ½”-0” Rock (0+00 – 29+95), Spread/Place Spot & Bedding Rock as marked, Install 8 Poly Pipes and Install 5 Poly Downspout Pipes, Install 8 Metal “T” Posts as marked.
- Road 2-6-21.10: 1,440 feet, 14-foot ditched/crowned subgrade, Natural surfacing, Clearing and Grubbing, Construct ditchouts, turnaround, waste area, and landing as marked, Spread/Place Spot & Bedding Rock as Marked, Place Rip-Rap for fill armor as marked, Install 2 Poly Pipes, Install 2 Metal “T” Posts as marked.
- Road 2-6-21.11: 545 feet, 14-foot ditched/crowned subgrade, Natural surfacing, Clearing and Grubbing, Construct ditchout, turnaround, and landing as marked, Spread/Place Spot & Bedding Rock as Marked, Install 2 Poly Pipes, Install 2 Metal “T” Posts as marked.
- Road 2-6-22.0: 1,624 feet, 14-foot ditched/crowned subgrade, Rocked surfacing, Clearing and Grubbing, Construct ditchouts, turnaround, and landing as marked, Spread a 9” lift of 6” Jaw Run Rock (0+00 – 16+24), Spread a 4” lift of 1 ½”-0” Rock (0+00 – 16+24), Spread/Place Spot & Bedding Rock as marked, Place Rip-Rap for fill armor as marked, Install 3 Poly Pipes and Install 1 Poly Downspout Pipe, Install 3 Metal “T” Posts as marked.

2. Renovation:

- Road 2-5-29.0 (Toll Road): 11.191 miles, 16-foot ditched/crowned subgrade, Rocked surfacing, Clean Culverts, Brushing with some Clearing and Grubbing, Spread/Place Spot & Bedding Rock as marked, Place Rip-Rap for fill armor as marked, Install 1 Poly Pipe and Replace 1 Metal Pipe, and Install 2 Metal "T" Posts as marked.
- Road 2-5-31.2: 2.009 miles, 14-foot ditched/crowned subgrade, Rocked surfacing, Blading and Compacting Surface, Clean Culverts, Brushing with some Clearing and Grubbing, Ditchline Re-establishment by bunching and hauling, Construct turnouts, turnarounds, ditchouts, waste areas, and a landing as marked, Spread/Place Spot & Bedding Rock as marked, Place Rip-Rap for fill armor and energy dissipater as marked, Install 2 Poly Pipes, Replace 15 Poly Pipes and Replace 2 Metal Pipes, Install 22 Metal "T" Posts, and Install 9 Sediment Catch Basins with Straw Bales as marked.
- Road 2-5-31.3: 162 feet, 14-foot outsloped subgrade, Natural surfacing, Blading and Compacting Surface, Brushing with some Clearing and Grubbing, Construct landing as marked, Spread Spot Rock as marked.
- Road 2-5-31.4: 568 feet, 14-foot ditched/crowned subgrade, Natural surfacing, Blading and Compacting Surface, Brushing with some Clearing and Grubbing, Ditchline Re-establishment by bunching and hauling, Construct turnaround/roadside landing and ditchout as marked, Spread/Place Spot & Bedding Rock as marked, Replace 2 Poly Pipes, Install 2 Metal "T" Posts as marked.
- Road 2-5-31.5: 911 feet, 14-foot ditched/crowned subgrade, Natural surfacing, Blading and Compacting Surface, Brushing with some Clearing and Grubbing, Ditchline Re-establishment by bunching and hauling, Construct turnout, turnaround, and landing as marked, Spread/Place Spot & Bedding Rock as marked, Place Rip-Rap for fill armor as marked, Install 2 Poly Pipes, Install 2 Metal "T" Posts as marked, and Install 1 Sediment Catch Basin with Straw Bale as marked.
- Road 2-5-31.6: 138 feet, 14-foot outsloped subgrade, Natural surfacing, Blading and Compacting Surface, Brushing with some Clearing and Grubbing, Construct landing as marked, Spread Spot Rock as marked.
- Road 2-6-15.0 (Whiteface Road): 1.749 miles, 14-foot ditched/crowned subgrade, Rocked surfacing, Blading and Compacting Surface, Clean Culverts, Brushing with some Clearing and Grubbing, Ditchline Re-establishment by bunching and hauling, Construct turnouts, turnaround, and roadside landing as marked, Spread/Place Spot, Bedding, and Pitrun Rock as marked, Place Rip-Rap for fill armor and energy dissipater as marked, Replace 6 Poly Pipes, Install 30 Metal "T" Posts, and Install 10 Sediment Catch Basins with Straw Bales as marked.
- Road 2-6-15.9: 0.211 miles, 14-foot ditched/crowned subgrade, Rocked surfacing, Blading and Compacting Surface, Clean Culverts, Brushing with some Clearing and Grubbing, Ditchline Re-establishment by bunching and hauling, Construct turnout as marked, Spread a 2" lift of 1 ½" -0" Rock (MP 0.000 – 0.211), Spread Spot Rock as marked, and Install 2 Metal "T" Posts as marked.
- Road 2-6-20.4: 0.277 miles, 14-foot ditched/crowned subgrade, Rocked surfacing, Blading and Compacting Surfacing, Clean Culverts, Brushing with some Clearing and Grubbing, Ditchline Re-establishment by bunching and hauling, Spread a 2" lift of 1 ½"-0" Rock (MP 0.000 – 0.277). Spread Spot & Pitrun Rock as marked, Install 3 Metal "T" Posts as marked, and Install 2 Sediment Catch Basins with Straw Bales as marked.
- Road 2-6-20.5: 0.081 miles, 14-foot ditched/crowned subgrade, Rocked surfacing, Blading and Compacting Surface, Clean Culverts, Brushing with some Clearing and Grubbing, Ditchline Re-establishment by bunching and hauling, Construct turnout as marked, Spread a 9" lift of 6" Jaw Run Rock (MP 0.000 – 0.081). Spread a 4" lift of 1 ½"-0" Rock (MP 0.000 – 0.081), Spread/Place Spot & Bedding Rock as marked, Replace 1 Poly Pipe, and Install 1 Metal "T" Post as marked.
- Road 2-6-21.0: 0.225 miles, 14-foot ditched/crowned subgrade, Rocked surfacing, Blading and Compacting Surface, Clean Culverts, Brushing with some Clearing and Grubbing, Ditchline Re-establishment by bunching and hauling, Construct turnout/roadside landing and ditchout as

marked, Spread/Place Spot & Bedding Rock as marked, Replace 2 Poly Pipes, and Install 3 Metal “T” Posts as marked.

Road 2-6-21.1: 2,894 feet, 14-foot ditched/crowned subgrade, Rocked surfacing, Blading and Compacting Surface, Clearing and Grubbing, Construct turnout, turnarounds, and ditchouts as marked, Spread a 9” lift of 6” Jaw Run Rock (Sta. 0+00 – 28+94). Spread a 4” lift of 1 ½”-0” Rock (Sta. 0+00 – 28+94). Spread/Place Spot & Bedding Rock as marked, Place RipRap for fill armor, stabilization wall, and energy dissipater as marked, Install 1 French-Drain with 1 ½”-3/4” Drain Rock with 375 SY of non-woven geosynthetic fabric as marked, Install 8 Poly Pipes and Install 2 Poly Downspout Pipes, Install 9 Metal “T” Posts as marked, and Install 2 Sediment Catch Basins with Straw Bales as marked.

Road 2-6-21.2: 0.304 miles, 14-foot ditched/crowned subgrade, Rocked surfacing, Blading and Compacting Surface, Clean Culverts, Brushing with some Clearing and Grubbing, Ditchline Re-establishment by bunching and hauling, Construct lead-off ditch, turnaround, turnout, and roadside landing as marked, Spread Spot Rock as marked, Re-attach 1 Poly Downspout Pipe, Install 3 Metal “T” Posts as marked, and Install 1 Sediment Catch Basin with Straw Bale as marked.

Road 2-6-21.3 East (3+22 – 5+13): 191 feet, 14-foot outsloped subgrade, Natural surfacing, Blading and Compacting Surface, Clearing and Grubbing, Spread/Place Spot & Bedding Rock as marked, Place Rip-Rap as fill armor as marked, Install 1 Metal Pipe, and Install 1 Metal “T” Post as marked.

Road 2-6-21.3 East (5+13 – 20+50): 1,537 feet, 14-foot ditched/crowned subgrade, Natural surfacing, Blading and Compacting Surface, Clearing and Grubbing, Ditchline Re-establishment by bunching and hauling, Construct ditchouts, waste areas, lead-off ditch, and turnarounds as marked, Spread/Place Spot & Bedding Rock as marked, Place Rip-Rap as fill armor as marked, Install 5 Poly Pipes, Install 5 Metal “T” Posts as marked, and Install 1 Sediment Catch Basin with Straw Bale as marked.

Road 2-6-21.3 West (6+07 – 12+67): 660 feet, 14-foot ditched/crowned subgrade, Rocked surfacing, Blading and Compacting Surface, Clearing and Grubbing, Ditchline Re-establishment by bunching and hauling, Construct ditchouts as marked, Spread a 9” lift of 6” Jaw Run Rock (Sta. 6+07 – 12+67), Spread a 4” lift of 1 ½”-0” Rock (Sta. 6+07 – 12+67), Place Bedding Rock as marked, Install 1 Poly Pipe, and Install 1 Metal “T” Post as marked.

Road 2-6-19.0: 0.491 miles, 14-foot ditched/crowned subgrade, Rocked surfacing, Blading and Compacting Surface, Ditchline Re-establishment by bunching and hauling, and Spread Spot Rock as needed.

Road 2-6-9.1: 1.608 miles, 14-foot ditched/crowned subgrade, Rocked surfacing, Spread/Place Spot & Bedding Rock as marked, Place Rip-Rap as fill armor as marked, Replace 1 Metal Pipe, and Install 1 Metal “T” Post as marked.

3. Improvement:

Road 2-6-21.3 West (Sta. 12+67 – 15+09): 242 feet, 14-foot ditched/crowned subgrade, Rocked surfacing, Blading and Compacting Surface, Clearing and Grubbing, Ditchline Establishment by bunching and hauling, Construct ditchout, waste area, turnaround, and curve widening as marked, Spread a 9” lift of 6” Jaw Run Rock (Sta. 12+67 – 15+09), Spread a 4” lift of 1 ½”-0” Rock (Sta. 12+67 – 15+09), and Spread Spot Rock as marked.

4. Estimated Quantities:

a. Clearing, Grubbing, and Brushing:

25.4 acres of Clearing and Grubbing

16.70 miles of Brushing

b. Culverts:

2,014 feet of 18 inch Corrugated Plastic Pipe (CPP) – Type S (55 Pipes)

80 feet of 18 inch Corrugated Plastic Pipe (CPP) – Type C (8 Pipes)
 515 feet of 24 inch Corrugated Plastic Pipe (CPP) – Type S (12 Pipes)
 35 feet of 24 inch Perforated Aluminized Steel Pipe (CMP) – (1 Pipe)
 101 feet of 30 inch 14 gauge Aluminized Steel Pipe (CMP) – (2 Pipes)
 60 feet of 36 inch 14 gauge Aluminized Steel Pipe (CMP) – (1 Pipe)
 115 feet of 42 inch 14 gauge Aluminized Steel Pipe (CMP) – (2 Pipes)
 56 feet of 48 inch 14 gauge Aluminized Steel Pipe (CMP) – (1 Pipe)

c. Aggregate & Asphalt Material:

<u>Quantity</u>	<u>Description</u>
5,223 cubic yards	1 ½” minus crushed rock – Construction Rock
8,642 cubic yards	6” jaw run crushed rock – Construction Rock
1,335 cubic yards	1 ½” minus crushed rock – Culvert Bedding Material
280 cubic yards	1 ½” – ¾” crushed rock – Drain Rock
65 cubic yards	Pitrun rock – Construction Rock
705 cubic yards	1 ½” minus crushed rock – BLM Maintenance Rock
285 cubic yards	1 ½” minus crushed rock – Non-BLM Maintenance Rock
1,190 cubic yards	Rip-Rap – Class 5

Rock Source: All 1 ½”-0”, 6” Jaw Run, and Pitrun Rock – Weyerhaeuser Section 30 Pit
 All Drain Rock and Riprap (Class 5) – Commercial Source

Other:

Compaction of all final grades will be required.

Right of way debris will be disposed of by scattering adjacent to all roads, outside of clearing limits.

All roads shall be decommissioned as follows:

The Purchaser shall decommission 2-6-21.4, 2-6-21.3 East (Sta. 16+86 – 20+50) by subsoiling, installing non-drivable waterbars, scattering slash, removing culverts, and blocking. The Purchaser shall decommission 2-6-21.3 East (Sta. 0+00 – 16+86) by installing non-drivable waterbars, removing culverts, and blocking. The Purchaser shall decommission 2-5-31.4, 2-5-31.5, 2-5-31.6, 2-6-21.7, 2-6-21.10, and 2-6-21.11 by installing non-drivable waterbars and blocking. The Purchaser shall stabilize 2-6-21.8, by installing drivable waterbars.

Grass seeding will be required on all newly disturbed areas. Grass seed will be furnished by the Government.

Straw mulch will be required on all disturbed/seeded soils that are wet and/or within 50 feet each side of “Live stream” locations and all disposal sites. Grass straw will be furnished by the Government.

All waste from re-establishing ditchlines on rock surfaced roads shall be bunched and end-hauled to designated waste area.

All slide removal material shall be end-hauled to designated waste areas.

All culverts removed upon road decommissioning shall be salvaged and delivered to the BLM Maintenance Facility at the SW ¼ of Section 5, T. 3 S., R. 6 W., W.M.

Purchaser shall enter into a separate rock lease agreement with Weyerhaeuser Company to develop, manufacture, and stockpile rock at their Section 30 Pit. Controlled blasting techniques shall be employed during production blasting to reduce the compounding of percussion waves. (The quarry shall be shot in multiple shot with no more than 5,000 CY per blast with a 8-millisecond time delay between shots)

TIMBER SALE CONTRACT SPECIAL PROVISIONS

Sec. 41. Timber and Area Reservation ProvisionsRESERVED

- a. All timber in the reserve and clump areas shown on Exhibit A, and all trees that are painted orange and posted, which mark the boundaries of the timber sale units.
- b. All trees marked with orange paint above and below stump height within the boundaries of the timber sale units shown on Exhibit A.
- c. All conifer trees less than seven (7) inches diameter at breast height (dbh), all Pacific madrone, all Pacific dogwood, all Oregon ash, and all Oregon white oak in the Sale Areas shown on Exhibit A which do not present a safety hazard as determined by the Authorized Officer. If any are felled, they shall be retained on site.
- d. Existing down logs and snags in the Sale Areas shown on Exhibit A, which do not present a safety hazard as determined by the Authorized Officer. All snags felled shall be retained on site.
- e. Trees felled within road rights-of-way, which are marked with yellow paint above and below stump height shall remain on site and be placed outside of the road prism.

Sec. 42. Special ProvisionsLOGGING

- a. Before beginning operations on the Contract Area for the first time or after a shutdown of seven (7) or more days, the Purchaser shall notify the Authorized Officer in writing of the date they plan to begin operations. This written notification must be received by the Authorized Officer no less than seven (7) days prior to the date the Purchaser plans to begin or resume operations. The Purchaser shall also notify the Authorized Officer in writing if they intend to cease operations for any period of seven (7) or more days.
- b. Prior to the commencement of operations, the Purchaser shall obtain from the Authorized Officer approval of a written operations and logging plan commensurate with the terms and conditions of the contract which shall include measures needed to assure protection of the environment and watershed. A pre-work conference between the Purchaser's authorized representative and the Authorized Officer must be held before the logging plan will be approved. All logging shall be done in accordance with the approved logging plan. The Purchaser shall provide a minimum of seven (7) days notice when requesting the scheduling of a pre-work conference.
- c. Excessive damage to reserve timber, as determined by the Authorized Officer, will result in suspension of yarding and felling operations until corrective measures to prevent further damages have been approved by the Authorized Officer.

d. No falling, yarding, or loading is permitted in or through the reserve areas, shown on Exhibit A, unless otherwise approved by the Authorized Officer.

e. Prior to attaching any logging equipment to a reserve tree, the Purchaser shall obtain approval from the Authorized Officer, and shall take precautions to protect the tree from damage as directed by the Authorized Officer.

f. At all landings, all non-merchantable logs more than eight (8) inches in diameter at the large end and exceeding eight (8) feet in length shall be scattered, or decked at a location designated by the Authorized Officer.

g. In skyline harvest areas all yarding shall be done with a skyline or similar cable system equipped with a carriage capable of yarding two thousand four hundred (2,400) feet slope distance from the landing and at least seventy-five (75) feet laterally from the skyline to the designated sky road. The carriage shall be capable of being held in position on the skyline during all lateral yarding and shall be able to pass intermediate support jacks as required. The leading end of all logs shall be transported free of the ground during yarding. Full suspension is required within fifty (50) feet of streams. The rigging of tail or lift trees, intermediate supports and use of tail holds outside the Sale Areas shall be required where necessary to meet this requirement. Space designated skyline corridors at a minimum of one hundred fifty (150) feet apart unless otherwise agreed to in writing by the Authorized Officer.

h. Ground-based operations are limited to slopes of thirty-five (35) percent or less. The Authorized Officer may approve the use of specialized, ground-based, mechanized equipment (machines specifically designed to operate on slopes greater than 35%) on slopes of 50% or less, except within two hundred ten (210) feet of streams. All skidding shall be done by equipment operated entirely on skid trails that have been approved by the Authorized Officer and use existing skid trails where available. The area composed of skid trails shall not exceed fifteen (15) percent of the total yarding area within a unit. Excavation on designated skid trails shall be limited to a maximum cut of one (1) foot unless otherwise approved by the Authorized Officer. The Purchaser shall directionally fall trees into the lead with the skidding direction and winch or carry the logs to the skid trails. Temporary logging roads, skid trails, and harvester/forwarder trails would be water barred and blocked as directed by the Authorized Officer, after each operating season before the fall wet season begins.

i. Before cutting and removing any trees necessary to facilitate logging in the Sale Areas shown on Exhibit A, the Purchaser shall identify the location of skid trails, cable yarding roads, and tail hold, tieback, guy line, lift, intermediate support, and danger trees on the ground in a manner approved by the Authorized Officer at the pre-work conference, and documented in the Logging Plan. Said Purchaser identification of trees to be cut and removed does not constitute authority to proceed with cutting and removal. In addition, before proceeding the following conditions must be met:

1. All skid roads and/or cable yarding roads upon which timber is identified by the Purchaser to be cut and removed in accordance with this special provision must be necessary for the safe and expeditious removal of timber sold under this contact and shall be limited to the minimum width necessary for yarding of logs with a minimum of damage to reserve trees, however, unless otherwise approved in writing by the Contracting Officer, the width of each skid road and/or cable yarding road shall be limited to twelve (12) feet.

2. The Purchaser may immediately cut and remove additional timber to clear skid trails and cable yarding roads; and provide tail hold, tieback, guy line, lift and intermediate support trees when the trees have been marked with blue or green paint above and below stump height by the Authorized Officer and thereby approved for cutting and removal by the Authorized Officer. When trees are marked with yellow paint above and below stump height they may be cut, but must remain on site. The volume of the timber to be sold will be determined by the Authorized Officer in accordance with Bureau of Land Management prescribed procedures. No timber may be cut or removed under terms of this provision unless sufficient installment payments have been made in accordance with Sec. 3.(b). of the contract or sufficient bonding has been provided in accordance with Sec. 3.(d). of the contract.

3. The Purchaser agrees that sale of this additional timber shall be accomplished by a unilateral modification of the contract executed by the Contracting Officer and that such timber shall be sold at the unit prices shown in Exhibit B of this contract unless: the value of the timber must be reappraised subject to the terms for contract extension set forth in Sec. 9. of the contract; or, the Authorized Officer determines that the tree species are not listed in Exhibit B of this contract and otherwise reserved in Sec. 41. of the contract or any tree that exceeds forty (40) inches dbh shall be appraised and sold by bilateral modification of the contract at current fair market value in accordance with Sec. 8. of the contract.

4. This authorization for the Purchaser to cut and remove additional timber prior to the execution of a modification may be withdrawn by the Contracting Officer if the Authorized Officer determines that the Purchaser has cut and removed any tree not previously marked and approved for cutting by the Authorized Officer, which under Sec. 10. of the contract constitutes a violation of the contract and under Sec. 13. of the contract may constitute a trespass rendering the Purchaser liable for damages under applicable law.

5. If authorization is withdrawn, the Contracting Officer shall issue a written notice to the Purchaser that the sale of additional timber under this special provision is no longer approved. In this case, the Purchaser shall inform the Authorized Officer at least one (1) working day prior to the need for cutting and removing any additional timber, and execute a bilateral modification prior to cutting for such additional approved timber at the unit prices shown in Exhibit B of the contract or in accordance with Sec. 8. or Sec. 9. of the contract as determined by the Authorized Officer in accordance with this provision. The Contracting Officer may issue a written order to the Purchaser to suspend, delay, or interrupt any or all contract work for the period of time deemed necessary and appropriate for the Government to safely measure and mark additional timber.

SAFETY

j. Purchaser's operations shall facilitate BLM's safe and practical inspection of Purchaser's operations and BLM's conduct of other official duties on Contract Area. Purchaser has all responsibility for compliance with safety requirements for Purchaser's employees, contractors and subcontractors.

In the event that the Authorized Officer identifies a conflict between the requirements of this contract or agreed upon methods of proceeding hereunder and State or Federal safety requirements, the contract may be modified. If the cost of such contract modification is of a substantial nature (\$2,000.00 or more), the

Purchaser may request, in writing, an adjustment in the Total Purchase Price specified in Sec. 2. of the timber sale contract, as amended, to compensate for the changed conditions.

Unless otherwise specified in writing, when operations are in progress adjacent to or on roads and/or trails in the harvest unit area, Purchaser shall furnish, install, and maintain all temporary traffic controls that provide the road or trail user with adequate warning of and protection from hazardous or potentially hazardous conditions associated with its operations. Purchaser shall prepare a Traffic Control Plan, which the Purchaser has determined is compliant with state and local OSHA and Transportation standards no later than the pre-work meeting and prior to commencing operations. Traffic control devices shall be appropriate to current operating and/or weather conditions and shall be covered or removed when not needed. Flagmen and devices shall be as specified in state OSHA and Transportation standards for logging roads or the "Manual on Uniform Traffic Control Devices for Streets and Highways" (MUTCD) published by the U.S. Department of Transportation - Federal Highway Administration. Included in the Traffic Control Plan, Purchaser shall note traffic control device locations on a Purchaser-produced copy of the contract Exhibit A Map.

SEASONAL RESTRICTIONS

k. No mechanized falling or ground based equipment operation within harvest units shown on Exhibit A during the wet season (generally between October 16 of one calendar year and May 31 of the following calendar year) and during periods of wet soil conditions as determined by the Authorized Officer.

l. No log or rock hauling in dust abatement areas, as shown in Exhibit E, shall occur between 9:00 A.M. and 11:00 P.M., for an approximate 3 week period each calendar year as determined by the Authorized Officer. The 3 week restriction will generally occur between May 1 and June 30 of the same calendar year.

m. Purchaser shall apply dust abatement as directed by the Authorized Officer, as shown in Exhibit E and described in Exhibit D. Lignin sulfonate and water applications are approved for dust abatement. No more than two (2) applications of lignin sulfonate for dust abatement may be applied per year. When water dust abatement is applied, no more than two (2) applications per day will be required. Dust abatement will generally occur between May 1 of one calendar year and September 15 of the same calendar year as determined by the Authorized Officer.

n. No cable yarding, log hauling, or rock hauling on 2-5-31.2, 2-5-31.3, 2-5-31.4, 2-5-31.5, 2-5-31.6, 2-6-15.0, 2-6-21.0, 2-6-21.2, 2-6-21.3 East, 2-6-21.4, 2-6-21.5, 2-6-21.7, 2-6-21.10, and 2-6-21.11 roads in the Sale Areas shown on Exhibit A during the wet season (generally October 16 of one calendar year to May 31 of the following calendar year) and during periods of wet soil conditions as determined by Authorized Officer.

o. No road renovation, road construction, road improvement, or road decommissioning (except roadside brushing, which is permitted year round), shown on Exhibit C, shall be conducted during the wet season, generally between October 16 of one calendar year and May 31 of the following calendar year, or during periods of wet soil conditions during the dry season as determined by Authorized Officer.

p. No road maintenance, as shown on Exhibit E, and described in Exhibit D, shall be conducted during periods of wet soil conditions as determined by the Authorized Officer.

q. No work required in live streams shall be conducted between October 1 of one calendar year and July 14 of the following calendar year in the North Yamhill River watershed, both days inclusive, unless BLM receives a waiver from the Oregon Department of Fish and Wildlife, and is approved by the Authorized Officer.

r. Weyerhaeuser Section 30 Rock Pit (T2S., R6W., section 30): Blasting shall not begin until 2 hours after sunrise and shall conclude 2 hours before sunset from April 1 to September 15, both days inclusive, unless otherwise approved by the Authorized Officer.

ROAD CONSTRUCTION, RENOVATION, IMPROVEMENT, MAINTENANCE AND USE

s. The Purchaser shall construct natural surfaced roads: 2-6-21.3 East (Sta. 0+00 – 3+22), 2-6-21.4, 2-6-21.5, 2-6-21.7, 2-6-21.10, and 2-6-21.11. The Purchaser shall construct surfaced roads: 2-6-21.6, 2-6-21.8, 2-6-21.9, 2-6-21.3 West (Sta. 0+00 – 6+07), and 2-6-22.0. The Purchaser shall renovate natural surfaced roads: 2-5-31.3, 2-5-31.4, 2-5-31.5, 2-5-31.6, and 2-6-21.3 East (Sta. 3+22 – 20+50). The Purchaser shall renovate surfaced roads: 2-5-29.0, 2-5-31.2, 2-6-15.0, 2-6-15.9, 2-6-19.0, 2-6-20.4, 2-6-20.5, 2-6-21.0, 2-6-21.1, 2-6-21.2, 2-6-21.3 West (Sta. 6+07 – 12+67), and 2-6-9.1. The Purchaser shall improve surfaced roads: 2-6-21.3 West (Sta. 12+67 – 15+09). Construction, renovation, and improvement shall be done in strict accordance with the plans and specifications shown on Exhibit C, which is attached hereto and made a part hereof.

t. Any required construction, renovation, and improvement shall be completed and accepted prior to the removal of any timber, except right-of-way timber, over the road.

u. The Purchaser shall decommission 2-6-21.4, 2-6-21.5, and 2-6-21.3 East (Sta. 16+86 - 20+50), as shown on Exhibit C, by subsoiling, installing non-drivable waterbars, scattering slash, removing culverts, and blocking. The Purchaser shall decommission 2-6-21.3 East (Sta. 0+00 – 16+86), as shown on Exhibit C, by installing non-drivable waterbars, removing culverts, and blocking. The Purchaser shall decommission 2-5-31.4, 2-5-31.5, 2-5-31.6, 2-6-21.7, 2-6-21.10 and 2-6-21.11, as shown on Exhibit C, by installing non-drivable waterbars and blocking. The Purchaser shall stabilize roads 2-6-21.8, as shown on Exhibit C, by installing drivable water bars. Subsoiling shall consist of loosening the soil to a depth of eighteen (18) inches utilizing excavator attachments, log loader tongs, or other approved equipment acceptable to the Authorized Officer. No subsoiling shall be required where the road traverses rock outcroppings. All natural water courses shall be opened to prevent erosion of the road. Barriers shall be constructed and clearing debris shall be placed on and around the barriers so as to prevent further use of the road by vehicles as shown on Exhibit C. Decommissioning and stabilization shall be completed within thirty (30) days of completion of yarding and hauling operations on that road.

v. The Purchaser is authorized to use the roads listed below and shown on Exhibit E which are under the jurisdiction of the Bureau of Land Management for the removal of Government timber sold under the terms of this contract and/or the hauling of rock and water as required in Exhibit C, Exhibit D,

and Exhibit E provided the Purchaser complies with the condition set forth in Sections 42.w.

Road No. and Segment	Length Miles Used	Road Control	Road Surface Type	Maintenance Responsibility
2-5-29.0 (J10-J1, G)	1.534	BLM	Rocked	Purchaser
2-5-31.2	2.009	BLM	Rocked	Purchaser
2-5-31.3	0.031	BLM	Natural	Purchaser
2-5-31.4	0.108	BLM	Natural	Purchaser
2-5-31.5	0.173	BLM	Natural	Purchaser
2-5-31.6	0.026	BLM	Natural	Purchaser
2-6-15.0 (C1-C4)	1.324	BLM	Rocked	Purchaser
2-6-21.1	0.548	BLM	Rocked	Purchaser
2-6-21.2 (A)	0.304	BLM	Rocked	Purchaser
2-6-21.3 East	0.388	BLM	Natural	Purchaser
2-6-21.3 West	0.286	BLM	Rocked	Purchaser
2-6-21.4	0.333	BLM	Natural	Purchaser
2-6-21.5	0.111	BLM	Natural	Purchaser
2-6-21.6	0.326	BLM	Rocked	Purchaser
2-6-21.7	0.398	BLM	Natural	Purchaser
2-6-21.8	0.083	BLM	Rocked	Purchaser
2-6-21.9	0.567	BLM	Rocked	Purchaser
2-6-21.10	0.273	BLM	Natural	Purchaser
2-6-21.11	0.103	BLM	Natural	Purchaser
2-6-22.0	0.308	BLM	Rocked	Purchaser
2-6-9.1 (B1-B2)	0.080	BLM	Rocked	Purchaser

w. The Purchaser shall perform any road repair and maintenance work on roads used, under the terms of Exhibit D, “Road Maintenance Specifications” of this contract which is attached hereto and made a part hereof. Purchaser shall spread **705** cubic yards of crushed rock on BLM controlled roads as directed by Authorized Officer and as part of maintenance requirements. Purchaser shall also pay a rockwear fee of, ten thousand nine hundred seventy-six and 24/100 dollars (\$10,976.24) to the Government. Additional fees for rockwear will be calculated at the current rate for additional timber volume for BLM controlled roads and be charged to the Purchaser, and be paid prior to contract termination.

x. In the use of the roads listed below and shown on Exhibit E, the Purchaser shall comply with the conditions of Right-of-Way and Road Use Agreement S-805 (OR044601) between the United States of America and Weyerhaeuser Company. The Purchaser will be required to enter into a license agreement with Weyerhaeuser Company prior to commencement of operations. The Purchaser shall furnish to the Authorized Officer a copy of the required executed license agreement. The license agreement conditions include: 1) Purchaser pay a road use obligation fee to Weyerhaeuser Company of twenty seven thousand eight and 00/100 (\$27,008.00) dollars. Road use fees have been calculated using the actual BLM timber sale cruise volume. Additional fees for road use obligation will be calculated at the agreed rates (in the license agreement) for additional timber volume for non-BLM controlled roads. 2) Purchaser pay a rockwear fee to Weyerhaeuser Company of forty one thousand one hundred eighty seven and 92/100 (\$41,187.92) dollars. Rockwear fees have been calculated using the actual BLM timber

sale cruise volume. Additional fees for rockwear will be calculated at the agreed upon rates (in the license agreement) for additional timber volume for non-BLM controlled roads. 3) The Purchaser shall *not* perform maintenance on road 2-5-29.0 (Seg. A1-F5, H-I4, K1-M2). Purchaser shall pay a maintenance fee to Weyerhaeuser Company of fifty three thousand eight hundred thirty seven and 72/100 (\$53,837.72) dollars. Maintenance fees have been calculated using the actual BLM timber sale cruise volume. Additional fees for maintenance will be calculated at the agreed upon rates (in the license agreement) for additional timber volume for non-BLM controlled roads. 4) The Purchaser shall perform any road repair and maintenance work on road 2-6-15.0 (Seg. A1-B2), 2-6-15.9 (Seg. A1), 2-6-20.4 (Seg. A1), 2-6-20.5 (Seg. A1), 2-6-21.0 (Seg. A), 2-6-19.0 (Seg. A1-A3), 2-6-9.1 (Seg. A1-A7, C), 2-6-3.0 (A1-A3), 2-5-10.0 (Seg. O4-O16), and 1-6-36.0 (Seg. A1-A6), under the terms of Exhibit D, “Road Maintenance Specifications”, of this contract which is attached hereto and made a part hereof. 5) The Purchaser shall enter into a separate Rock Lease Agreement with Weyerhaeuser Company for the manufacturing and stockpiling of rock from the Section 30 Pit (located in the NE ¼ T. 2S., R. 6W., Section 30, WM) for a 60 day timeframe. 6) Default by the Purchaser of said Right-of-Way and Road Use Agreement or any license agreement executed pursuant thereto, shall be considered a violation of this contract. The amount of unpaid fees shall be considered as the amount of damage suffered by the Government as a result of the violation of this provision. The Purchaser will be required to carry liability insurance with the limits of \$1,000,000/\$1,000,000/\$1,000,000 and a performance bond of \$10,000.

Road No. and Segment	Length Miles Used	Road Control	Road Surface Type	Maintenance Responsibility
2-6-15.0 (A1-B2)	0.425	Weyerhaeuser	Rocked	Purchaser
2-6-15.9 (A1)	0.211	Weyerhaeuser	Rocked	Purchaser
2-6-20.4 (A1)	0.277	Weyerhaeuser	Rocked	Purchaser
2-6-20.5 (A1)	0.081	Weyerhaeuser	Rocked	Purchaser
2-6-21.0 (A)	0.225	BLM	Rocked	Purchaser
2-6-19.0 (A1-A3)	0.491	Weyerhaeuser	Rocked	Purchaser
2-6-9.1 (A1-A7, C)	1.528	Weyerhaeuser	Rocked	Purchaser
2-6-3.0 (A1-A3)	0.729	Weyerhaeuser	Rocked	Purchaser
2-5-10.0 (O4-O16)	2.943	Weyerhaeuser	Rocked	Purchaser
1-6-36.0 (A1-A6)	1.611	Weyerhaeuser	Rocked	Purchaser
2-5-29.0 (A1-F5, H-I4, K1-M2)	9.657	Weyerhaeuser	Rocked	Weyerhaeuser

y. In the use of the roads listed below and shown on Exhibit E, the Purchaser shall comply with the conditions of Right-of-Way and Road Use Agreement S-682I (OR068011) between the United States of America and System Global Timberlands LLC. The Purchaser shall *not* be required to pay any fees for the use of the road and shall not be required to enter into a license agreement with System Global Timberlands LLC. The Purchaser shall perform any road repair and maintenance work on road 2-5-31.3, under the terms of Exhibit D, “Road Maintenance Specifications”, of this contract which is attached hereto and made a part hereof.

Road No. and Segment	Length Miles Used	Road Control	Road Surface Type	Maintenance Responsibility
2-5-31.3	0.031	BLM	Natural	Purchaser

z. In the use of the roads listed below and shown on Exhibit E, the Purchaser shall comply with the conditions of the Cooperative Right-of-Way Agreement (OR056542), between the United States of America and the State of Oregon. The Purchaser shall *not* be required to pay any fees for the use of the road and shall not be required to enter into a license agreement with the Oregon Department of Forestry (ODF). The Purchaser shall perform any road repair and maintenance work on road 1-6-36.0 (Seg. B2), under the terms of Exhibit D, "Road Maintenance Specifications", of this contract which is attached hereto and made a part hereof.

Road No. and Segment	Length Miles Used	Road Control	Road Surface Type	Maintenance Responsibility
1-6-36.0 (B2)	0.177	ODF	Rocked	Purchaser

aa. In the use of the roads listed below and shown on Exhibit E, the Purchaser shall comply with the conditions set forth by the Barney Reservoir Joint Ownership Commission (BRJOC). The Purchaser shall enter into a separate agreement with the BRJOC for the use of BRJOC controlled roads and drafting of water. The Purchaser shall perform any road repair and maintenance work on road 1-6-36.0 (Seg. B1, B3), under the terms of Exhibit D, "Road Maintenance Specifications", of this contract which is attached hereto and made a part hereof.

Road No. and Segment	Length Miles Used	Road Control	Road Surface Type	Maintenance Responsibility
1-6-36.0 (B1,B3)	0.209	BRJOC	Rocked	Purchaser

bb. The Purchaser agrees that if they request to use any other private road, subject of a right-of-way agreement with the Government for the removal of Government timber sold under the terms of this contract, and is approved by the Authorized Officer, Purchaser shall request and agree to the modification of this contract to provide for such use and for allowances for amortization of the Government's shares of the capital investment of any such road.

cc. With the prior written approval of the Authorized Officer, the Purchaser may arrange for cooperative maintenance with other users of roads included in Exhibit E; provided, that such cooperative arrangement shall not relieve the Purchaser of his liability for the maintenance and repair of such roads resulting from wear or damage, in accordance with this contract. The Purchaser shall furnish the Authorized Officer a copy of any cooperative maintenance agreements entered into with other users of these roads.

dd. The Purchaser shall be required to secure written approval to use vehicles or haul forest products and equipment over Government owned or controlled roads when such vehicles or equipment exceed the maximum allowable weights or dimensions established by the State for vehicles operating without a permit or if vehicles meet allowable non-permitted State vehicle weights, but the haul route crosses a structure or segment of road that is posted for reduced weights. The Purchaser agrees to abide by any special requirements included in said written approval.

Details of such equipment shall be furnished to the Authorized Officer for evaluation of load characteristics at least fifteen (15) days prior to proposed move in.

Details shall include:

- A. Axle weights when fully loaded.
- B. Axle spacing.
- C. Transverse wheel spacing.
- D. Tire size.
- E. Outside width of vehicle.
- F. Operating speed.
- G. Frequency of use.
- H. Special features (e.g., running tracks, overhang loads, etc.).

ee. The Purchaser shall be responsible for repair of any damage to roads or structures caused by the use of overweight or over-dimension vehicles or equipment: (1) without written approval; (2) in violation of the conditions of a written approval; or, (3) in a negligent manner. The amount of actual damage shall be determined by the Authorized Officer following a technical inspection and evaluation.

ff. The Purchaser shall perform any road repair and maintenance work on roads used (and designated as Purchaser Maintenance), under the terms of Exhibit D, "Road Maintenance Specifications", of this contract which is attached hereto and made a part hereof. Purchaser shall spread **285** cubic yards of crushed rock on non-BLM roads used for this timber sale, as directed by the Authorized Officer as part of maintenance requirements.

ENVIRONMENTAL PROTECTION

gg. In order to prevent the spread of noxious weeds, the Purchaser shall pressure wash all road construction and ground-based logging equipment that will be used off of existing roads, as well as loaders and mechanically propelled brush cutters, prior to each entry onto the BLM Land shown on Exhibit A, as directed by the Authorized Officer. Cleaning shall be defined as removal of all dirt, grease, plant parts and material that may carry noxious weed seeds.

hh. The Purchaser shall immediately discontinue specified construction or harvesting operations upon written notice from the Contracting Officer that:

1. threatened or endangered plants or animals protected under the Endangered Species Act of 1973, as amended, may be affected by the operation, and a determination is made that consultation or reinitiation of consultation is required concerning the species prior to continuing operation, or;

2. when, in order to comply with the Endangered Species Act, or to prevent incidental take of northern spotted owls in accordance with management direction in the Record of Decision (ROD) and Resource Management Plan (RMP), or to protect occupied marbled murrelet sites in accordance with management direction of the ROD and RMP, the Contracting Officer determines it may be necessary to modify or terminate the contract, or;

3. federal proposed, federal candidate, Bureau sensitive or State listed species protected under BLM Manual 6840 - Special Status Species Management - have been identified, and a determination is made that continued operations would affect the species or its habitat, or;

4. when, in order to comply with a court order, which enjoins operations on the sale or otherwise requires the Bureau of Land Management to suspend operations, or;

5. when, in order to comply with a court order, the Contracting Officer determines it may be necessary to modify or terminate the contract, or;

6. species have been discovered which were identified for protection in accordance with management direction established in the ROD and RMP, and the Contracting Officer determines that continued operations would affect the species or its habitat, or;

7. when, in order to protect species which were identified for protection in accordance with management direction established in the ROD and RMP, the Contracting Officer determines it may be necessary to modify or terminate the contract.

Those operations necessary for a safe removal of personnel and equipment from the contract area and those directed by the Contracting Officer, which are required in order to leave the contract area in an acceptable condition will be permitted. Discontinued operations may be resumed upon receipt of written instructions and authorization by the Contracting Officer.

During any period of suspension, the Purchaser may withdraw performance and payment bond coverage aside from that deemed necessary by the Authorized Officer to secure cut and/or removed timber for which the Bureau of Land Management has not received payment, and/or unfulfilled contract requirements associated with harvest operations that have already occurred and associated post-harvest requirements.

In the event of a suspension period or a combination of suspension periods that exceed a total of 30 days, the First Installment held on deposit may be temporarily reduced upon the written request of the Purchaser. For the period of suspension extending beyond 30 days, the First Installment on deposit may be reduced to five (5) percent of the First Installment amount listed in Section 3.b. of the contract. Any First Installment amount temporarily reduced may be refunded or transferred to another BLM contract at the request of the Purchaser. However, if the Purchaser has outstanding debt owing the United States, the Contracting Officer must first apply the amount of First Installment that could be refunded to the debt owed in accordance with the Debt Collection Improvement Act, as amended (31 USC 3710, et seq.). Upon Purchaser's receipt of a bill for collection and written notice from the Contracting Officer lifting the suspension, the Purchaser shall restore the First Installment to the full amount shown in Section 3.b. of the contract within 15 days after the bill for collection is issued, subject to Section 3.j. of the contract. The Purchaser shall not resume contract operations until the First Installment amount is fully restored.

In the event of a suspension period or a combination of suspension periods that exceed a total of 30 days, the unamortized Out-of-Pocket Expenses for road or other construction required pursuant to Exhibit C of the contract shall be refunded or transferred to another BLM contract at the request of the Purchaser. Upon written notice from the Contracting Officer lifting the suspension, the Purchaser shall reimburse the Government the amounts refunded or transferred. The Purchaser may choose to pay this reimbursement at once or in installments payable at the same time as

payments are due for the timber under the contract and in amounts approximately equal to the expenses associated with the timber for which payment is due.

In the event that operating time is lost as a result of the incorporation of additional contract requirements, or delays due to Endangered Species Act consultation with the U.S. Fish and Wildlife Service or U.S. National Marine Fisheries Service, or court-ordered injunctions, the Purchaser agrees that an extension of time, without reappraisal, will constitute a full and complete remedy for any claim that delays due to the suspension hindered performance of the contract or resulted in damages of any kind to the Purchaser.

The Contracting Officer may determine that it is necessary to modify the contract or terminate the cutting and removal rights under the contract in order to comply with the Endangered Species Act, prevent incidental take of northern spotted owls in accordance with the ROD and RMP, protect occupied marbled murrelet sites in accordance with the ROD and RMP, protect species that have been discovered which were identified for protection in accordance with management direction established in the ROD and RMP, or comply with a court order. Following the issuance of a written notice that cutting and removal rights will be terminated, the Purchaser will be permitted to remove timber cut under the contract, if allowed by the Endangered Species Act, if able to proceed without causing incidental take of northern spotted owls in accordance with the ROD and RMP, consistent with marbled murrelet occupied site protection in accordance with the ROD and RMP, consistent with species protection in accordance with management direction established in the ROD and RMP, or court order requirements necessitating the modification or termination.

In the event the contract is modified or cutting and removal rights are terminated under this subsection, the Purchaser agrees that the liability of the United States shall be limited to the actual costs incurred by the Purchaser which have not been amortized by timber removed from the contract area. This calculation of liability shall utilize actual Purchaser costs and Government estimates of timber volumes. At the Authorized Officer's request, the Purchaser agrees to provide documentation of the actual costs incurred in the performance of the contract. In addition, the Purchaser shall be released from the obligation to pay the contract price for any timber which is not authorized to be removed from the contract area.

The Purchaser specifically and expressly waives any right to claim damages, other than those described in the preceding paragraphs, based on an alleged breach of any duty to the Purchaser, whether express or implied, in regard to the manner in which the Government defended the litigation which resulted in the court order affecting the operation of the contract. This waiver also extends to any claims based on effects on the operation of the contract that arise from litigation against another agency. Furthermore, the Purchaser specifically acknowledges and agrees that a court ruling that the Government violated the Administrative Procedures Act cannot be interpreted, in itself, to mean that the Government had not acted reasonably in regard to its duties to the Purchaser under this contract.

FIRE PREVENTION

ii. Primarily for purposes of fire prevention and control, the Purchaser shall, prior to the operation of power driven equipment in construction or logging operations under this contract during the

fire season or periods of fire danger, prepare a fire prevention and control plan to the satisfaction of the Authorized Officer. Purchaser shall take such measures for prevention and suppression of fire on the contract area and other adjacent Government lands used or traversed by Purchaser in connection with operations as are required by applicable laws and regulations. However, when in the opinion of the Authorized Officer, weather and other conditions affecting fire incidence and control make special precautions necessary to protect the contract area and said Government lands, Purchaser shall take such additional or other fire prevention and control measures as may be required by the Authorized Officer. The Purchaser shall comply with Oregon Department of Forestry Industrial Fire Precaution Level (IFPL) I Fire Season requirements. At IFPL II and III, additional fire prevention and control provisions may be added as determined by the Authorized Officer and specified in written instructions to the Purchaser to mitigate dry fuel and weather conditions.

LOGGING RESIDUE REDUCTION

jj. In addition to the requirements of Sec. 15 of this contract, and notwithstanding the Purchasers satisfactory compliance with State laws and regulations regarding offsetting or abating the additional fire hazard created by this operation and the States willingness to release the Purchaser from liability for such hazard, the Purchaser shall remain responsible to the Government for performance of the following hazard reduction measure(s) required by this contract: Perform logging residue reduction and site preparation work on up to seventy-one (71) acres of harvest area located within harvest units. The required work shall consist of any treatment or combination of treatments, as determined by the Authorized Officer and specified in writing by the Contracting Officer. The number of acres of each treatment shall be determined by the Authorized Officer. Prior to commencement of any operation under this Section of the contract, a slash disposal and pre-work conference between the purchaser's representative and the Authorized Officer must be held at a location designated by the Authorized Officer. The number of acres of each treatment shall be determined by the Authorized Officer. All slash disposal shall be done in accordance with the plans developed at this pre-work conference. Slash, as defined for this section, shall mean all material (brush, limbs, tops, unmerchantable stems, and chunks) severed or knocked over as a result of purchasers operations under the terms of this contract.

1. Excavator pile and burn slash within ground based portion of regeneration harvest units from skid trails/slash mat and within 25 feet of 2-6-15.0, 2-5-31.2, and 2-5-31.3 roads in harvest areas. Slash shall be piled by an excavator equipped with a hydraulic thumb. Finished piles shall be tight and free of dirt.

a. Unmerchantable logs greater than six (6) inches on the small end shall be left in place, or positioned so that they will not be burned.

b. Slash less than six (6) inches in diameter would be less than one (1) foot in depth as directed by the Authorized Officer.

c. Machine piles shall be located as far as possible from green trees, snags, or unit boundaries to minimize damage.

d. Machine piles shall be kept free of dirt and other non-wood debris and constructed as compactly as possible. There should be an adequate supply of finer fuels

located within and under the covered area of the pile to ensure ignition of the larger fuels.

e. A minimum 10-foot by 10-foot cover of four (4) mil (0.004) inch thick polyethylene shall cap each machine pile to maintain a dry ignition point. The cover shall be firmly fixed to each pile to hold it in place. Plastic shall be held in place with woody debris or tied with rope or twine. The plastic must be secured so that it is held in place during strong wind conditions. The Purchaser is required to furnish the covering materials. Covering shall be completed as directed by the Authorized Officer.

f. Cutting Areas shall be piled during the same season that they are logged unless otherwise approved by the Authorized Officer.

2. Slashing shall be completed in Harvest Unit 5 shown on Exhibit A as directed by the Authorized Officer.

a. All standing woody vegetation (brush), whips, and designated trees over one (1) foot in height shall be felled (slashed) and lopped into six (6) foot or smaller lengths in Harvest Unit 5 in section 31.

b. All logging slash and slashed woody vegetation that is greater than six (6) feet in length and between one (1) inch and six (6) inches in diameter shall be lopped. Larger material which has a portion meeting this specification must be bucked at the six (6) inch diameter.

c. All woody vegetation, whips, and designated trees shall be completely severed from the stump(s). Stump height shall not exceed six (6) inches measured on the uphill side.

d. All Western redcedar and Western hemlock trees shall be reserved and undamaged.

3. Pile and burn landing slash within thirty (30) feet of the edge of each landing, all tops, broken pieces, limbs and debris more than one (1) inch in diameter at the large end and longer than three (3) feet in length shall be piled within fifteen (15) days of completion of hauling logs from that landing. Landing piles shall be kept free of dirt and located adjacent to roads at least twenty (20) feet from any Reserve Tree and/or as directed by the Authorized Officer. Upon completion of landing piling, the Purchaser shall prepare the landing piles for burning by securely covering each landing pile with four (4) mil (0.004) inch thick polyethylene plastic film at least 10 feet wide. Landing piles shall be covered sufficiently to allow for ignition in wet conditions as approved by the Authorized Officer. The plastic shall be oriented southwest to northeast. Pieces of burnable material shall be placed on top of the plastic to secure it from moving and to prevent it from blowing off during strong wind episodes. The Purchaser is required to furnish the covering materials. The timing of this covering work shall be in accordance with instructions from the Authorized Officer. No landing debris shall be dozed off the landing and covered with dirt. Debris which has been buried and is

determined to be the source of holdover fire shall be excavated by the Purchaser, at the Purchaser's expense, with a tractor and/or hydraulic excavator as directed by the Authorized Officer. If the structure of the landing piles will not permit adequate consumption of piled debris by burning, the Purchaser shall re-pile them at the direction of the Authorized Officer.

kk. Notwithstanding the provisions of Sec. 15 of this contract, the Government shall assume all obligations for disposal or reduction of fire hazards created by Purchaser's operations on Government lands, except for burning and mop-up assistance as required herein and measures required in Section 42(jj). The Purchaser shall, under supervision of the Authorized Officer or designated representative, assist in preparing units for burning, mop-up, and patrol by furnishing, at the Purchaser's expense, the services of personnel and equipment on each unit as shown below:

1. For Igniting, Burning, Mop-up of Piles on Units:

a. One work leader(s) Firefighter Type 1 (FFT1) qualified according to National Wildfire Coordinating Group (NWCG) Wildland Fire Qualifications System guide, PMS 310-1) to supervise crew and equipment operations, and to serve as Purchaser's representative.

b. Five-person crew Firefighter Type 2 (FFT2) qualified according to National Wildfire Coordination Group (NWCG) Wildland Fire Qualifications System guide, PMS 310-1, with sufficient fuel for burning, six (6) drip torches, one (1) power saw, and one (1) backpack pump, one (1) tool for each crew member.

c. The crew shall arrive on the project area with radios capable of inter-crew communications and communication with a BLM representative at a ratio of one (1) radio per every five (5) crewmembers.

d. All ignition and mop-up personnel will be directly supervised by a BLM representative.

Aircraft and pilots used for Logging Residue Reduction or the suppression of escaped fires from Logging Residue Reduction operations, shall be acquired from a list of aircraft and pilots approved (i.e., carded for these specific activities) by the Office of Aircraft Services or the U.S. Forest Service. This list is available from BLM District Offices upon request.

All listed personnel shall be physically fit, experienced and fully capable of functioning as required. In addition, all listed personnel shall be qualified according to the National Wildfire Coordinating Group (NWCG) Wildland Fire Qualification System Guide, PMS-310-1 and provide documentation of these qualifications. On the day of ignition all listed personnel shall be fluent in speaking and understanding English, clothing shall consist of long pants and long sleeved shirts, and be of approved aramid fabric (Nomex™ or equivalent), as well as being free of diesel fuel oil. All personnel shall wear lug sole boots with minimum eight (8) inch tall uppers that provide ankle support, approved hardhats and leather gloves. Personnel who do not meet these requirements or do not have proper clothing and personal protective equipment (PPE) will not be allowed to participate. All listed tools and equipment shall be in

good usable condition. All power-driven equipment shall be fully fueled and available for immediate use. During periods of use under this subsection, the Purchaser shall provide fuel and maintenance for all such power-driven equipment.

Except as provided hereafter for fire escapement, the Purchaser shall continue the required assistance in mop up on each cutting unit shown on Exhibit A for seventy-two (72) hours, as directed by the Authorized Officer within a five (5) day period commencing at 8:00 a.m. the day following the completion of ignition in that unit, or until released from such service by the Government, whichever occurs first.

In the event of a fire escapement, the Purchaser's personnel and equipment shall, under supervision of the Authorized Officer, take action to control and mop up the escaped fire until released from such service by the Government. If it becomes necessary to use furnished personnel and equipment for the suppression of a fire which escapes from the prescribed fire area for a period beyond the remainder of the day in which the fire escapes, then the Government shall, at its option: (1) reimburse the Purchaser for such additional use of personnel and equipment at wage rates shown in the current Administratively Determined Pay Rates for the Western Area and at equipment rates shown in the current Oregon-Washington Interagency Fire Fighting Equipment Rental Rates schedule until the Purchaser is released from such service by the Government; or (2) release the Purchaser from additional suppression work and assume responsibility for suppressing the escaped fire.

In situations where an escaped fire is controlled and contained by an adequate fire break (i.e., trail, road, stream, rock formation, etc.), the Government may permit the Purchaser to remove personnel for that day; provided that all mop up work on the escaped fire is included with mop up work on the prescribed fire area. In such an event, the Purchaser must sign a statement of agreement to complete mop up work on all escaped fire areas concurrently with mop up work on the prescribed fire area.

In case of injury to personnel or damage to equipment furnished as required by this subsection, liability shall be borne by the Purchaser, unless such injury or damage is caused by Government negligence.

Time is of the essence in complying with this provision. In the event the Purchaser fails to provide the personnel and equipment required herein, the Purchaser shall be responsible for all additional cost incurred by the Government in disposing of slash including but not limited to the wages and other costs of providing federal employees and others as substitute labor force, the cost of providing substitute equipment and appropriate additional overhead expenses. If the Purchaser's failure results in a deferral of burning and new conditions necessitate additional personnel and equipment to accomplish the planned burn, the Purchaser also shall be responsible for such additional costs.

CREATION OF COARSE WOODY DEBRIS

II. In the Coarse Woody Debris Creation Units shown on Exhibit F, the Purchaser shall, upon completion of yarding, select and fall, top, high-girdle, or basal-girdle five hundred twenty-three (523) live trees in accordance with Exhibit F. No adjustments of volume or value shall be made to meet these requirements.

CONTRIBUTIONS

mm. The Purchaser shall create coarse woody debris in accordance with Section 42.11. The Purchaser shall have the option of completing this work, or in lieu thereof, may make a contribution to the Bureau of Land Management in the amount of forty-three thousand one hundred thirty-one and 05/100 dollars (\$43,131.05), and upon making such contribution, the Purchaser shall be relieved of the obligations set out in this subsection. The Purchaser shall notify the Authorized Officer of their intention to make this contribution prior to the date of execution of this contract, and the Purchaser shall pay such amount in full prior to the commencement of operations.

LOG EXPORT RESTRICTION

nn. All timber sold to the Purchaser under the terms of the contract, except exempted species, is restricted from export under the United States in the form of unprocessed timber, and is prohibited from being used as a substitute for exported private timber. For the purpose of this contract, unprocessed timber is defined as (1) any logs except those of utility grade or below, such as saw logs, peeler logs, and pulp logs; (2) cants or squares to be subsequently remanufactured exceeding eight and three-quarters (8-3/4) inches in thickness; (3) split or round bolts or other round wood not processed to standards and specifications suitable for end-product uses; or (4) western red cedar lumber which does not meet lumber of American Lumber Standards Grades of Number 3 dimension or better, or Pacific Lumber Inspection Bureau R-List Grades of Number 3 Common or better.

Thus, timber manufactured into the following will be considered processed: (1) lumber and construction timbers, regardless of size, manufactured to standards and specifications suitable for end product uses; (2) chips, pulp and pulp products; (3) green or dry veneer and plywood; (4) poles and piling cut or treated for use as such; (5) cants, squares, and lumber cut for remanufacturing of eight and three-quarters (8-3/4) inches in thickness or less; (6) shakes and shingles. Substitution will be determined under the definition found in 43 CFR 5400.0-5(n).

The Purchaser is required to maintain and upon request to furnish the following information:

1. Date of last export sale.
2. Volume of timber contained in last export sale.
3. Volume of timber exported in the past twelve (12) months from the date of last export sale.
4. Volume of Federal timber purchased in the past twelve (12) months from date of last export sale.
5. Volume of timber exported in succeeding twelve (12) months from date of last export sale.
6. Volume of Federal timber purchased in succeeding twelve (12) months from date of last export sale.

In the event the Purchaser elects to sell any or all of the timber sold under this contract in the form of unprocessed timber, the Purchaser shall require each party buying, exchanging, or receiving such timber to execute a "Certificate as to Nonsubstitution and Domestic Processing of Timber". The original of such certification shall be filed with the Authorized Officer.

Additionally, when the other party is an affiliate of the Purchaser, the Purchaser will be required to update information under item (2) of Form 5450-17 (Export Determination) and file the form with the Authorized Officer.

In the event an affiliate of the Purchaser has exported private timber within twelve (12) months prior to purchasing or otherwise acquiring Federal timber sold under this contract, the Purchaser shall, upon request, obtain from the affiliate information in the form specified by the Authorized Officer and furnish the information to the Authorized Officer.

Prior to the termination of this contract, the Purchaser shall submit to the Authorized Officer Form 5460-15 (Log Scale and Disposition of Timber Removed Report) which shall be executed by the Purchaser. In addition, the Purchaser is required under the terms of this contract to retain for a three-year period from the date of termination of the contract the records of all sales or transfer of logs involving timber from the sale for inspection and use of the Bureau of Land Management.

Unless otherwise authorized in writing by the Authorized Officer, the Purchaser shall, prior to the removal of timber from the contract area, brand with Purchaser's registered log brand at least one end of each log, bolt, or other roundwood and identify each of these by painting with highway yellow paint.

In the event of the Purchaser's noncompliance with this subsection of the contract, the Authorized Officer may take appropriate action as set forth in Sec. 10. of this contract. In addition, the Purchaser may be declared ineligible to receive future awards of Government timber for a period of one (1) year.

Unless otherwise authorized in writing by the Contracting Officer, the Purchaser shall brand clearly and legibly one end of all logs with a scaling diameter (small end inside bark) of over ten (10) inches, prior to the removal of timber from the contract area. All loads of eleven (11) logs or more will have a minimum of ten (10) logs clearly and legibly branded on one end regardless of the diameter of the logs. All logs will be branded on loads of ten (10) logs or less. One end of all branded logs to be processed domestically will be marked with a three (3) square inch spot of highway yellow paint. The Purchaser will stop trucks for accountability monitoring at mutually agreed upon locations when notified by the Authorized Officer.

If multiple trailers (mule trains) are used, each bunked load shall be considered an individual load, and these guidelines will apply to each bunked load. If a flatbed stake trailer is used, each bundle will be treated as a separate load.

At the discretion of the Contracting Officer, the Purchaser may be required to brand and paint all logs. Any increased costs for log branding and painting shall be the responsibility of the Purchaser.

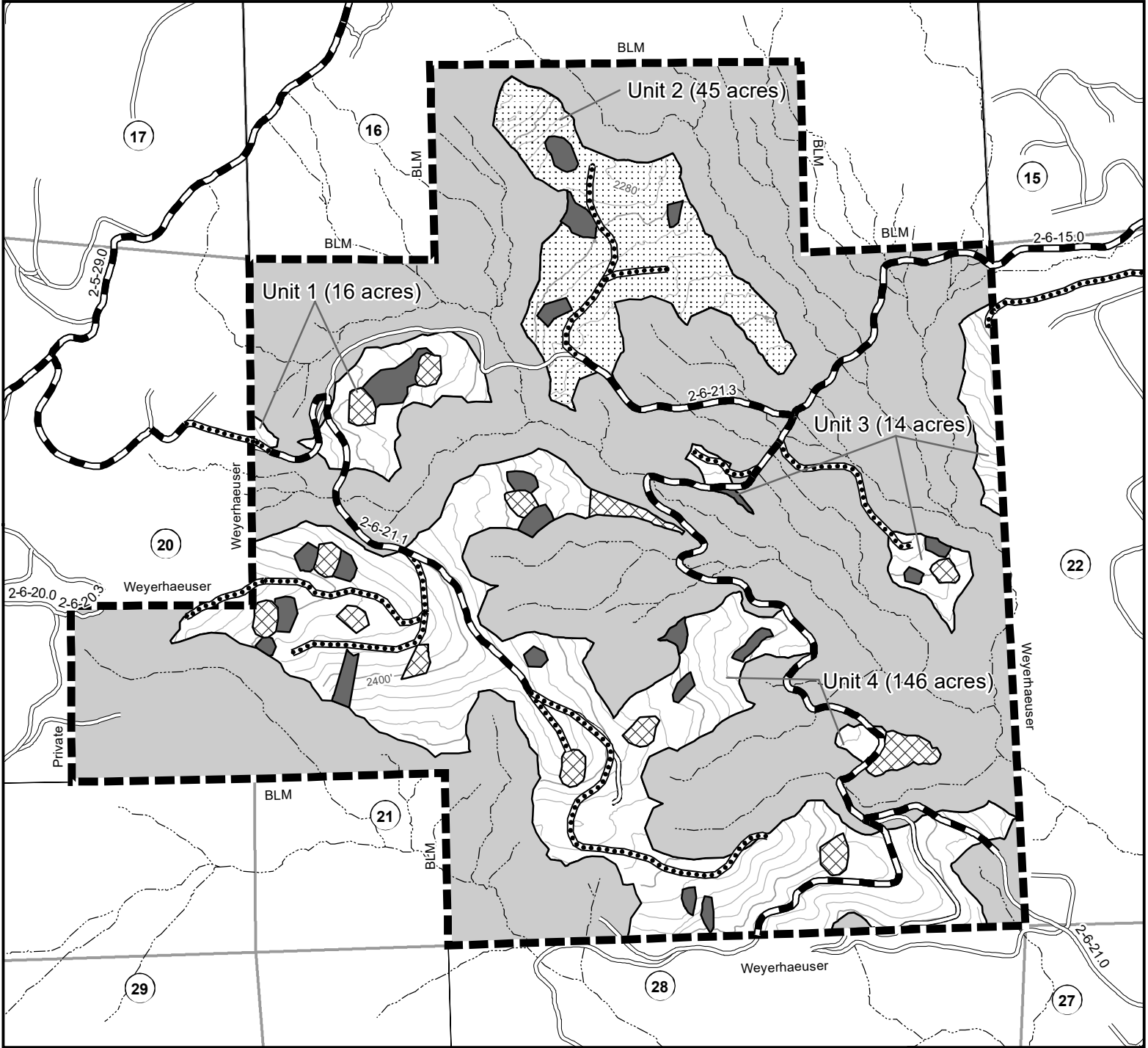


United States Department of the Interior
 BUREAU OF LAND MANAGEMENT
 TIMBER SALE CONTRACT MAP

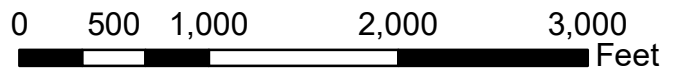
Contract No. ORN04-TS-2021.0401
 The Sentinel Timber Sale
 Exhibit A
 Page 1 of 2

1/21/2021

T. 2S. R. 6W, Section 16, 20, and 21 W. M. - NORTHWEST OREGON DISTRICT - OREGON



Partial Cut Area	250 acres
Regeneration Cut Area	45 acres
Right-of-Way	8 acres
Reserve Area	591 acres
Clump	23 acres
Patch Cut	21 acres
Total Contract Area	898 acres



- Road to be constructed
- Road to be improved
- Road to be renovated
- Sentinel Contract Area
- Existing Roads
- Streams
- Clump
- Patch Cut
- Reserve Area
- Partial Cut
- Regeneration Harvest

Contour Interval: 40 feet

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification. Note: Boundaries of harvest areas are painted/flagged in orange and posted. Right-of-ways (ROW) are posted. Harvest area acres do not include existing roads. Acres shown on Exhibit A for harvest area have been computed using a S1 mobile mapper and Trimble R1 GNSS Receiver.

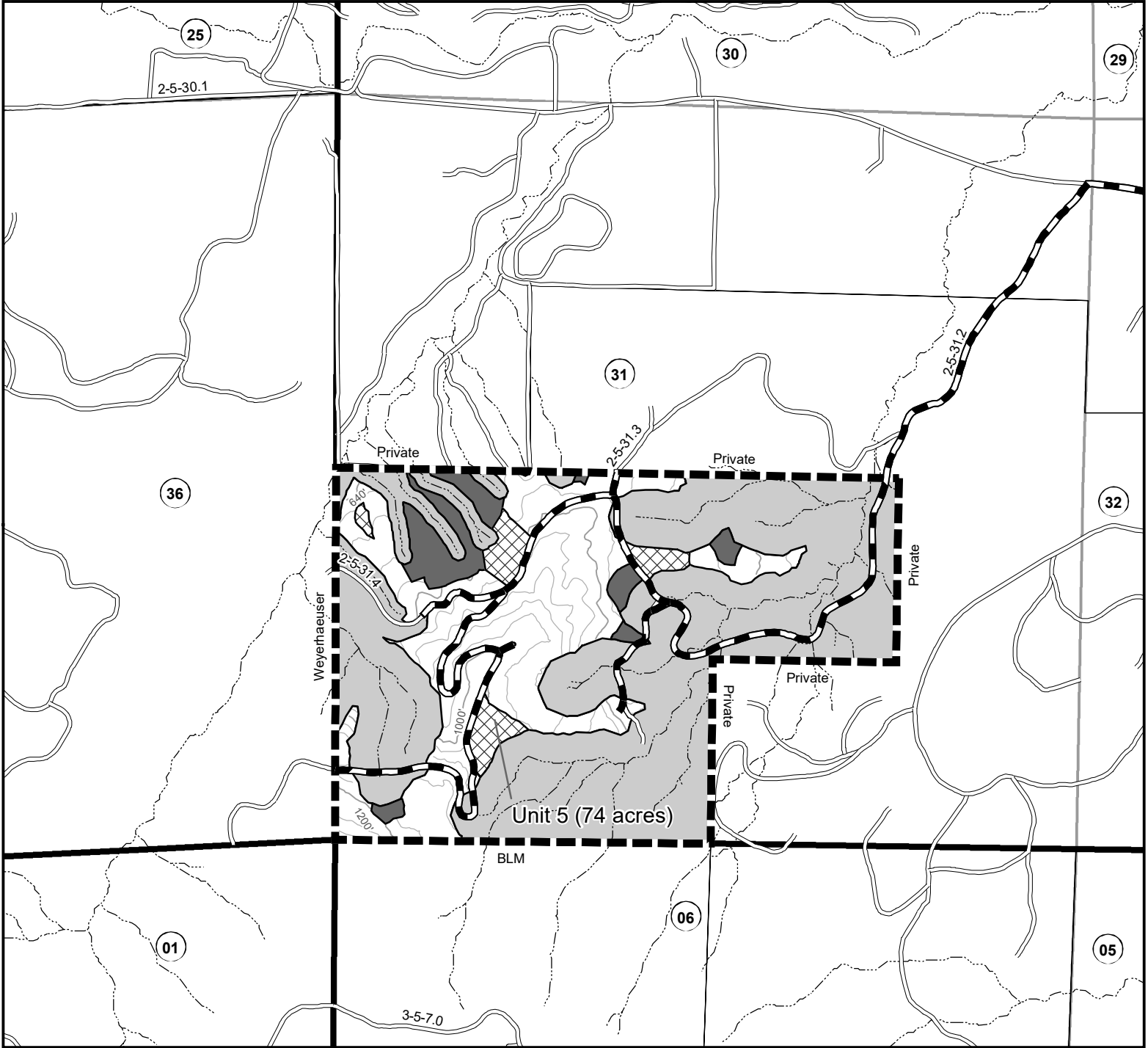


United States Department of the Interior
 BUREAU OF LAND MANAGEMENT
 TIMBER SALE CONTRACT MAP

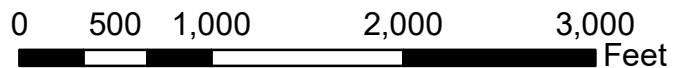
Contract No. ORN04-TS-2021.0401
 The Sentinel Timber Sale
 Exhibit A
 Page 2 of 2

1/21/2021

T. 2S. R. 5W, Section 31 W. M. - NORTHWEST OREGON DISTRICT - OREGON



Partial Cut Area	250 acres
Regeneration Cut Area	45 acres
Right-of-Way	8 acres
Reserve Area	591 acres
Clump	23 acres
Patch Cut	21 acres
Total Contract Area	898 acres



- Road to be constructed
- Road to be improved
- Road to be renovated
- Sentinel Contract Area
- Existing Roads
- Streams
- Clump
- Patch Cut
- Reserve Area
- Partial Cut
- Regeneration Harvest

Contour Interval: 40 feet

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification. Note: Boundaries of harvest areas are painted/flagged in orange and posted. Right-of-ways (ROW) are posted. Harvest area acres do not include existing roads. Acres shown on Exhibit A for harvest area have been computed using a S1 mobile mapper and Trimble R1 GNSS Receiver.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

EXHIBIT B / PRE-SALE

5450-3

Contract No.

ORN04-TS-2021.0401

The Sentinel

The following estimates and calculations of value of timber sold are made solely as an administrative aid for determining: (1) adjustments made or credits given in accordance with Secs. 6, 9, or 11; (2) when payments are due; and (3) value of timber subject to any special bonding provisions. The value of timber will be determined by multiplying the value per acre as shown below, times the amount of acreage as determined by the Authorized Officer, which has been cut or removed or designated for taking. Except as provided in Sec. 2, Purchaser shall be liable for total purchase price even though quantity of timber actually cut or removed or designated for taking is less than the estimated volume or quantity shown. Cutting areas are shown on **Exhibit A**.

SPECIES	ESTIMATED VOLUME OR QUANTITY <i>(Units Specified)</i>		PRICE PER UNIT	ESTIMATED VOLUME OR QUANTITY X UNIT PRICE
Douglas Fir	7,795.0	MBF	\$245.80	\$1,916,011.00
Western Redcedar	26.0	MBF	\$443.70	\$11,536.20
Grandfir	272.0	MBF	\$92.00	\$25,024.00
Red Alder	270.0	MBF	\$32.70	\$8,829.00
Bigleaf Maple	55.0	MBF	\$21.30	\$1,171.50
TOTALS	8,418.0	MBF		\$1,962,571.70

The apportionment of the total purchase price is as follows:

Unit 1

Douglas Fir	362.0 MBF	X	\$245.80 =	\$88,979.60
Western Redcedar	2.0 MBF	X	\$443.70 =	\$887.40
Grandfir	16.0 MBF	X	\$92.00 =	\$1,472.00
Red Alder	2.0 MBF	X	\$32.70 =	\$65.40
Bigleaf Maple	2.0 MBF	X	\$21.30 =	\$42.60
Total	384.0 Mbf			\$91,447.00 ÷ 16.0 acres = \$5,715.44/Acre

Unit 2

Douglas Fir	1,849.0 MBF	X	\$245.80 =	\$454,484.20
Grandfir	22.0 MBF	X	\$92.00 =	\$2,024.00
Red Alder	200.0 MBF	X	\$32.70 =	\$6,540.00
Bigleaf Maple	18.0 MBF	X	\$21.30 =	\$383.40
Total	2089.0 Mbf			\$463,431.60 ÷ 45.0 acres = \$10,298.48/Acre

Unit 3

Douglas Fir	314.0 MBF	X	\$245.80 =	\$77,181.20
Western Redcedar	1.0 MBF	X	\$443.70 =	\$443.70
Grandfir	14.0 MBF	X	\$92.00 =	\$1,288.00
Red Alder	2.0 MBF	X	\$32.70 =	\$65.40
Bigleaf Maple	2.0 MBF	X	\$21.30 =	\$42.60
Total	333.0 Mbf			\$79,020.90 ÷ 14.0 acres = \$5,644.35/Acre

Unit 4

Douglas Fir	3,337.0 MBF	X	\$245.80 =	\$820,234.60
Western Redcedar	15.0 MBF	X	\$443.70 =	\$6,655.50
Grandfir	147.0 MBF	X	\$92.00 =	\$13,524.00

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Contract No.
ORN04-TS-2021.0401
The Sentinel

EXHIBIT B / PRE-SALE

5450-3

The following estimates and calculations of value of timber sold are made solely as an administrative aid for determining: (1) adjustments made or credits given in accordance with Secs. 6, 9, or 11; (2) when payments are due; and (3) value of timber subject to any special bonding provisions. The value of timber will be determined by multiplying the value per acre as shown below, times the amount of acreage as determined by the Authorized Officer, which has been cut or removed or designated for taking. Except as provided in Sec. 2, Purchaser shall be liable for total purchase price even though quantity of timber actually cut or removed or designated for taking is less than the estimated volume or quantity shown. Cutting areas are shown on **Exhibit A**.

Unit 4

Red Alder	18.0 MBF	X	\$32.70	=	\$588.60
Bigleaf Maple	20.0 MBF	X	\$21.30	=	\$426.00
Total	3537.0 Mbf				\$841,428.70 ÷ 146.0 acres = \$5,763.21/Acre

Unit 5

Douglas Fir	1,572.0 MBF	X	\$245.80	=	\$386,397.60
Western Redcedar	8.0 MBF	X	\$443.70	=	\$3,549.60
Grandfir	69.0 MBF	X	\$92.00	=	\$6,348.00
Red Alder	9.0 MBF	X	\$32.70	=	\$294.30
Bigleaf Maple	9.0 MBF	X	\$21.30	=	\$191.70
Total	1667.0 Mbf				\$396,781.20 ÷ 74.0 acres = \$5,361.91/Acre

Unit RW

Douglas Fir	361.0 MBF	X	\$245.80	=	\$88,733.80
Grandfir	4.0 MBF	X	\$92.00	=	\$368.00
Red Alder	39.0 MBF	X	\$32.70	=	\$1,275.30
Bigleaf Maple	4.0 MBF	X	\$21.30	=	\$85.20
Total	408.0 Mbf				\$90,462.30 ÷ 8.0 acres = \$11,307.79/Acre

TABLE OF CONTENTS

SECTION	PAGE	DESCRIPTION
100	3-9	General
150	10-12	Road Plan and Detail Sheets
200	13-14	Clearing and Grubbing
300	14-18	Excavation and Embankment
400	18-21	Pipe Culverts
500	21-22	Renovation and Improvement of Existing Roads
600	22-23	Watering
700	23-24	Aggregate Base Course – Pitrun Rock
900	25-26	Aggregate Base Course - Screened Rock
1000	26-30	Aggregate Base Course - Crushed Rock
1200	30-33	Aggregate Surface Course - Crushed Rock
1300	34-36	Geotextiles
1400	36-38	Slope Protection
1600	38-41	Quarry and Borrow Pit Development
1700	41-42	Erosion Control
1800	42-43	Soil Stabilization
2100	43-45	Roadside Brushing
2300	45-46	Slope Staking
2700	46	Barricades and Control Devices
	47-49	Road Plan Maps
	50	Earth Barricade, Waterdip, Drivable and Non-Drivable Waterbar Details
	51	Brushing Details
	52	Sediment Catch Basin Details
	53-58	Culvert List
	59	Culvert Band Details
	60	Culvert Installation Details
	61-66	Rock Volumes Totals

**U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
SALEM DISTRICT – OREGON
TIMBER SALE CONTRACT
ROAD SPECIFICATIONS**

Road Number And Segment	New Construction (Stations and Miles)	Improvement (Stations and Miles)	Renovation (Stations and Miles)
2-5-31.2			106+08 Sta. = 2.009 Miles
2-5-31.3			1+62 Sta. = 0.031 Miles
2-5-31.4			5+68 Sta. = 0.108 Miles
2-5-31.5			9+11 Sta. = 0.173 Miles
2-5-31.6			1+38 Sta. = 0.026 Miles
2-6-15.0			92+35 Sta. = 1.749 Miles
2-6-15.9			11+14 Sta. = 0.211 Miles
2-6-20.4			14+63 Sta. = 0.277 Miles
2-6-20.5			4+28 Sta. = 0.081 Miles
2-6-21.0			11+88 Sta. = 0.225 Miles
2-6-21.1			28+94 Sta. = 0.548 Miles
2-6-21.2			16+05 Sta. = 0.304 Miles
2-6-21.3 East	3+22 Sta. = 0.061 Miles		17+28 Sta. = 0.327 Miles
2-6-21.3 West	6+07 Sta. = 0.115 Miles	2+42 Sta. = 0.046 Miles	6+60 Sta. = 0.125 Miles
2-6-21.4	17+60 Sta. = 0.333 Miles		
2-6-21.5	5+87 Sta. = 0.111 Miles		
2-6-21.6	17+20 Sta. = 0.326 Miles		
2-6-21.7	21+00 Sta. = 0.398 Miles		
2-6-21.8	4+36 Sta. = 0.083 Miles		
2-6-21.9	29+95 Sta. = 0.567 Miles		
2-6-21.10	14+40 Sta. = 0.273		
2-6-21.11	5+45 Sta. = 0.103 Miles		
2-6-22.0	16+24 Sta. = 0.308		
2-5-29.0			590+88 Sta. = 11.191 Miles
2-6-19.0			25+92 Sta. = 0.491 Miles
2-6-9.1			84+90 Sta. = 1.608 Miles

GENERAL – 100

101 - Pre-work Conference(s):

A pre-work conference will be held prior to the start of new construction, renovation, quarry development, and decommissioning operations. The Purchaser shall request the conference at least forty-eight (48) hours prior to the time it is to be held. The conference will be attended by the Purchaser and/or his representative(s), subcontractor(s) and/or his or their representative(s) and the Authorized Officer and/or his representative(s).

The purpose of the prework conference will be to review the required work, exhibits and specifications, and to establish a work schedule and a list of the Purchaser's representatives and subcontractor(s).

102 - Definitions:

AASHTO - American Association of State Highway and Transportation Officials. Current editions of tests and specifications.

Apparent Opening Size (AOS) - Number of the U.S. Bureau of Standard sieve (or its opening size in millimeters or inches) having openings closest in size to the diameter of uniform particles which will allow five (5) percent by weight to pass through the geotextile material when shaken in a prescribed manner. This is also referred to as Equivalent Opening Size (EOS).

ASTM - American Society for Testing and Materials.

Base Course - Surfacing structure consisting of crushed gravel or stone, crushed sandstone, pit-run rock, bank or river-run gravels, etc., to provide support and, in the event no surface course is placed, the running surface for traffic load.

BLM - Bureau of Land Management

Borrow - Excavated material required for embankments and other portions of the work.

Burst Strength - The resistance of a geotextile material to rupture from pressure applied at right angles to the plane of the geotextile material under specified conditions, usually expressed as the amount of pressure causing failure. Rupture or burst results from tensile failure of the geotextile material.

Culvert - A pipe, pipe-arch, arch, or box structure constructed of metal, concrete, plastic or wood which provides an opening under the roadway primarily for the conveyance of liquids, pedestrians or livestock.

Curve Widening - Widening required on inside of curves to accommodate long log and equipment hauling trucks.

Embankment - A structure of soil, aggregate, or rock material placed on a prepared ground surface and constructed to subgrade.

End Haul - Excavated material moved, other than by dozer, to an embankment or waste area to prevent sidecasting material outside of the road prism.

Excess Excavation - Material from the roadway in excess of that needed for construction of the designed roadway (waste).

Grab Tensile Strength - A modified tensile strength of a geotextile material. The strength of a specific width of geotextile material together with the additional strength contributed by adjacent areas. Typically, grab strength is determined on a 12-inch-wide strip of geotextile material, with the tensile load applied at the midpoint of the geotextile material width through 1-inch-wide jaw faces.

Grading - Leveling to grade, shaping and smoothing of a road subgrade; the shaping of roadside ditches as to grade and contour. In some instances includes smoothing of the cut bank.

Nonwoven Geotextile Material - A textile structure produced by bonding or interlocking of fibers, or both, accomplished by mechanical or chemical means.

Overhaul - Distance excavated material is transported in excess of the distance included in the cost for excavation.

Penetration Resistance - The geotextile material property determined by the force required to penetrate a geotextile material with a sharp pointed object. Initial penetration is by separating the fibers. Further penetration is essentially a tearing process.

Percent Open Area - The net area of a geotextile material that is not occupied by geotextile material filaments, normally determinable only for woven and nonwoven geotextile material having distinct, visible, and measurable openings that continue directly through the geotextile material.

Permeability - The geotextile material property which permits water to be transmitted in the longitudinal or transverse planes of the geotextile material.

Pioneer Road - Temporary construction access built along the route of the project.

Piping - The process by which soil particles are washed in or through pore spaces in drains and filters or poorly compacted fill/backfill material.

Plans - The approved drawings, or exact reproductions thereof which show the locations, character, dimensions, and details of the work to be done.

Pore Size - The size of an opening between geotextile material filaments; apparent opening size (AOS) is used to quantify this geotextile material property.

Puncture Resistance - The geotextile material property determined by the force required to penetrate a geotextile material with a blunt object. Failure results in a tearing of the geotextile material.

Purchaser - The individual, partnership, joint venture, or corporation contracting with the Government under the terms of a Timber Sale Contract and acting independently or through their, or its agents, employees, or contractors.

Reasonably Close Conformity - Compliance with reasonable and customary manufacturing and construction tolerances where working tolerances are not specified.

Reinforcement - Strengthening of concrete with iron bars or mesh: geotextile with geotextile material inclusion: subgrade with aggregate: etc.

Roadbed - The graded portion of the road within top and side slopes, prepared as a foundation for the pavement structure and shoulders.

Road Centerline - The longitudinal center of a roadbed.

Road Improvement - Work done to an existing road which improves it over its original design standard.

Road Renovation - Work done to an existing road which restores it to its original design.

Roadway - The portion of a road within limits of construction. Usually from the toe of the fill slope to a point where the cut slope intersects natural ground line.
Synonym - road prism.

Scale - In quarrying, consists of the removal of loose or overhanging rock adhering to the solid face after a shot or a round of shots has been fired.

Scarification - The process of loosening or breaking up of the surface layer of soil or road, usually to a specified depth.

Separation - Function of geotextile material as a partition between adjacent materials to prevent mixing of those materials.

Shoulder - The portion of the roadbed contiguous with the traveled way designed for accommodation of stopped vehicles, safety, and lateral support of base and surface courses.

Slope ratio notation (horizontal:vertical) - Slope ratios for constructed cut and fill slopes are expressed as a ratio of horizontal units to vertical units.

Spalls - Flakes or chips of stone.

Specifications - A general term applied to all directions, provisions, and requirements pertaining to performance of the work.

Specific Gravity - The ratio of the density of a material to the density of water obtained by weighing known volumes of both items in air. A specific gravity less than one implies that the material will float.

Structures - Bridges, culverts, catch basins, retaining walls, underdrains, flumes, splash pads, downspouts, and other project features which may be involved in the work and not otherwise classified in these specifications.

Sub-base - Reinforcement of the subgrade with large particles of pit-run rock or crushed stone. Usually confined to roads having wet subgrades or subgrades with weak support characteristics.

Surface Course - Top layer of a road structure consisting of finely crushed gravels or asphalt designed to provide a smooth running surface for traffic load.

Subgrade - The top surface of a roadbed upon which the traveled way and shoulders are constructed.

Tensile Strength - The strength shown by a geotextile material subjected to tension as distinct from torsion, compression, or shear.

Tensile Stress - Strain Modulus - A measure of the resistance to elongation under stress. The ratio of the change in tensile stress to the corresponding change in strain.

Tensile Test - A test which subjects geotextile material to tensile forces and measures resultant stresses and strains.

Timber - Standing trees, downed trees, or logs which can be measured in board feet.

Traveled Way - The portion of the roadbed used for the movement of vehicles, exclusive of shoulders.

Typical Cross Sections - Cross-sectional plane of a typical roadway; showing natural ground line and designed roadway in relation to cut and fill, through cut, and through fill.

Turnout - Extra widening of the roadbed at appropriate intervals on single-lane roads for passing purposes.

Ultraviolet (UV) Radiation Stability - The ability of geotextile material to resist deterioration from exposure to sunlight.

102a - Tests Used in These Specifications:

<u>AASHTO T 11</u>	Quantity of rock finer than No. 200 sieve.
<u>AASHTO T 27</u>	Sieve analysis of fine and coarse aggregate using sieves with square openings; gradation.
<u>AASHTO T 89</u>	Liquid limit of material passing the No. 40 sieve. Water content at which the soil passes from a plastic to a liquid state.
<u>AASHTO T 90</u>	Plastic limits and plasticity index of soil. a. Plastic limit - lowest water content at which the soil remains plastic. b. Plasticity index - range of water content, within which the material is in a plastic state. Numerical difference between the liquid and plastic limits of the soil.
<u>AASHTO T 96</u>	Resistance to abrasion of small size coarse aggregate by use of the Los Angeles machine.
<u>AASHTO T 99</u>	Relationship between soil moisture and density of soil. Method A - 4" mold, soil passing a No. 4 sieve 25 blows/layer & 3 layers. Method C - 4" mold, soil passing a 3/4 inch sieve 25 blows/layer & 3 layers. Method D - 6" mold, soil passing a 3/4 inch sieve. 56 blows/layer & 3 layers.
<u>AASHTO T 119</u>	Slump of hydraulic cement concrete.
<u>AASHTO T 152</u>	Air content of freshly mixed concrete.
<u>AASHTO T 166</u>	Specific Gravity of compacted Bituminous Mixtures.
<u>AASHTO T 176</u>	Shows relative portions of fine dust or claylike materials in soil or graded aggregate.
<u>AASHTO T 180</u>	(OSHD 106-71) moisture density relationship of soil same as AASHTO T 99 proctor but uses a 10-lb rammer & 18-in drop height.
<u>AASHTO T 191</u>	<u>Sand Cone.</u> Density of soil in place: For subgrade use 6-inch or 12-inch cone. For rock surfacing for 1-1/2-inch minus to 3-inch minus use 12-inch cone.
<u>AASHTO T 205</u>	<u>Rubber balloon.</u> Density of soil in place. Use for compacted or firmly bonded soil.

<u>AASHTO T 209</u>	Maximum Specific Gravity of Bituminous Paving Mixtures.
<u>AASHTO T 210</u>	Durability of aggregates based on resistance to produce fines.
<u>AASHTO T 224</u>	Correction for coarse particles in the soil.
<u>AASHTO T 238</u>	Density of Soil and Soil-Aggregate in place by nuclear methods.
<u>AASHTO T 248</u>	Reducing field samples of aggregate to testing size by mechanical splitter, quartering, or miniature stockpile sampling.
<u>ASTM D 4564</u>	Determination of relative density of cohesion less soils.
<u>DMSO (dimethyl sulfide)</u>	Determines volume of expanding clays in aggregates. Usually associated with marine basalts.

103 - Compaction equipment shall meet the following requirements:

103b - Sheepsfoot/Tamping rollers. A tamping roller unit shall consist of two (2) watertight metal drums mounted in frames in such manner as to be fully oscillating, together with a tractor having sufficient weight and power under actual working conditions to pull the roller drums at a minimum speed of two and a half (2.5) miles per hour. The drums shall be no less than sixty (60) inches in diameter and no less than fifty-four (54) inches in length, measured at the drum's surface, and shall be studded with tamping feet projecting not less than seven (7) inches from the face of the drums.

The distance between circumferential rows of tamper feet shall be such that the diagonal distance from any foot to the nearest foot in each adjacent row shall be not more than twelve (12) inches. The cross-sectional area of the face of each tamper foot, measured perpendicular to the axis of the stud, shall be not less than 5-1/2 square inches nor more than eight (8) square inches.

The weight of the tamping-roller unit shall be such as to exert a minimum pressure of two hundred fifty (250) pounds per square inch on the ground area in contact with the tamping feet, and the roller shall be so designed that the weight may be increased to exert a pressure up to five hundred (500) pounds per square inch on the ground area in contact with the tamping feet.

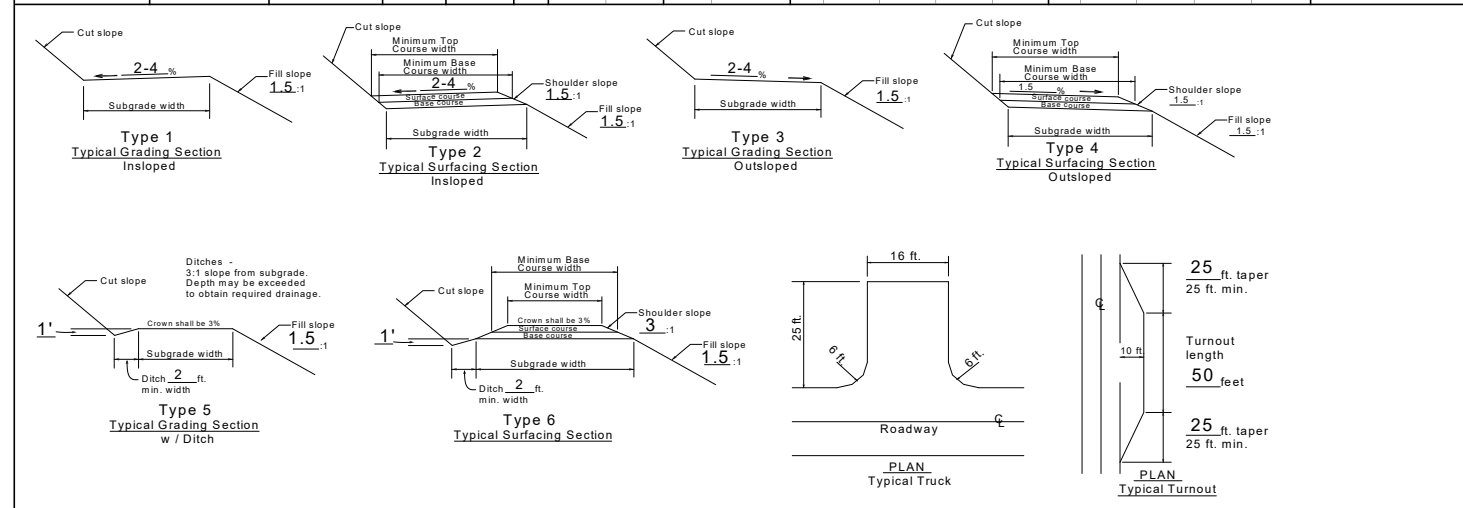
The ground pressure shall be determined by dividing the total weight of the roller unit, not including the weight of the tractor, by the total cross-sectional area of the tamping feet in one (1) row of tamping feet parallel to the axis of the roller.

- 103f - Vibratory roller. The drum diameter shall be not less than forty-eight (48) inches, the drum width not less than fifty-eight (58) inches, and have a turning radius of fifteen (15) feet or less. Vibration frequency shall be regulated in steps to 1400, 1500, and 1600 vibrations per minute (VPM), corresponding to engine speeds of 1575, 1690, and 1800 RPM. The centrifugal force developed shall be seven (7) tons at 1600 RPM. It shall be activated by a power unit of not less than twenty-five (25) horsepower. The vibratory roller shall be self-propelled or drawn by a vehicle of sufficient horsepower to enable the unit to travel through a loose layer of material at a speed ranging from 0.9 mile to 1.8 miles per hour, as directed by the Authorized Officer.

The towing vehicle and roller or self-propelled unit meeting the above requirements shall be considered a vibratory roller unit.

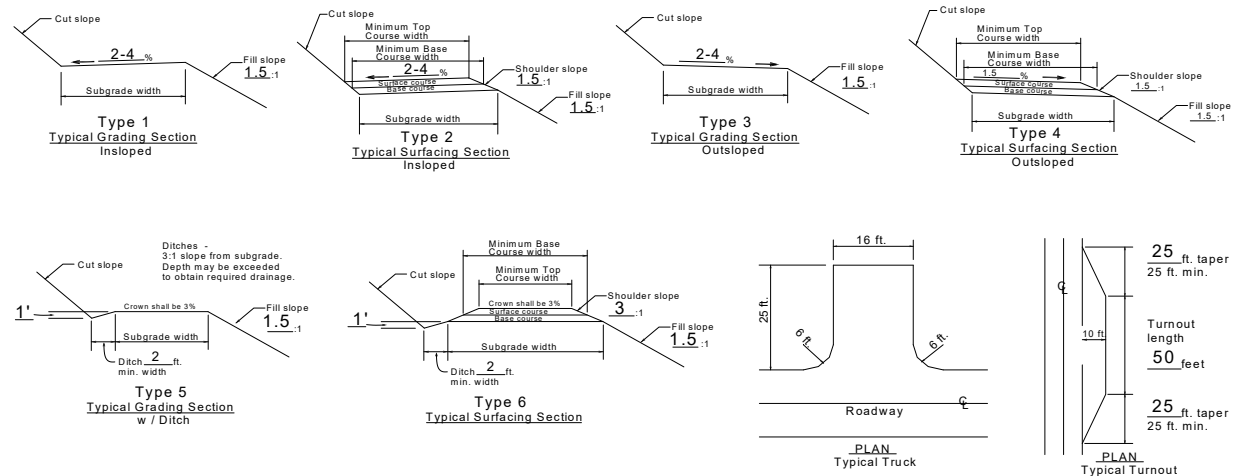
- 103g - Vibratory compactor. Vibratory compactors shall consist of multiple or gang-type compacting units or pads with a minimum variable width of two (2) feet. It shall be self-contained and capable of compacting material as required.
- 103h - Drum drive self-propelled vibratory grid roller. The unit shall consist of one cylindrical drum with a drum diameter of not less than fifty-six (56) inches, nor shall be more than sixty-six (66) inches and the drum width be eighty-four (84) inches. Vibration frequency shall be regulated in steps from 1200 to 1800 vibrations per minute (VPM), and the centrifugal force developed shall be at least 40,000 pounds at 1800 RPM. The vibratory grid roller shall be self-propelled and have a power unit of not less than 112 horsepower. The "grid" design shall be a herringbone or z-bar pattern around the circumference of the drum. The grid bars shall be one (1) inch in height and spaced not more than eight and one half (8-1/2) inches apart.
- 103i - Other. Compaction equipment approved by the Authorized Officer.

Road Number	Start Station or Milepost	End Station or Milepost	Total Length	Typical Cross Section	Min. Curve Radius	ROAD WIDTH		GRADIANT		SURFACING (*5)						Remarks				
						Subgrade	Ditch	Max. Favorable	Max. Adverse	BASE COURSE			SURFACE COURSE							
										Min. Width	Comp. Depth	Surface Type (*3)	Grading Size (*3)	Number of Lifts	Min. Width		Comp. Depth	Surface Type (*3)	Grading Size (*3)	Number of Lifts
2-5-31.2	0.000	2.009	2.009	6		14'	2'											Renovation. Spread 625 CY 1-1/2"-0" Crushed Spot Rock as marked and needed. Spread 550 CY 6" Jaw Run Base Rock as marked and needed. Place 370 CY 1-1/2"-0" Crushed Bedding/Backfill Rock as marked. Place 40 CY Class 5 RipRap @ outlet as fill armor/dissipater @ MP 0.329. Place 5 CY Class 5 RipRap @ outlet as dissipater at MP 0.562. Place 20 CY Class 5 RipRap @ outlet as fill armor/dissipater at MP 0.689. Place 10 CY Class 5 RipRap @ inlet to form catch basin at MP 0.702. Place 20 CY Class 5 RipRap @ outlet as fill armor/dissipater at MP 0.862. Re-establish ditchline and haul material to WA as directed. Construct and Surface 4 turnouts and 3 turnarounds as marked. Construct ditchouts and lead-off ditches as marked and needed. Construct Waste Areas as marked and needed. Install 9 Sediment Catch Basins with Straw Bales as marked. Replace 17 culverts. Install 2 culverts. Install 22 inlet markers.		
2-5-31.3	0+00	1+62	1+62	3		14'	0'											Renovation. Spread 10 CY 1-1/2"-0" Crushed Spot Rock as marked. Spread 20 CY 6" Jaw Run Base Rock as marked. Construct a Landing (based on ROW limits).		
2-5-31.4	0+00	5+68	5+68	5		14'	2'											Renovation. Spread 40 CY 1-1/2"-0" Crushed Spot Rock as marked. Spread 60 CY 6" Jaw Run Base Rock as marked. Place 40 CY 1-1/2"-0" Crushed Bedding/Backfill Rock as marked. Re-establish ditchline and haul material to WA as directed. Construct ditchouts and lead-off ditches as marked and needed. Remove existing waterbars as marked. Construct 1 turnout/roadside landing as marked. Replace 2 culverts. Install 2 inlet markers.		
2-5-31.5	0+00	9+11	9+11	5		14'	2'											Renovation. Spread 40 CY 1-1/2"-0" Crushed Spot Rock as marked. Spread 60 CY 6" Jaw Run Base Rock as marked. Place 45 CY 1-1/2"-0" Crushed Bedding/Backfill Rock as marked. Place 50 CY Class 5 RipRap @ outlet as fill armor at Sta. 6+37. Re-establish ditchline and haul material to WA as directed. Construct 1 turnout/turnaround as marked. Construct a Landing (approx. 50' diameter) as marked. Install 1 Sediment Catch Basin with Straw Bale as marked. Install 2 culverts. Install 2 inlet markers.		
2-5-31.6	0+00	1+38	1+38	3		14'	0'											Renovation. Spread 10 CY 1-1/2"-0" Crushed Spot Rock as marked. Spread 20 CY 6" Jaw Run Base Rock as marked. Use existing RipRap stockpile @ Sta. 1+38 for other project work or as directed by Authorized Officer. Remove material @ Sta. 0+73 - 1+32 as marked and haul material to WA as directed. Scatter decked logs at Sta. 1+02 outside of ROW. Construct a Landing (approx. 50' diameter) as marked.		
2-6-15.0 (Whiteface Rd.)	0.000	1.749	1.749	6		14'	2'											Renovation. Spread 550 CY 1-1/2"-0" Crushed Spot Rock as marked and needed. Spread 350 CY 6" Jaw Run Base Rock as marked and needed. Place 110 CY 1-1/2"-0" Crushed Bedding/Backfill Rock as marked. Spread 35 CY Pit-Run to line ditchlines as marked. Place 20 CY Class 5 RipRap @ outlet as fill armor at MP 0.658. Place 10 CY Class 5 RipRap @ outlet as fill armor/dissipater at MP 0.788. Place 20 CY Class 5 RipRap @ outlet as fill armor/dissipater at MP 0.844. Place 30 CY Class 5 RipRap @ outlet as fill armor at MP 0.879. Place 20 CY Class 5 RipRap @ outlet as fill armor at MP 0.905. Place 30 CY Class 5 RipRap @ outlet as fill armor at MP 1.298. Place 120 CY Class 5 RipRap @ outlet as fill armor/dissipater at MP 1.510. Re-establish ditchline and haul material to WA as directed. Grade and remove cracks in subgrade at MP 0.771 - 0.788. Catch basin needs to be excavated and cleaned @ MP 0.479, 1.366, 1.595, and 1.663. Excavate and cut off 3' of inlet on existing CPP @ MP 0.394. Remove 2' of existing CMP at outlet at MP 0.788. Construct and Surface 3 turnouts and 1 turnaround as marked. Construct 1 roadside landing/turnout as marked. Install 10 Sediment Catch Basins with Straw Bales as marked. Replace 6 culverts. Install 30 inlet markers.		
2-6-15.9	0.000	0.211	0.211	6		14'	2'						12'	2"	ASC	C	1	Renovation. Spread a 2" Lift 1-1/2"-0" Crushed Cap Rock over Base Rock (approx. 120 CY 1-1/2"-0" Crushed Rock) as directed. Spread 30 CY 1-1/2"-0" Crushed Spot Rock as marked. Spread 100 CY 6" Jaw Run Base Rock as marked and needed. Re-establish ditchline and haul material to WA as directed. Catch basin is too deep @ MP 0.131 fix with compacted native soil. Construct and Surface 1 turnout as marked. Install 2 inlet markers.		
2-6-20.4	0.000	0.277	0.277	6		14'	2'						12'	2"	ASC	C	1	Renovation. Spread a 2" Lift 1-1/2"-0" Crushed Cap Rock over Base Rock (approx. 158 CY 1-1/2"-0" Crushed Rock) as directed. Spread 20 CY 1-1/2"-0" Crushed Spot Rock as marked. Spread 50 CY 6" Jaw Run Base Rock as marked. Spread 20 CY Pit-Run to line ditchline as marked. Re-establish ditchline and haul material to WA as directed. Catch basin is too deep @ 0.081 fix with compacted native soil. Install 2 Sediment Catch Basins with Straw Bales as marked. Install 3 inlet markers.		
2-6-20.5	0.000	0.056	0.056	6		14'	2'			13'	9"	ABC	D	2	12'	4"	ASC	C	1	Renovation. Spread a 4" Lift 1-1/2"-0" Crushed Cap Rock over Base Rock (approx. 90 CY 1-1/2"-0" Crushed Rock) as directed. Spread a 9" Jaw Run Base Rock (approx. 218 CY 6" Jaw Run) as directed. Spread 30 CY 1-1/2"-0" Crushed Spot Rock as marked. Spread 20 CY 6" Jaw Run Base Rock as marked. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock as marked. Re-establish ditchline and haul material to WA as directed. Construct and Surface 1 turnout as marked. Replace 1 culvert. Install 1 inlet marker.
	0.056	0.081	0.025	5		14'	2'												Renovation. Re-establish ditchline only (no grading, brushing, compacting, clearing and grubbing, etc.) and haul material to WA as directed. Catch basin needs to be excavated and cleaned @ MP 0.081. Install 1 inlet marker.	
2-6-21.0	0.000	0.225	0.225	6		14'	2'												Renovation. Spread 80 CY 1-1/2"-0" Crushed Spot Rock as marked and needed. Spread 60 CY 6" Jaw Run Base Rock as marked and needed. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock as marked. Re-establish ditchline and haul material to WA as directed. Construct ditchout as marked and needed. Construct and Surface 1 turnout/roadside landing as marked. Replace 2 culverts. Install 3 inlet markers.	



- *NOTES**
- Extra subgrade widths**
Add to each shoulder: 1 ft. for fills of 1-6 ft. and 2 ft. for fills over 6 ft. Widen the inside shoulder of curves as follows:
(See Road Plan Map, Exhibit C)
 - Backslopes**
Materials: Solid rock, Soft rock and shale, Common
Cut slopes: 1:4:1, 1:2:1
Fill slopes: Angle of repose
Slopes under 55%: 1:1, 1-1/2:1
Slopes over 55%: 3/4:1, 1-1/2:1
 - PRR - Pit run rock**
GRR - Grid rolled rock
SRN - Screened rock
JRR - Jaw run rock
ABC - Aggr. base course
ASC - Aggr. surface course
WC - Wood chips
 - Grading**
A - 3"
B - 2"
C - 3" jaw run
D - 6" jaw run
E - 1 1/2" - 0"
F - 1"
G - 3/4"
 - Turnouts**
Width - 10 ft. in addition to subgrade width, or as shown on the plans. Located approximately as shown on the plans. Intervisible and not more than 750 ft. apart.
 - Surfacing**
Turnouts, curve widening and road approach aprons shall be surfaced.
 - Clearing width** 200
See Section
 - As posted and painted for Right-of-Way:
 - Drainage**
See Culvert List
 - Compaction**
See Sections 300 and 400
- Note: Full bench construction is required on side slopes exceeding 60%.
- *Clearing Limits as posted on ground**

Road Number	Start Station or Milepost	End Station or Milepost	Total Length	Typical Cross Section	Min. Curve Radius	ROAD WIDTH		GRADIENT		SURFACING (*5)										Remarks
						Subgrade	Ditch	Max. Favorable	Max. Adverse	BASE COURSE					SURFACE COURSE					
										Min. Width	Comp. Depth	Surface Type (*3)	Grading Size (*3)	Number of Lifts	Min. Width	Comp. Depth	Surface Type (*3)	Grading Size (*3)	Number of Lifts	
2-6-21.1	0+00	28+94	28+94	6		14'	2'			13'	9"	ABC	D	2	12'	4"	ASC	C	1	Renovation. Spread a 4" Lift 1-1/2"-0" Crushed Cap Rock over Base Rock (approx. 624 CY 1-1/2"-0" Crushed Rock) as directed. Spread a 9" Lift 6" Jaw Run Base Rock (approx. 1,516 CY 6" Jaw Run) as directed. Spread 30 CY 1-1/2"-0" Crushed Spot Rock as marked. Spread 60 CY 6" Jaw Run Base Rock as marked. Place 120 CY 1-1/2"-0" Crushed Bedding/Backfill Rock as marked. Place 60 CY Class 5 RipRap @outlet as fill armor at Sta 7+50. Place 30 CY Class 5 RipRap @ inlet as fill armor at Sta 7+50. Place 30 CY Class 5 RipRap @ outlet as fill armor/dissipater at Sta 11+45. Place 20 CY Class 5 RipRap @ outlet as fill armor at Sta 17+89. Place 10 CY Class 5 RipRap @ outlet as fill armor at Sta 21+58. Place 10 CY Class 5 RipRap @ outlet as fill armor at Sta 25+34. Place 280 CY 1-1/2"-3/4" Crushed Drain Rock wrapped with 375 SY on non-woven geo-synthetic fabric around a perforated CMP as directed to construct a French-Draining fill at Sta 9+31 - 9+74. French Drain drawings available upon request. Re-establish ditchline and haul material to WA as directed. Shift centerline of road to the right 9' at Sta 11+34 - 12+88 and haul material to WA as directed. Use excavated material from 2-6-21.9 (Sta 0+50 - 1+95) for fill at Sta 26+94 - 28+94. Construct ditchouts as marked and needed. Construct and Surface 1 turnout/turnaround and 1 turnaround as marked. Install 2 Sediment Catch Basins with Straw Bales as marked. Install 8 culverts and 2 downspouts. Install 9 inlet markers.
2-6-21.2	0.000	0.304	0.304	6		14'	2'					ABC	D				ASC	C		Renovation. Spread 100 CY 1-1/2"-0" Crushed Spot Rock as marked and needed. Spread 100 CY 6" Jaw Run Base Rock as marked and needed. Re-establish ditchline and haul material to designated WA as directed. Construct a lead-off ditch as marked. Construct and Surface 1 turnaround and 1 turnout/turnaround/roadside landing as marked. Remove logs on road at MP 0.227 and place outside of ROW. Install 1 Sediment Catch Basin with Straw Bale as marked. Re-attach existing downspout at MP 0.227. Install 3 inlet markers.
2-6-21.3 East	0+00	3+22	3+22	5		14'	2'	10%	10%			ABC	D				ASC	C		New Construct. Spread 10 CY 1-1/2"-0" Crushed Spot Rock as marked. Spread 20 CY 6" Jaw Run Base Rock as marked. Cut and drift material back at Sta 0+00 to use as fill to create smooth transition.
	3+22	5+13	1+91	3		14'	0'					ABC	D				ASC	C		Renovation. Spread 25 CY 1-1/2"-0" Crushed Spot Rock as marked. Spread 30 CY 6" Jaw Run Base Rock as marked. Place 35 CY 1-1/2"-0" Crushed Bedding/Backfill Rock as marked. Place 5 CY Class 5 RipRap @ inlet as fill armor at Sta 3+44. Place 10 CY Class 5 RipRap @ outlet as fill armor/dissipater at Sta 3+44. Grade stream bed at Sta 3+92 to allow proper flow to CMP at Sta 3+44 as directed. Install 1 culvert. Install 1 inlet marker.
	5+13	20+50	15+37	5		14'	2'					ABC	D				ASC	C		Renovation. Spread 65 CY 1-1/2"-0" Crushed Spot Rock as marked. Spread 90 CY 6" Jaw Run Base Rock as marked. Place 90 CY 1-1/2"-0" Crushed Bedding/Backfill Rock as marked. Place 10 CY Class 5 RipRap @ outlet as fill armor at Sta 9+83. Place 20 CY Class 5 RipRap @ outlet as fill armor at Sta 16+86. Re-establish ditchline and haul material to WA as directed. Construct ditchouts and lead-off ditches as marked and needed. Construct waste areas as marked. Construct 2 turnarounds as marked. Install 1 Sediment Catch Basin with Straw Bale as marked. Install 5 culverts. Install 5 inlet markers.
2-6-21.3 West	0+00	6+07	6+07	6		14'	2'	18%	18%	13'	9"	ABC	D	2	12'	4"	ASC	C	1	New Construct. Spread a 4" Lift 1-1/2"-0" Crushed Cap Rock over Base Rock (approx. 131 CY 1-1/2"-0" Crushed Rock) as directed. Spread a 9" Lift 6" Jaw Run Base Rock (approx. 318 CY 6" Jaw Run) as directed. Spread 20 CY 1-1/2"-0" Crushed Spot Rock as marked. Spread 40 CY 6" Jaw Run Base Rock as marked. Place 10 CY 1-1/2"-0" Crushed Bedding/Backfill Rock as marked. Construct lead-off ditch and ditchouts as marked and needed. Construct and Surface 1 turnaround as marked. Cut and drift material at Sta 5+40 - 7+65 and use as fill at Sta 7+65 - 9+50. Install 1 culvert. Install 1 inlet marker.
	6+07	12+67	6+60	6		14'	2'			13'	9"	ABC	D	2	12'	4"	ASC	C	1	Renovation. Spread a 4" Lift 1-1/2"-0" Crushed Cap Rock over Base Rock (approx. 142 CY 1-1/2"-0" Crushed Rock) as directed. Spread a 9" Lift 6" Jaw Run Base Rock (approx. 346 CY 6" Jaw Run) as directed. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock as marked. Re-establish ditchline and haul material to WA as directed. Construct ditchouts as marked and needed. Cut and drift material at Sta 10+80 - 11+93 and use as fill at Sta. 11+93 - 13+50. Install 1 culvert.
	12+67	15+09	2+42	6		14'	2'			13'	9"	ABC	D	2	12'	4"	ASC	C	1	Improvement. Spread a 4" Lift 1-1/2"-0" Crushed Cap Rock over Base Rock (approx. 55 CY 1-1/2"-0" Crushed Rock) as directed. Spread a 9" Lift 6" Jaw Run Base Rock (approx. 133 CY 6" Jaw Run) as directed. Spread 30 CY 1-1/2"-0" Crushed Spot Rock as marked. Spread 60 CY 6" Jaw Run Base Rock as marked. Construct ditchouts as marked and needed. Construct and Surface 1 turnaround as marked. Construct waste area as marked. Widen subgrade to the left 8' at Sta 13+26 - 15+09. Cut and drift material at Sta 13+50 - 14+00 and use as fill at Sta 14+00 - 14+62.
2-6-21.4	0+00	7+50	7+50	3		14'	0'	18%	18%											New Construct. Cut and drift material at Sta 0+00 - 0+25 to create a smooth transition. Construct waste area as marked. Construct 1 turnout/turnaround as marked.
	7+50	17+60	10+10	5		14'	2'	18%	18%			ABC	D				ASC	C		New Construct. Spread 15 CY 1-1/2"-0" Crushed Spot Rock as marked. Spread 20 CY 6" Jaw Run Base Rock as marked. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock as marked. Construct ditchouts as marked and needed. Construct 1 turnout and 1 turnaround/roadside landing as marked. Construct a landing (approx. 50' diameter) as marked. Cut and Drift material at Sta 9+05 - 9+98 and use as fill at Sta 8+09 - 9+05. Cut and drift material at Sta 12+78 - 13+48 and use as fill at Sta 9+98 - 12+01. Install 1 culvert. Install 1 inlet marker.
2-6-21.5	0+00	5+87	5+87	3		14'	0'	10%	10%											New Construct. Construct 1 turnaround as marked. Construct a landing (approx. 50' diameter) as marked.
2-6-21.6	0+00	17+20	17+20	6		14'	2'	18%	18%	13'	9"	ABC	D	2	12'	4"	ASC	C	1	New Construct. Spread a 4" Lift 1-1/2"-0" Crushed Cap Rock over Base Rock (approx. 371 CY 1-1/2"-0" Crushed Rock) as directed. Spread a 9" Lift 6" Jaw Run Base Rock (approx. 901 CY 6" Jaw Run) as directed. Spread 80 CY 1-1/2"-0" Crushed Spot Rock as marked. Spread 150 CY 6" Jaw Run Base Rock as marked. Place 95 CY 1-1/2"-0" Crushed Bedding/Backfill Rock as marked. Place 50 CY Class 5 RipRap on fill slope as fill armor at Sta 12+21 - 15+61. Construct and Surface 1 turnout and 2 turnarounds as marked. Construct waste areas as marked. Construct a landing (approx. 50' diameter) as marked. Widen subgrade to the left 8' at Sta 5+58 - 6+08. Cut and drift material at Sta 13+06 - 15+06 and Sta 16+45 - 17+20 and use as fill at Sta 15+06 - 16+45. Install 7 culverts. Install 6 inlet markers.



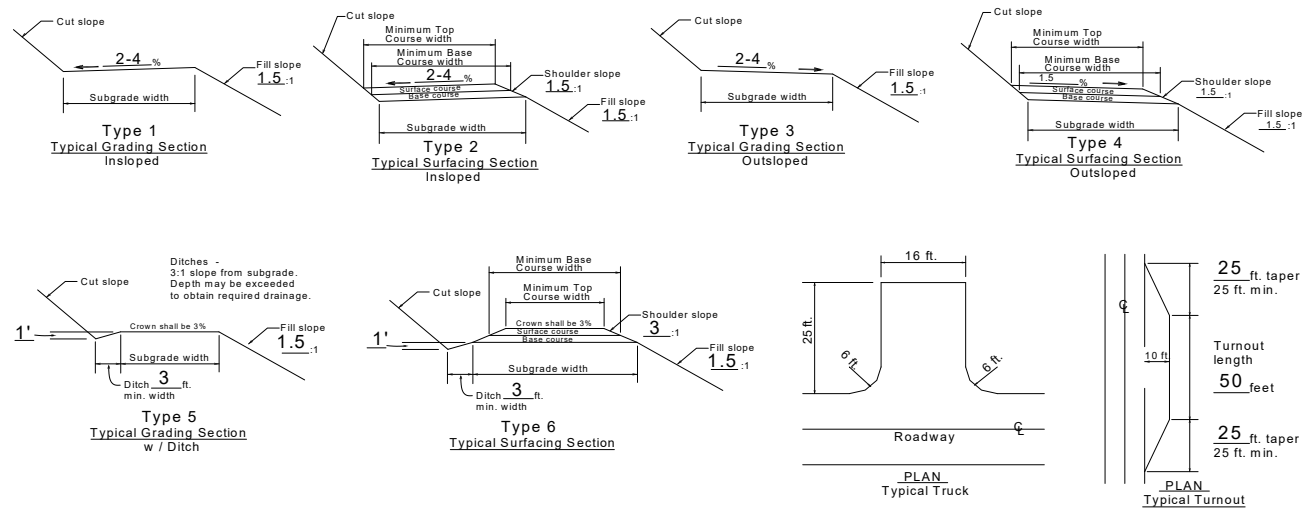
- *NOTES**
- Extra subgrade widths:** Add to each shoulder: 1 ft. for fills of 1-6 ft. and 2 ft. for fills over 6 ft. Widen the inside shoulder of curves as follows: (See Road Plan Map, Exhibit C)
 - Backslopes:**

Materials	Cut slopes	Fill slopes
Solid rock	1:4:1	Angle of repose
Soft rock and shale	1:2:1	
Common		
Slopes under 55%	1:1	1-1/2:1
Slopes over 55%	3/4:1	1-1/2:1

Note: Full bench construction is required on side slopes exceeding 60%.
 - Surface type:**

Materials	Grading
PRR - Pit run rock	A - 3"
GRR - Grid rolled rock	B - 2"
SRN - Screened rock	C - 3" jaw run (base course)
JRR - Jaw run rock	D - 6" jaw run
ABC - Aggr. base course	C - 1 1/2" - 0"
ASC - Aggr. surface course	D - 1"
WC - Wood chips	E - 3/4"
 - Turnouts:** Width - 10 ft. in addition to subgrade width, or as shown on the plans. Located approximately as shown on the plans. Intervisible and not more than 750 ft. apart.
 - Surfacing:** Turnouts, curve widening and road approach aprons shall be surfaced.
 - Clearing width:** 200
 - As posted and painted for Right-of-Way:**
 - Drainage:** See Culvert List
 - Compaction:** 300 and 400 (See Sections)
- *Clearing Limits as posted on ground**

Road Number	Start Station or Milepost	End Station or Milepost	Total Length	Typical Cross Section	Min. Curve Radius	ROAD WIDTH		GRADIANT		SURFACING (*5)										Remarks				
						Subgrade	Ditch	Max. Favorable	Max. Adverse	BASE COURSE					SURFACE COURSE									
										Min. Width	Comp. Depth	Surface Type (*3)	Grading Size (*3)	Number of Lifts	Min. Width	Comp. Depth	Surface Type (*3)	Grading Size (*3)	Number of Lifts					
2-6-21.7	0+00	17+35	17+35	5		14'	2'	18%	18%															New Construct. Spread 10 CY 1-1/2"-0" Crushed Spot Rock as marked. Spread 20 CY 6" Jaw Run Base Rock as marked. Construct ditchouts as marked. Construct 2 turnarounds as marked. Construct a waste area as marked. Construct a landing (approx. 50' diameter) as marked. Cut and drift material at Sta 7+20 - 10+46 and Sta 13+50 - 18+20 and use as fill at Sta 5+60 - 7+20.
	17+35	21+00	3+65	3		14'	0'	15%	15%															New Construct.
2-6-21.8	0+00	4+36	4+36	4		14'	0'	15%	15%	13'	9"	ABC	D	2	12'	4"	ASC	C	1					New Construct. Spread a 4" Lift 1-1/2"-0" Crushed Cap Rock over Base Rock (approx. 91 CY 1-1/2"-0" Crushed Rock) as directed. Spread a 9" Lift 6" Jaw Run Base Rock (approx. 222 CY 6" Jaw Run) as directed. Spread 40 Cy 1-1/2"-0" Crushed Spot Rock as marked. Spread 70 CY 6" Jaw Run Base Rock as marked. Construct a landing (approx. 50' diameter) as marked.
2-6-21.9	0+00	29+95	29+95	6		14'	2'	17%	17%	13'	9"	ABC	D	2	12'	4"	ASC	C	1					New Construct. Spread a 4" Lift 1-1/2"-0" Crushed Cap Rock over Base Rock (approx. 676 CY 1-1/2"-0" Crushed Rock) as directed. Spread a 9" Lift 6" Jaw Run Base Rock (approx. 1,643 CY 6" Jaw Run) as directed. Spread 120 CY 1-1/2"-0" Crushed Spot Rock as marked. Spread 270 CY 6" Jaw Run Base Rock as marked. Place 135 CY 1-1/2"-0" Crushed Bedding/Backfill Rock as marked. Construct ditchouts and lead-off ditches as marked and needed. Construct and Surface 3 turnouts and 1 turnaround as marked. Construct a linear landing (approx. 40' width x 75' length) as marked. Cut and drift material at Sta 0+50 - 1+95 and use as fill on 2-6-21.1 at Sta 26+94 - 28+94. Cut and drift material at Sta 1+95 - 3+25 and use as fill at Sta 3+25 - 4+97. Cut and drift material at Sta 9+10 - 10+70 and use as fill at Sta 10+70 - 12+10. Cut and drift material at Sta 12+10 - 13+50 and use as fill at Sta 13+50 - 16+95. Cut and drift material at Sta 16+30 - 20+45 and use as fill at Sta 20+45 - 24+14. Cut and drift material at Sta 28+30 - 29+20 and use as fill at Sta 25+59 - 28+30. Install 8 culverts and install 5 downspouts. Install 8 inlet markers.
2-6-21.10	0+00	14+40	14+40	5		14'	2'	18%	18%															New Construct. Spread 40 CY 1-1/2"-0" Crushed Spot Rock as marked. Spread 60 CY 6" Jaw Run Base Rock as marked. Place 40 CY 1-1/2"-0" Crushed Bedding/Backfill Rock as marked. Place 40 CY Class 5 RipRap @ outlet as fill armor at Sta 2+40. Place 120 CY Class 5 RipRap on fill slope as fill armor at Sta 7+23 - 7+73. Construct ditchouts as marked and needed. Construct 1 turnaround as marked. Construct waste area as marked. Construct a landing (approx. 50' diameter landing) as marked. Cut and drift material at Sta 4+72 - 6+51 and use as fill at Sta 6+51 - 7+73. Install 2 culverts. Install 2 inlet markers.
2-6-21.11	0+00	5+45	5+45	5		14'	2'	18%	18%															New Construct. Spread 35 CY 1-1/2"-0" Crushed Spot Rock as marked. Spread 50 CY 6" Jaw Run Base Rock as marked. Place 30 CY 1-1/2"-0" Crushed Bedding/Backfill Rock as marked. Construct ditchouts as marked and needed. Construct 1 turnaround as marked. Construct a landing (approx. 50' diameter) as marked. Cut and drift material at Sta 1+10 - 2+89 and use as fill at Sta 0+27 - 1+10. Install 2 culverts. Install 1 inlet marker.
2-6-22.0	0+00	16+24	16+24	6		14'	2'	18%	18%	13'	9"	ABC	D	2	12'	4"	ASC	C	1					New Construct. Spread a 4" Lift 1-1/2"-0" Crushed Cap Rock over Base Rock (approx. 350 CY 1-1/2"-0" Crushed Rock) as directed. Spread a 9" Lift 6" Jaw Run Base Rock (approx. 850 CY 6" Jaw Run) as directed. Spread 50 CY 1-1/2"-0" Crushed Spot Rock as marked. Spread 90 CY 6" Jaw Run Base Rock as marked. Place 45 CY 1-1/2"-0" Crushed Bedding/Backfill Rock as marked. Construct ditchouts as marked and needed. Place 20 CY Class 5 RipRap @ outlet as fill armor at Sta 6+39. Place 10 CY Class 5 RipRap @ inlet for fill armor at Sta 6+39. Construct and Surface 1 turnaround as marked. Construct a landing (approx. 50' diameter) as marked. Cut and drift material at Sta 0+17 - 1+89 and use as fill at Sta 1+89 - 3+82. Cut and drift material at Sta 3+82 - 5+40 and use as fill at Sta 5+40 - 7+17. Install 3 culverts and install 1 downspout. Install 3 inlet markers.
2-5-29.0 (Toll Road)	0.000	11.191	11.191	6		16'	2'																	Renovation. Spread 240 CY 1-1/2"-0" Crushed Spot Rock as marked and needed. Spread 50 CY 6" Jaw Run Base Rock as marked. Place 60 CY 1-1/2"-0" Crushed Bedding/Backfill Rock as marked. Place 40 CY Class 5 RipRap @ inlet as fill armor at MP 0.212. Place 100 CY Class 5 RipRap @ outlet as fill armor at MP 0.212. Place 70 CY Class 5 RipRap @ inlet as fill armor at MP 0.346. Place 100 CY Class 5 RipRap @ outlet as fill armor at MP 0.346. Install 1 culvert. Replace 1 culvert. Install 2 inlet markers.
2-6-19.0	0.000	0.491	0.491	6		14'	2'																	Renovation. Spread 50 CY 1-1/2"-0" Crushed Spot Rock as needed. Re-establish ditchline and haul material to WA as directed.
2-6-9.1	0.000	1.608	1.608	6		14'	2'																	Renovation. Spread 20 CY 1-1/2"-0" Crushed Spot Rock as marked. Spread 25 CY 6" Jaw Run Base Rock as marked. Place 30 CY 1-1/2"-0" Crushed Bedding/Backfill Rock as marked. Place 40 CY Class 5 RipRap @ outlet as fill armor at MP 0.304. Replace 1 culvert. Install 1 inlet marker.



- *NOTES**
- Extra subgrade widths**
Add to each shoulder: 1 ft. for fills of 1-6 ft. and 2 ft. for fills over 6 ft. Widen the inside shoulder of curves as follows:
(See Road Plan Map, Exhibit C)
 - Backslopes**

Materials	Cut slopes	Fill slopes
Solid rock	1:4:1	Angle of repose
Soft rock and shale	1:2:1	
Common		
	Slopes under 55%	1:1
	Slopes over 55%	3/4:1

Note: Full bench construction is required on side slopes exceeding 60%.
 - Surface type**

Material	Grading
PRR - Pit run rock	A - 3"
GRR - Grid rolled rock	B - 2"
SRN - Screened rock	C - 3" jaw run
JRR - Jaw run rock	D - 6" jaw run
ABC - Aggr. base course	C - 1 1/2" - 0"
ASC - Aggr. surface course	D - 1"
WC - Wood chips	E - 3/4"
 - Turnouts**
Width - 10 ft. in addition to subgrade width, or as shown on the plans. Located approximately as shown on the plans. Intervisible and not more than 750 ft. apart.
 - Surfacing**
Turnouts, curve widening and road approach aprons shall be surfaced.
 - Clearing width**
See Section 200
 - As posted and painted for Right-of-Way:
 - Drainage**
See Culvert List
 - Compaction**
See Sections 300 and 400

***Clearing Limits as posted on ground**

CLEARING AND GRUBBING - 200

- 201 - This work shall consist of clearing, grubbing, removing and disposing of vegetation, debris, surface objects, and protruding obstructions within the clearing limits in accordance with these specifications and conforming to the lines, grades, dimensions and typical cross sections shown on the plans and as marked on the ground.
- 201a - This work shall consist of clearing, grubbing, removing and disposing of vegetation, debris, surface objects, and protruding obstructions from borrow pits, quarries, channel changes, stockpile sites, etc., in accordance with these specifications and as staked on the ground.
- 202 - Where clearing limits have not been staked, established by these specifications or shown on the plans, the limits shall extend ten (10) feet back of the top of the cut slope and five (5) feet out from the toe of the fill slope.
- 202b - Where clearing limits for channel changes and waste areas have not been staked or shown on the plans, the limits shall extend ten (10) feet back of the top of the cut slope and five (5) feet outside of the outside slope lines.
- 203 - Clearing shall consist of the removal and disposal of trees, logs, rotten material, brush, and other vegetative materials and surface objects in accordance with these specifications and within the limits established for clearing as specified under Subsections 202 and 202b, as shown on the plans, and as marked on the ground.
- 203b - Standing trees and snags to be cleared shall be felled within the limits established for clearing, unless otherwise authorized. Felled snags shall be left as down woody debris outside of the clearing limits.
- 203c - Disposal of logs from private timber cleared within the limits established shall consist of decking at a location designated by the Authorized Officer.
- 204 - Grubbing shall consist of the removal and disposal of stumps, roots, and other wood material embedded in the ground and protruding obstacles remaining as a result of the clearing operation. Undisturbed stumps, roots and other solid objects which will be a minimum of four (4) feet below subgrades or slope surfaces or embankments are excluded.
- 205 - Clearing and grubbing debris shall not be placed or permitted to remain in or under road embankment sections.
- 206a - Notwithstanding Subsections 204 and 205, clearing and grubbing debris resulting from landing construction, waste area construction, turnaround construction, or log fill replacement shall be placed at disposal sites and shall not

be covered with excavated material. Location of disposal sites will be determined by the Authorized Officer.

- 210 - Disposal of clearing and grubbing debris, stumps and cull logs shall be by scattering over government owned lands outside of established clearing limits in a manner acceptable to the Authorized Officer. The areas for such scattering shall have the prior approval of the Authorized Officer.
- 210a - Disposal of clearing and grubbing debris, stumps, and cull logs on non-government property shall be by scattering over non-government owned lands outside of established clearing limits in a manner acceptable to the Authorized Officer.
- 213 - No clearing or grubbing debris shall be left lodged against standing trees.

EXCAVATION AND EMBANKMENT - 300

- 301 - This work shall consist of excavating, overhaul, placement of embankments, backfilling, borrowing, leveling, ditching, grading, outsloping, crowning and scarification of the subgrade, compaction, disposal of excess and unsuitable and slide materials, and other earth-moving work in accordance with these specifications and conforming to the lines, grades, dimensions, and typical cross sections shown on the plans.
- 302 - Excavation shall also consist of the excavation of road and landing cut sections, borrow sites, backfilling, leveling, ditching, grading, compaction, and other earth moving work necessary for the construction of the roadway in accordance with these specifications and conforming to the lines, grades, dimensions, and typical cross sections shown on the plans and as marked on the ground.
- 303 - Suitable material removed from the excavation shall be used in the formation of embankment subgrade, shoulders, slopes, bedding, backfill for structures, and for other purposes as shown on the plans.
- 304 - Borrow shall consist of suitable material required for the construction of embankments or for other portions of the work; such material shall be obtained from sources selected by the Purchaser at his option and approved by the Authorized Officer.
- 305 - Embankment construction shall consist of the placement of excavated and borrowed materials, backfilling, leveling, grading, compaction, and other earth-moving work necessary for the construction of the roadway and landings in

accordance with these specifications and conforming to the lines, grades, dimensions, and typical cross sections shown on the plans and as marked on the ground.

- 305a - Material used in the construction of embankment sections shall be free of stumps, cull logs, brush, muck, sod, roots, frozen material, and other deleterious materials and shall be placed and compacted as specified.
- 305b - Embankment materials shall be placed in successive parallel layers on areas cleared of stumps, cull logs, brush, sod, and other vegetative and deleterious materials, except as provided under Subsection 204. Roadway embankments of earth material shall be placed in horizontal layers not exceeding eight (8) inches in depth.
- 305d - Where embankments are constructed predominantly of blasted rock material, depth of layers shall not exceed (4) feet. Rock fragments having dimensions greater than 4 feet will be permitted provided that they have no dimensions greater than (6) feet and that clearance between adjacent fragments is adequate for the placing and compacting of material in horizontal layers as specified, and that no part of the larger fragments comes within (4) feet of subgrade.
- 306 - Layers of embankment and selected borrow, as specified under Subsections 305a, 305b, and 317 shall be moistened or dried to a uniform optimum moisture content suitable for maximum density and compacted to full width with compacting equipment conforming to requirements of Subsections 103b, 103g, or 103i. Final Subgrades shall be moistened or dried to a uniform optimum moisture content suitable for maximum density and compacted to full width with compacting equipment conforming to requirements of Subsections 103f or 103i.
- 306c - Compacted materials shall have a uniform density of not less than eighty-five (85) percent of the maximum density as determined by AASHTO T 99, Method A or Method D.
- 308 - In the case of rock fills, placement of material in layers is not required and such material may be placed by end-dumping or other methods approved by the Authorized Officer provided that the rock be reasonably prevented from escaping beyond the embankment toe.
- 311 - In solid rock cuts where pockets that will not drain are formed by blasting below the subgrade elevation, drainage shall be provided by ditching to the edge of the subgrade and backfilling to grade, and compacting the pockets and the ditch with rock fragments, gravel, or other suitable porous material.

- 313 - In cut areas where solid rock is encountered at, or near subgrade, the rock shall be excavated to a minimum depth of six (6) inches below subgrade elevation and the excavated area backfilled with suitable material. The backfill material shall be processed to the optimum moisture content suitable for maximum density and compacted to full width in accordance with the requirements of Subsection 306.
- 314 - When heavy clays, muck, clay shale, or other deleterious material for forming the roadbed is encountered in cuts at subgrade, it shall be excavated to a minimum depth of two (2) feet below the subgrade elevation and the excavated area backfilled with a selected borrow material approved by the Authorized Officer. The backfill material shall be uniformly moistened or dried to the optimum moisture content suitable for maximum density in accordance with the requirements of Subsection 306. Unsuitable material shall be disposed of as directed by the Authorized Officer.
- 315 - Borrow material required for the construction of embankment or for other portions of the work shall be obtained from sources adjacent to the roadway.
- 316 - Borrow material from sources selected at the Purchaser's option shall be inspected and approved in writing by the Authorized Officer prior to placement.
- 317 - Selected borrow shall consist of talus material, finely broken rock, gravel, or other material of granular or favorable characteristics from sources shown on the plans.
- 320 - Ditches shall conform to the slope, grade, dimensions, and shape of the required cross section shown on the plans. Roots, stumps, rocks, and other projections shall be removed to form smooth, even slopes.
- 321 - Excess excavated, unsuitable, or slide materials shall not be disposed of on areas where the material will encroach on a stream course or other body of water. Such materials shall be disposed of in accordance with Subsection 321c. Materials not disposed of in this manner shall be retrieved and disposed of at the Purchaser's expense and at the direction of the Authorized Officer.
- 321a - Excess construction materials specified under Subsection 321 shall be loaded, hauled, and placed as embankment for the roadbed on the following road section:

Road No.	From Sta./M.P.	To Sta./M.P.
2-6-21.3 West	5+40 – 7+65	7+65 – 9+50
	10+80 – 11+93	11+93 – 13+50
	13+50 – 14+00	14+00 – 14+62
2-6-21.4	9+05 – 9+98	8+09 – 9+05
	12+78 – 13+48	9+98 – 12+01
2-6-21.6	13+06 – 15+06	15+06 – 16+45
	16+45 – 17+20	
2-6-21.7	7+20 – 10+46	5+60 – 7+20
	13+50 – 18+20	
2-6-21.9	0+50 – 1+95	(2-6-21.1) 26+94 – 28+94
	1+95 – 3+25	3+25 – 4+97
	9+10 – 10+70	10+70 – 12+10
	12+10 – 13+50	13+50 – 16+95
	16+30 – 20+45	20+45 – 24+14
	28+30 – 29+20	25+59 – 28+30
2-6-21.10	4+72 – 6+51	6+51 – 7+73
2-6-21.11	1+10 – 2+89	0+27 – 1+10
2-6-22.0	0+17 – 1+89	1+89 – 3+82
	3+82 – 5+40	5+40 – 7+17

- 321c - End-dumping will be permitted for the placement of excess materials under Subsection 321 in designated disposal areas or within areas approved by the Authorized Officer. Watering, rolling, and placement in layers are not required. Materials placed shall be sloped, shaped, and otherwise brought to a visible condition acceptable to the Authorized Officer.

- 322 - When so indicated on the plans, selected coarse rock encountered in the excavation shall be conserved for slope protection or special rock embankment purposes and placed in accordance with the requirements and details of Section 1400 of these specifications and as shown on the plans.

- 323 - In the construction of channel changes and stream-crossing embankment sections, natural stream flow shall be maintained unless otherwise provided.

- 324 - Excavated material shall not be allowed to cover boles of standing trees to a depth in excess of a half (1/2) feet on the uphill side.

- 327 - The finished grading shall be approved by the Authorized Officer in segments or for the total project. The Purchaser shall give the Authorized Officer three (3) days' notice prior to final inspection of the grading operations.
- 328 - The Purchaser shall adopt methods and procedures in using explosives, which will prevent damage to adjacent landscape features, and which will minimize scattering rocks and other debris outside the road prism.
- 328a - The Purchaser shall establish and be responsible for blasting techniques and shall furnish the Authorized Officer, prior to starting drilling operations, a blasting plan specifying drill-hole diameter, drill-hole spacing, depth of drilling, type of explosive to be used, loading pattern, sequence of firing, the location where the plan is to be used, and other relevant data. Acceptance of the drilling and blasting plan does not relieve the Purchaser of responsibility or liability for the results of the blasting.

PIPE CULVERTS - 400

- 401 - This work shall consist of furnishing and installing pipe culverts, downspouts, and other erosion control devices in accordance with these specifications and conforming to the lines, grades, dimensions, and typical cross sections shown on the plans. Individual lengths and locations are approximate; final lengths and locations will be determined by the Authorized Officer upon completion of the roadbed and upon installation of the appurtenance structures. Additional pipe and erosion control devices may be required at the option of the Authorized Officer, in which case a reduction in the total purchase price shall be made to offset the cost of furnishing and installing such items. Costs will be based upon the unit prices set forth in the current BLM Timber Appraisal Production Cost Schedule.
- 403 - Grade culverts shall have a gradient from two (2) percent to four (4) percent greater than the adjacent road grade. Grade culverts shall be skewed down grade thirty (30) degrees as measured from the perpendicular to the centerline unless otherwise specified on the plans.
- 404 - Damage to the spelter, or burn back in excess of three-eighths (3/8) inch, shall be wire brushed and painted with two coats of zinc-rich paint on zinc-coated steel pipe.
- 405a - Corrugated-(aluminized) steel-welded pipe culverts and pipe-arch culverts and special sections shall conform to the requirements of AASHTO M 36 and AASHTO M 218, AASHTO M 274, or AASHTO M 289 as specified on the plans.

- 405e - Corrugated-polyethylene pipe for culverts 18-inch through 36-inch diameter shall meet the requirements of AASHTO M 294.
- Installation will be subject to the same specification as other pipe materials.
- 406 - Coupling bands shall conform to the requirements of AASHTO M 36 and AASHTO M 274 with the exception of band widths and the "Hugger"-type band which shall conform to the details, dimensions, and typical diagram shown on the plans.
- 406a - "Hugger"-type coupling bands shall only be used with annular corrugated pipe and pipe-arch culverts, or helically corrugated pipe and pipe-arch culverts having annular reformed ends. Annular reformed ends shall consist of two annular corrugations.
- 408 - Pipe culverts shall be placed on the bed starting at the downstream end with the inside circumferential laps pointing downstream and with the longitudinal laps at the side or quarter points. Coupling bands of the type required under these specifications shall be installed so as to provide the circumferential and longitudinal strength necessary to preserve the pipe alignment, prevent separation of the pipe sections, and minimize infiltration of fill material.
- 409 - Structural-plate pipe culverts and pipe-arch culverts shall be installed in accordance with the plans and detailed erection instructions furnished by the manufacturer. One copy of the erection instructions shall be submitted to the Authorized Officer (3) days prior to erection.
- 410 - Pipe shall be unloaded and handled with reasonable care. If the Authorized Officer determines any structure is damaged to the extent that it is unsuitable for use in the road construction, it shall be replaced at the Purchaser's expense.
- 411 - Trenches necessary for the installation of pipe culverts shall conform to the lines, grades, dimensions, and typical diagram included in the plans and the Culvert Installation Detail Sheet.
- 412 - Where ledge rock, boulders, soft, or spongy soils are encountered, they shall be excavated a minimum of twenty-four (24) inches below the invert grade for a width of at least one (1) pipe diameter or span on each side of the pipe and shall be backfilled with selected granular or fine readily compactable soil material or crushed rock material.
- 413 - All pipe culverts shall be bedded on a 1-1/2"-0" crushed rock material in accordance with Section 1200 gradation. Bedding shall have a depth of not less than six (6) inches as shown on plans. Foundation material shall be of uniform density throughout the length of the structure and shall be shaped to fit the pipe.

- 414a - The invert grade of the bedding shall be cambered at the middle ordinate a minimum of 1 percent of the total length of the drainage structure. Camber shall be developed on a parabolic curve.
- 415 - Inspection of pipe culverts having a diameter of (48) inches and pipe-arch culverts having a height of (40) inches or a cross sectional area of (13) or larger shall be made before backfill is placed. Culverts found to be out of alignment or damaged shall be replaced, reinstalled or repaired as directed by the Authorized Officer at the Purchaser's expense.
- 416 - Side-fill material for pipe culverts shall be placed within one (1) pipe diameter, or a minimum of one (1) foot, of the sides of the pipe barrel, and to a half (1/2) pipe diameter on round pipes with granular material (or 1-1/2"-0" crushed rock material in accordance with Section 1200 gradation if crushed bedding/backfill is required in the rock sheets and Section 413).
- The remaining fill material shall be of fine, readily compactable soil and be free of excess moisture, muck, frozen material, roots, sod, or other deleterious or caustic material and devoid of rocks or stones of sizes which may impinge upon and damage the pipe or otherwise interfere with proper compaction.
- 419 - The pipe culverts, after being bedded and backfilled as required by these specifications, shall be protected by an 18" cover of fill before heavy equipment is permitted to cross the drainage structures.
- 421 - Trenches and bedding rock necessary for the installation of perforated pipe shall conform to the lines, grades, dimensions and typical diagram as shown on the plans.
- 422 - Drain rock shall be carefully placed on geotextile material required in section 1300, to prevent damage or displacement. A minimum 4-inch bedding of drain rock shall be placed and compacted in the bottom of the trench before installing the underdrain pipe. Underdrain pipe shall be firmly embedded in this layer and drain rock placed to the height shown on the plans, or as directed by the Authorized Officer, and then compacted. Care shall be taken not to displace the underdrain pipe or the covering at open joints. Geotextile material shall be overlapped on top of the drain rock a minimum of 1 foot, as shown on the plans (provided upon request). Backfill shall then be placed and compacted in one-foot lifts to the required grades.
- 423 - Construction of catch basins conforming to lines, grades, dimensions and typical diagrams shown on the plans, shall be required for grade culverts.

- 424 - Construction of splash pads and energy dissipaters conforming to lines, grades, dimensions and typical diagram shown on the plans, shall be required for grade culverts and culverts as listed on the culvert sheet.
- 426 - Culvert markers consisting of six (6) foot steel fence posts painted blue shall be furnished, fabricated, and installed by the Purchaser at the inlet of all culverts (installed and existing) as marked. Marker shall be installed within six (6) inches of upslope side of culvert inlet.
- 427 - The Purchaser shall record culvert sizes, lengths and location actually installed on a copy of the culvert list. This culvert list shall be furnished to the Authorized Officer.
- 428 - The Purchaser shall remove and dispose of old culverts (removed in the construction phase) in a legal manner, off of Government property, and pay any fees required. The Purchaser shall remove the old culverts from the work site prior to road acceptance.
- 429 - Keep the excavation site dewatered so that the installation of culverts is completed under dry conditions. Dispose of excess water by using pumping or natural drainage ways near the site in a manner that will avoid damage to adjacent property. Provide for downstream waterflow with no more than ten (10) percent increase in natural stream turbidity due to transport of excavated material or sediment during construction. Diversion streams shall not be returned to the natural channel until all in-stream work has been completed.
- 430 - During culvert installations or replacement activities, all stream flow shall be diverted around the culvert work occurring in live streams, as to maintain downstream flows and minimize turbidity. Woody material removed from stream channels during culvert work shall be placed in the stream channel downstream of the culvert.

RENOVATION AND IMPROVEMENT OF EXISTING ROADS - 500

- 501 - This work shall consist of reconditioning and preparing the roadbed and shoulders, minor excavation and/or embankment, cleaning and shaping drainage ditches, trimming vegetation from cut and embankment slopes, and cleaning and repairing drainage structures of existing roads in accordance with these specifications, as shown on the plans, and as marked on the ground.
- 501a - This work shall include the removal and disposal of slides in accordance with these specifications and as marked on the ground.

- 502 - The existing road surface shall be bladed and shaped to the lines, grades, dimensions, and typical cross sections shown on the plans.
- 502b - Drainage ditches shall be bladed and shaped in accordance with the lines, grades, dimensions, and typical cross sections shown on the plans.
- 503a - Material from the ditchline reestablishment excavation shall be hauled to designated disposal sites or at locations directed by the Authorized Officer.
- 504 - Existing road surface shall be uniformly moistened or dried to the optimum moisture content suitable for maximum density and compacted to full width with equipment conforming to requirements of Subsections 103f and 103i.
- 504a - Minimum compaction required shall be six (6) passes over each full-width layer, or fraction thereof, as measured along the centerline per layer of material.
- 506 - The inlet end of all existing drainage structures shall be cleared of vegetative debris and boulders that are of sufficient size to obstruct normal flow. Pipe inverts shall be cleared of sediment and other debris lodged in the barrel of the pipe. The outflow area of pipe structures shall be cleared of rock and vegetative obstructions which will impede the structure's designed outflow configuration. Catch basins shall conform to the lines, grade, dimensions, and typical diagram shown on the plans.
- 508 - Vegetation encroaching on the roadbed and the drainage ditches of existing roads shall be removed by cutting and disposed of in accordance with Subsection 2100 of these specifications.
- 509 - The finished grading and compacting shall be approved by the Authorized Officer. The Purchaser shall give the Authorized Officer three (3) days' notice prior to final inspection of the grading operations.

WATERING - 600

- 601 - This work shall consist of furnishing and applying water required for the compaction of embankments, roadbeds, backfills, base courses, surface courses, finishing and reconditioning of existing roadbeds, laying dust, or for other uses in accordance with these specifications.
- 602 - Water, when needed for compaction or laying dust, shall be applied at the locations, in the amounts, and during the hours as directed by the Authorized Officer. Amounts of water to be provided will be the minimum needed to properly execute the compaction requirements in conformance with these specifications.

- 603 - Water trucks used in this work shall be equipped with a distributing device of ample capacity and of such design as to ensure uniform application of water on the road bed.
- 604 - Water required under these specifications shall be obtained at the times and at the locations indicated below:

Willamette Meridian				Dates Available	
Common Name	Section	T	R	From	To
Barney Reservoir	S ½, Section 36	1S	6W	TBD	TBD

Use of water sources are subject to applicable State water regulations. In the event that the required water is not available at the locations specified, water shall be obtained from a source approved by the Authorized Officer as permitted by Oregon Water Resources. A reduction shall be made in the total purchase price to reflect additional hauling distance based on rental rates from current BLM Timber Appraisal Cost Schedules. It is estimated that approximately six hundred thirty one thousand eight hundred eighty (631,880) gallons will be required for processing rock and dust abatement.

- 605 - The Purchaser shall secure the necessary water permits and pay all required water fees for use of the water sources specified under Subsection 604 for use of water sources approved by the Authorized Officer. Purchaser shall notify the Bureau of Land Management when an agreement has been met and shall provide a copy of the documentation.

AGGREGATE BASE COURSE - 700
PIT-RUN ROCK MATERIAL

- 701 - This work shall consist of furnishing, hauling, and placing one or more layers of pit-run rock material on roadbeds and as backfill material approved for placing pit-run materials in accordance with these specifications and conforming to the dimensions and typical cross sections shown on the plans.
- 702 - Pitrun rock materials used in this work shall be obtained from the source shown on the plans. Development and mining of such source shall be in accordance with section 1600 of these specifications

- 703 - Pit-run rock materials shall consist of talus rock, partly decomposed granite or basalt, or other approved materials. The materials shall be reasonably free from vegetative matter or other deleterious material.
- 704 - Pit-run rock material shall consist of native materials of such a size and grading that it can be taken directly from the source and placed on the road without crushing or screening.
- The material shall contain only occasional oversize particles to be removed. The term "oversize" shall be construed to mean material greater than six (6) inches.
- 705 - Pit-run rock material shall be placed in layers of sufficient thickness to accommodate the material, except that the maximum thickness of any layer shall not exceed six (6) inches. Where the total specified thickness is greater than six (6) inches the material shall be placed in two (2) or more layers of equal thickness.
- 706 - Oversize material that cannot be accommodated in the layer shall be removed at the source or on the road, and shall be disposed of as directed by the Authorized Officer.
- 707 - When so indicated by the plans, filler or binder obtained from the chosen sources shall be uniformly blended with pit-run rock material on the road.
- 708 - The roadbed as shaped and compacted under sections 400 and 500 of these specifications shall be approved by the Authorized Officer prior to placement of pit-run rock material. Notification for final inspection of base rock shall be three (3) days prior to the spreading of crushed cap rock.
- 709 - Pit-run rock material shall be placed on roadbed, blade processed and spread to required dimensions.
- 711 - Layers of pit-run rock material placed and shaped as specified shall be uniformly moistened or dried to the optimum moisture content for maximum density and compacted to full width by compacting equipment conforming to the requirements of Subsections 103f, 103g, 103h, and 103i. Minimum compaction shall be six (6) passes over each full-width layer, or fraction thereof.
- 712 - Pit-run rock material shall be surface bladed during the compaction operation to remove irregularities and to produce a smooth running surface.
- 713 - Pit-run rock material used to repair or reinforce soft, muddy, frozen, yielding, or rutted subgrades shall not be construed as surfacing required under this specification, unless approved in writing by the Authorized Officer prior to placement.

AGGREGATE BASE COURSE - 900
SCREENED ROCK MATERIAL

- 901 - This work shall consist of furnishing, hauling, and placing one or more lifts of screened rock material on roadbeds approved for placing screened rock material in accordance with these specifications and conforming to the dimensions and typical cross sections shown on the plans
- 902a - Screened rock materials to be used in this work may be obtained from a source selected by the Purchaser, at his option, providing the rock materials furnished comply with these specifications and the sources are approved in writing by the Authorized Officer prior to use.
- 903 - Screened rock material shall conform to the following gradation requirements:

Table 903

SCREENED ROCK MATERIAL GRADATION REQUIREMENTS

Percentage by Weight Passing Square Mesh Sieves
(AASHTO T 27)

Sieve Designation	Gradation D
2 inch	100
1-1/2 inch	99
1-1/4 inch	99
1 inch	71
3/4 inch	31
5/8 inch	12
1/2 inch	3
1/4 inch	2
No. 4	2
No. 10	1
No. 20	1
No. 50	0.8
No. 100	0.5
No. 200	0.3

- 904 - Screened rock material shall not exceed (35) percent loss as determined by AASHTO T 96.

- 904a - Screened rock material shall show a durability value of not less than 35 as determined by AASHTO T 210.
- 905 - The roadbed as shaped and compacted under sections 300 and 500 of these specifications, shall be approved by the Authorized Officer prior to placement of screened rock materials. Notification for final inspection, prior to rocking, shall be (72) hours prior to that inspection and shall be (10) days prior to start of rock operations.
- 906 - Screened rock material shall be placed in layers not to exceed (6) inches in thickness. Where the required total thickness is more than (6) inches, the rock material shall be shaped and compacted in two or more layers of approximately equal thickness.
- 906a - Screened rock materials used to repair or reinforce a soft, muddy, frozen, yielding, or rutted subgrades shall not be construed as surfacing under this specification.
- 908 - Screened rock material shall be blade-processed and spread to required dimensions. Processing shall be performed in such a manner as to minimize aggregate segregation.
- 909 - Screened rock material shall be compacted by routing construction and hauling equipment over the full width of each layer placed.
- 911 - The Purchaser shall place in stockpile 280 cubic yards truck measure of Gradation D at a site shown on the plans. Such material shall be used as shown on the plans and as directed by the Authorized Officer.

AGGREGATE BASE COURSE - 1000
CRUSHED ROCK MATERIAL

- 1001 - This work shall consist of furnishing, hauling, and placing one or more layers of crushed rock material on roadbeds and culvert bedding approved for placing crushed rock material, in accordance with these specifications and conforming to the dimensions and typical cross sections shown on the plans.

Material not conforming to these specifications will be rejected, and shall be removed from the road or stockpile at the purchaser's expense.
- 1002 - Crushed rock materials used in this work shall consist of quarry rock, stone,

gravel, or other approved materials obtained from the source shown on the plans. Development and mining of such source shall be in accordance with section 1600 of these specifications.

- 1003 - Crushed rock material produced from gravel shall have two (2) manufactured fractured faces on sixty-five (65) percent, by weight, of the material retained on the No. 4 sieve. If necessary to meet the above requirements or to eliminate an excess of filler, the gravel shall be screened before crushing.
- 1004 - Crushed rock material shall consist of hard durable rock fragments conforming to the following gradation requirements:

TABLE 1004
AGGREGATE BASE COURSE
CRUSHED ROCK MATERIAL

Percentage by weight passing square mesh sieves
AASHTO T 11 & T 27

GRADATION

Sieve Designation	D
6-inch	100
3-inch	45-65
1-1/2-inch	-
1-inch	-
¾-inch	-
No. 4	10 Max
No. 30	-
No. 40	-
No. 200	-

- 1004a - The Purchaser shall be required to take one sample of each 2,000 cubic yards of crushed rock material produced, using approved AASHTO sampling procedures. The Purchaser shall submit samples to a certified lab or shall perform testing for gradation requirements using ASHTO T 11 and AASHTO T 27 testing procedures and also perform testing for sand equivalency requirements using AASHTO T 176 testing procedures. Prior to testing, each sample shall be split, making one-half of the sample with proper identification available for testing by the Authorized Officer. Each sample and the results of Purchaser testing shall be made available to the Authorized Officer within twenty-four (24) hours of

sampling. The Purchaser shall provide test results for the first five hundred (500) cubic yards produced prior to commencing production crushing and hauling.

- 1005 - Crushed rock material shall not exceed thirty-five (35) percent loss as determined by AASHTO T 96.
- 1006 - Crushed rock material shall show a durability value of not less than thirty-five (35) as determined by AASHTO T210.
- 1007 - That portion of crushed rock material passing the No. 40 sieve, including blending filler, shall have a liquid limit of not more than thirty (35) and a plasticity index of not less than four (4) and not more than twelve (12) as determined by AASHTO T 89 and AASHTO T 90.
- 1008 - If additional binder or filler material is necessary to meet the grading or plasticity requirements or for satisfactory bonding of the material, it shall be uniformly blended with the crushed rock material at the crushing and screening plant prior to placing on the road, unless otherwise agreed. The material for such purposes shall be obtained from sources approved by the Authorized Officer and shall be free from stones, vegetative matter, and other deleterious materials.
- 1008a - Each layer of crushed rock material shall be thoroughly mixed on the roadbed by alternately blading, to full depth, until a uniform mixture has been obtained. The mixture shall then be spread to full width. When completed, the spreading shall produce a surface which is smooth, presents uniform shoulder lines, and conforms to the specified cross section.
- 1009 - Shaping and compacting of roadbed shall be completed and approved prior to placing crushed rock material, in accordance to the requirements of Subsections 300, 400, and 500. Notification for final inspection of base rock shall be three (3) days prior to the spreading of crushed cap rock.
- 1010 - Crushed rock material conforming to the requirements of these specifications shall be placed on the approved roadbed, turnarounds, and landings in accordance with these specifications and conforming to the lines, grades, dimensions, and typical cross sections shown on the plans and marked on the ground. Compacted layers shall not exceed four (4) inches in depth. When more than one (1) layer is required, each shall be shaped, processed, compacted, and approved by the Authorized Officer before the succeeding layer is placed. Irregularities or depressions that develop during compaction of the top layer shall be corrected by loosening the material at these places and then adding or removing crushed rock material until the surface is smooth and uniform.
- 1010a - Crushed rock material used to repair or reinforce soft, muddy, frozen, yielding, or rutted roadbed shall not be construed as surfacing required by this specification unless approved by the Authorized Officer in advance.

- 1012 - Each layer of crushed rock material placed, processed, and shaped as specified shall be moistened or dried to a uniform moisture content suitable for maximum compaction and compacted to full width by compacting equipment conforming to the requirements of Subsections 103f and 103i . Minimum compaction shall be six (6) passes over each full-width layer, or fraction thereof.

- 1016 - The Purchaser shall place in stockpile 8,642 cubic yards truck measure of Gradation D crushed rock material at site shown on the plans. Such material shall be used as shown on the plans and as directed by the Authorized Officer. All crushed rock material so stockpiled shall be placed on the designated roads prior to termination of the timber sale contract.

- 1017 - Prior to stockpiling Subsection 1004 Gradation D crushed rock material, the stockpile site shall be prepared by clearing and disposing of all trees, stumps, brush, and other debris in accordance with Section 200. The floor of each stockpile site shall be graded to a level and uniform cross section. A minimum of 8,642 cubic yards, stockpile measure, shall be placed at the following stockpile site:

Stockpile No.	Willamette Meridian			Approx. Cu. Yds.	Road No.
	Sec.	T.	R.		
1	30	2	6	8,642	Weyerhaeuser Section 30 Pit

- 1018 - The equipment and methods used for stockpiling crushed rock material and for removing material from the stockpiles shall be such that minimum degradation or segregation of the material will result and that minimal amounts of foreign material will be incorporated into the crushed base material. There will be no intermingling of stockpiled materials.

- 1020 - Crushed rock material required under Section 1000 of these specifications shall first be placed in stockpile after crushing. The Purchaser shall notify the Authorized Officer a minimum of (3) days in advance of the date he intends to commence the crushing and stock-piling operation so that progressive test samples can be taken as the crushed rock material is produced. Sample material shall remain in stockpile until such time the Authorized Officer receives test results which indicate compliance with Subsections 1003, 1004, 1005, 1006,

1007, and 1008. Crushed rock material so tested shall be approved in writing by the Authorized Officer within (6) days from sampling date. Approved material may then be removed from stockpile for placement on the designated road. In no event shall the Purchaser place crushed rock materials on the road from sources other than the tested and approved stockpiles. Noncompliance with the requirements of this subsection shall constitute grounds for the rejection of crushed rock materials furnished under this contract.

AGGREGATE SURFACE COURSE – 1200
CRUSHED ROCK MATERIAL

- 1201 - This work shall consist of furnishing, hauling, and placing one (1) or more layers of crushed rock material on roadbeds, base courses, and culvert bedding approved for placing crushed rock material in accordance with these specifications and conforming to the dimensions and typical cross sections shown on the plans. Material not conforming to these specifications will be rejected, and shall be removed from the road or stockpile at the purchaser's expense.
- 1202 - Crushed rock materials used in this work shall consist of quarry rock, stone, gravel, or other approved materials obtained from source shown on the plans. Development and mining of such source shall be in accordance with section 1600 of these specifications.
- 1203 - When crushed rock material is produced from gravel, not less than seventy-five (75) percent by weight of the particles retained on the No. 4 sieve will have 4 manufactured fractured faces. If necessary to meet the above requirements or to eliminate an excess of filler, the gravel shall be screened before crushing.
- 1204 - Crushed rock material shall consist of hard durable rock fragments conforming to the following gradation requirements:

TABLE 1204
AGGREGATE SURFACE COURSE
CRUSHED ROCK MATERIAL
Percentage by weight passing square mesh sieves
AASHTO T 11 & T 27
GRADATION

Sieve Designation	C
1-1/2-inch	100
1-inch	-
3/4-inch	60-90
1/2-inch	-
No. 4	30-55
No. 8	22-43
No. 30	11-27
No. 40	-
No. 200	3-15

- 1204a - The Purchaser shall be required to take one sample for each 1,000 cubic yards of crushed rock material to be utilized using AASHTO sampling procedures. The Purchaser shall submit samples to a certified lab or perform testing for gradation requirements using AASHTO T 11 and AASHTO T 27 testing procedures and also perform testing for sand equivalency requirements using AASHTO T 176 testing procedures. Prior to testing, each sample shall be split, making one half of the sample, with proper identification, available for testing by the Authorized Officer. Each sample and the results of Purchaser testing shall be made available to the Authorized Officer within 24 hours of sampling. The Purchaser shall provide test results for the first (500) cubic yards produced prior to commencing production crushing and hauling.
- 1205 - Crushed rock material retained on the No. 4 sieve shall have a percentage of loss of not more than thirty-five (35) at five hundred (500) revolutions, as determined by AASHTO T 96.
- 1206 - Crushed rock material shall show a durability value of not less than thirty-five (35) as determined by AASHTO T210.
- 1207 - That portion of crushed rock material passing the No. 40 sieve, including blending filler, shall have a liquid limit of not more than thirty-five (35) and a plasticity index of not less than four (4) and not more than twelve (12) as determined by AASHTO T 89 and AASHTO T 90.

- 1208 - If additional binder or filler material is necessary to meet the grading or plasticity requirements or for satisfactory bonding of the material, it shall be uniformly blended with the crushed rock material at the crushing and screening plant prior to placing on the road, unless otherwise agreed. The material for such purposes shall be obtained from sources approved by the Authorized Officer and shall be free from stones, vegetative matter, and other deleterious materials.
- 1208a - Each layer of crushed rock material shall be thoroughly mixed on the roadbed by alternately blading, to full depth, until a uniform mixture has been obtained. The mixture shall then be spread to full width. When completed, the spreading shall produce a surface which is smooth, presents uniform shoulder lines, and conforms to the specified cross section.
- 1209 - Shaping and compacting of roadbed, base course, or culvert trench shall be completed and approved prior to placing crushed rock material, in accordance to the requirements of Subsections 300, 400, 500, and 700. Notification for final inspection of base rock shall be three (3) days prior to the spreading of crushed cap rock.
- 1210 - Crushed rock material conforming to the requirements of these specifications shall be placed on the approved roadbed, landings, base course and culvert trench in accordance with these specifications and conforming to the lines, grades, dimensions, and typical cross sections shown on the plans and marked on the ground. Compacted layers shall not exceed 4 inches in depth. When more than one (1) layer is required, each shall be shaped, processed, compacted, and approved by the Authorized Officer before the succeeding layer is placed.
- Irregularities or depressions that develop during compaction of the top layer shall be corrected by loosening the material at these places and then adding or removing crushed rock material until the surface is smooth and uniform.
- 1210a - Crushed rock material used to repair or reinforce soft, muddy, frozen, yielding, or rutted roadbed shall not be construed as surfacing required by this specification unless approved by the Authorized Officer in advance.
- 1212 - Each layer of crushed rock material placed, processed, and shaped as specified shall be moistened or dried to a uniform moisture content suitable for maximum compaction and compacted to full width by compacting equipment conforming to the requirements of Subsections 103f, 103g, and 103i . Minimum compaction shall be six (6) passes over each full-width layer, or fraction thereof.
- 1216 - The Purchaser shall place in stockpile 7,548 cubic yards truck measure of Gradation C crushed rock material at site shown on the plans. Such material shall be used to reinforce and repair areas of deficient support which appear during the hauling operation. Crushed rock material so stockpiled shall be placed on the

designated road prior to termination of the timber sale contract.

- 1217 - Prior to stockpiling Subsection 1204 Gradation C crushed rock material, the stockpile site shall be prepared by clearing and disposing of all trees, stumps, brush, and other debris in accordance with Section 200. A minimum of 7,548 cubic yards, stockpile measure, shall be placed at the following stockpile sites:

Stockpile No.	Willamette Meridian			Approx. Cu. Yds.	Road No.
	Sec.	T.	R.		
2	30	2	6	7,548	Weyerhaeuser Section 30 Pit

- 1218 - The equipment and methods used for stockpiling crushed rock material and for removing material from the stockpiles shall be such that minimum degradation or segregation of the material will result and that minimal amounts of foreign material will be incorporated into the crushed base material and that there will be no intermingling of stockpiled materials.
- 1220 - Crushed rock material required under Section 1200 of these specifications shall first be placed in stockpile after crushing. The Purchaser shall notify the Authorized Officer a minimum of (3) days in advance of the date he intends to commence the crushing and stockpiling operations so that progressive test samples can be taken as the crushed rock material is produced. Sampled materials shall remain in stockpile until such time the Authorized Officer receives test results which indicate compliance with Subsections 1203, 1204, 1204a, 1205, 1206, 1207, 1208, and 1208a. Crushed rock material so tested shall be approved in writing by the Authorized Officer within 6 days from sampling date. Approved material may then be removed from stockpile for placement on the designated road. In no event shall the Purchaser place crushed rock materials on the road from sources other than the tested and approved stockpiles. Noncompliance with the requirements of this subsection shall constitute grounds for the rejection of all crushed rock materials furnished under this contract.

GEOTEXTILES – 1300

- 1301 - This work shall consist of furnishing, hauling, and installing geotextile material at the locations and in accordance with these specifications and the lines, grades, dimensions, and typical cross sections shown on the plans (provided upon request).
- 1302 - Use long-chain, synthetic polymers, composed of at least 95 percent by mass of polyolefins or polyesters, to manufacture geotextile or the threads used to sew geotextile.
- 1303 - Furnish to the Authorized Officer a commercial certification including the name of the manufacturer, product name, style number, chemical composition of the filaments or yarns, and other pertinent information to fully describe the geotextile.
- 1303b - When using a geotextile for a permanent installation limit material exposure to ultraviolet radiation to less than 10 days. Geotextile material deemed to have been overexposed to sunlight by the Authorized Officer shall be rejected.
- 1307 - Where subgrade reinforcement is required, clearing, grubbing, and excavation of the subgrade shall be completed prior to the placement of geotextile material. The subgrade shall be leveled and smoothed to remove lumps and depressions which exceed (6) inches in height and depth. Small pieces of woody debris shall be removed. Light vegetation, i.e., grasses, weeds, leaves, and other small woody debris, may be left in place.
- 1308 - The geotextile material shall be installed directly on the prepared surface. Place the geotextile smooth and free of tension, stress, or wrinkles. Fold or cut the geotextile to conform to curves. Overlap in the direction of construction. Overlap the geotextile a minimum of (2) feet at the ends and sides of adjoining sheets, or sew the geotextile joints according to manufacturer's recommendations. Do not place longitudinal overlaps below anticipated wheel loads. Hold the geotextile in place with pins, staples, or piles of cover material.
- 1309 - End-dump the cover material onto the geotextile from the edge of the geotextile or from previously placed cover material. Do not operate equipment directly on the geotextile. Spread the end-dumped pile of cover material maintaining a minimum lift thickness of (4) inches. Compact the cover material with rubber-tired or non-vibratory smooth drum rollers. Avoid sudden stops, starts, or turns of the construction equipment. Fill all ruts from construction equipment with additional cover material. Do not re-grade ruts with placement equipment.

- 1310 - Repair or replace all geotextile that is torn, punctured, or muddy. Remove the damaged area and place a patch of the same type of geotextile overlapping 3 feet beyond the damaged area.
- 1311 - Geotextile material used for subgrade reinforcement or material separation shall meet the following requirements:

TABLE 1311b
Physical Requirements for Stabilization Geotextile

Property	Test Method ASTM	Units	Specifications ⁽¹⁾	
			Type III-A	Type III-B
Grab strength	D 4632	N	1400/900	1100/700
Sewn seam strength	D 4632	N	1260/810	990/630
Tear strength	D 4533	N	500/350	400 ⁽³⁾ /250
Puncture strength	D 4833	N	500/350	400/250
Burst strength	D 3786	kPa	3500/1700	2700/1300
Permittivity	D 4491	s ⁻¹	0.43	0.43
Apparent opening size	D 4751	mm	0.60 ⁽²⁾	0.60 ⁽²⁾
Ultraviolet stability	D 4355	%	50% after 500 hours of exposure	

- (1) The first values in a column apply to geotextiles that break at < 50 percent elongation (ASTM D 4632). The second values in a column apply to geotextiles that break at ≥ 50 percent elongation (ASTM D 4632).
- (2) Maximum average roll value.
- (3) The minimum average tear strength for woven monofilament geotextile is 245 N.

- 1312 - Where geotextile material is specified as filter wrap for underdrains it shall be inert to commonly encountered chemicals, mildew and rot resistant, resistant to ultraviolet light exposure, and insect and rodent resistant.
- 1313 - Trenches for underdrains shall be excavated to the dimensions marked in field. Smooth the trench surfaces by removing all projections that may damage the geotextile. Minimum slope of trenches shall be one percent. The Authorized Officer shall have a minimum of 3 days notice in which to approve trenches prior to installation of the geotextile material, pipe, drain rock, or other backfill.
- 1314 - Geotextile material used as a filter shall be placed in a manner and at the locations shown on the plans. Place the long dimension of the geotextile parallel to the centerline of the trench. Position the geotextile, without stretching, in contact with the trench surface. Overlap the joints a minimum of 24 inches with the upstream geotextile placed over the downstream geotextile. Replace geotextile

damaged during installation.

- 1315 - Geotextile materials used for subsurface drainage shall meet the following requirements:

TABLE 1315
Physical Requirements for Subsurface Drainage Geotextile

Property	Test Method ASTM	Units	Specifications ⁽¹⁾					
			Type I-A	Type I-B	Type I-C	Type I-D	Type-I-E	Type I-F
Grab strength	D 4632	N	1100/700	1100/700	1100/700	800/500	800/500	800/500
Sewn seam strength	D 4632	N	990/630	990/630	990/630	720/450	720/450	720/450
Tear strength	D 4533	N	400 ⁽³⁾ /250	400 ⁽³⁾ /250	400 ⁽³⁾ /250	300/175	300/175	300/175
Puncture strength	D 4833	N	400/250	400/250	400/250	300/175	300/175	300/175
Burst strength	D 3786	kPa	2750/1350	2750/1350	2750/1350	2100/950	2100/950	2100/950
Permittivity	D 4491	s ⁻¹	0.5	0.2	0.1	0.5	0.2	0.1
Apparent opening size	D 4751	mm	0.43 ⁽²⁾	0.25 ⁽²⁾	0.22 ⁽²⁾	0.43 ⁽²⁾	0.25 ⁽²⁾	0.22 ⁽²⁾
Ultraviolet stability	D 4355	%	50% after 500 hours of exposure					

- (1) The first values in a column apply to geotextiles that break at < 50 percent elongation (ASTM D 4632). The second values in a column apply to geotextiles that break at ≥ 50 percent elongation (ASTM D 4632).
(2) Maximum average roll value.
(3) The minimum average tear strength for woven monofilament geotextile is 245 N.

SLOPE PROTECTION - 1400

- 1401 - This work shall consist of furnishing, hauling, and placing stone materials for slope protection structures, splash pads, and road blockages in accordance with these specifications and conforming to the lines, grades, dimensions, and typical cross-sections shown on the plans. Material not conforming to these

specifications will be rejected and shall be removed from the slope protection structure at the purchaser’s expense and as directed by the Authorized Officer.

- 1402 - Stone material shall consist of hard angular quarry rock of such quality that it will not disintegrate on exposure to water or weathering, and shall be graded in accordance with these specifications.

Volume/ Cubic Foot	Average Dimension in inches	Approximate Weight in Pounds
12	27.5 x 27.5 x 27.5	2100
6	21.8 x 21.8 x 21.8	1050
4	19.1 x 19.1 x 19.1	700
3	17.3 x 17.3 x 17.3	525
1	12.0 x 12.0 x 12.0	175
2/3	10.5 x 12.0 x 12.0	120
1/2	9.5 x 9.5 x 9.5	88
1/3	8.3 x 8.3 x 8.3	60
1/4	7.6 x 7.6 x 7.6	44
1/6	6.6 x 6.6 x 6.6	30
1/8	6.0 x 6.0 x 6.0	22
1/100	2.6 x 2.6 x 2.6	2

- 1404 - The material shall be well graded from the smallest to the maximum size specified. Stones smaller than the specified ten (10) percent size shall consist of spalls and fine rock fragments so distributed as to provide a stable compact mass.

- 1405 - Rip rap shall conform to the following gradations:

TABLE 1405

Class	% of Rock Equal of Smaller by Count, Dx	Range of Intermediate Dimensions, inches	Range of Rock Mass, pounds
5	100	33-39	2900-4850
	85	23-28	990-1800
	50	17-20	400-650
	15	11-15	110-270

Rocks smaller than six inches in diameter are not counted.

- 1405a - Stone materials shall show a durability value of not less than fifty (50) as determined by AASHTO T 210.

- 1406a - The embankment shall be placed in successive horizontal layers of sufficient depth to contain the maximum size rock present in the material. Spalls and finer fragments of stone other than specified in Subsection 1405 shall be used to chock the larger stones solidly in position and to fill voids between the major stones as laid in the embankment. The exposed face of the embankment shall be reasonably smooth and uniform; material shall be prevented from escaping beyond the toe of the structure
- 1407 - Determination of the acceptability of the slope protection material gradation will be through visual inspection and physical measurements by the Authorized Officer.
- 1408 - Trenches for slope protection structures shall be excavated to the lines, elevations, and typical diagram shown on the plans. They shall be of sufficient size to permit the placing of structure footing of the full widths and length shown. Trenches shall be approved by the Authorized Officer prior to placement of slope protection material.
- 1408a - Foundation trenches and other required excavation as shown on the plans shall be approved prior to placing the slope protection material.

QUARRY AND BORROW PIT DEVELOPMENT - 1600

- 1601 - This work shall consist of quarry development and rehabilitation in accordance with these specifications and conforming to the lines, grades, dimensions, and typical cross sections shown on the plans.
- 1602a - The designated rock quarry site is located on non-BLM lands at the following location:

Willamette Meridian		
Section	T	R
30	2 S.	6 W.

Use of sites on non-BLM ownership are subject to the terms and conditions of Rock Permits, and regulations as administered by the State of Oregon Department of Geology and Mineral Industries (DOGAMI) which may include, but are not limited to, the following requirements: payment of a royalty fee, obtaining liability insurance and performance bond, and compliance with rock quarry site development plans.

- 1603 - If the Purchaser elects to use a rock source other than the designated source, the rock material produced shall comply with applicable sections of these specifications. If the alternate source is located on BLM ownership and a current BLM plan is not available, a development, mining, and reclamation plan shall be prepared by the Purchaser, and submitted for approval by the Authorized Officer. Development, mining and reclamation work shall be in accordance with the approved plan and 1600 specifications.
- 1604 - If the designated source proves insufficient as to quantity and quality of the required rock material, the Purchaser shall, when ordered in writing by the Authorized Officer, move his operation to an alternate materials source selected by the Authorized Officer
- 1605c - The operation of equipment related to the production of rock aggregate and quarry operations shall be confined to the quarry operations area and to the designated tractor trails.
- 1606 - Prior to removal of overburden from the quarry site, topsoil shall be removed and stockpiled. Stockpiles shall not be covered by overburden or waste materials and will be readily accessible for final backfilling and grading. The location of stockpile sites shall be shown on the mining plans.
- 1607b - Slash, stumps, logs, and other organic debris shall be piled so that it can be returned to the quarry floor at the termination of operations as directed by the Authorized Officer.
- 1608 - Overburden or reject material which does not conform to the requirements of Subsections 1005, 1006, 1205, and 1206 shall be wasted.
- 1609 - Overburden, trees, stumps, logs, and loose rock shall be removed back from the edge of working quarry faces for a minimum distance of ten (10) feet.
- 1610 - Waste disposal sites shall be selected and prepared to minimize erosion and establish conditions conducive to vegetative growth. Disposal areas shall be seeded and mulched in accordance with the requirements set forth in Section 1800 of these specifications.
- 1611 - The Purchaser shall notify the Weyerhaeuser Authorized Officer in writing at least two (2) days prior to commencing quarry operations.
- 1611a - The Purchaser shall not commence production drilling or crushing until the Authorized Officer has inspected and approved the site development.

- 1612 - The Purchaser shall notify MSHA (Mining Safety and Health Administration) by standard form or telephone, and in accordance with part 56, Chapter 1 of Title 30 Code of Federal Regulations (CFR), of what date he intends to commence, terminate, and/or temporarily close down operations of the pit. Notice shall be submitted a minimum of ten (10) days prior to the proposed date of the action to be taken. Notification shall be submitted to:

Mining Safety and Health Administration
Albany, OR 97321

or

Mining Safety and Health Administration
Bellevue, WA 98004

The Purchaser shall also prepare and submit to MSHA the quarterly Employment Report and Injury and Illness Report for the mining operation.

- 1613 - The Purchaser shall comply with local and State Safety Codes covering quarrying operations, warning signs, seismic monitoring, and traffic control. All quarrying operations will be conducted by appropriately licensed personnel; i.e. blasting and powder handler's license, etc.
- 1613a - The Purchaser has an option to enter into a separate rock and road lease agreement with Weyerhaeuser to develop and manufacture rock in their Section 30 Pit. Purchaser will submit a rock quarry development plan to Weyerhaeuser and Bureau of Land Management's Authorized Officer for approval, prior to operating under the lease. Purchaser shall notify the Bureau of Land Management when an agreement has been met and shall provide a copy of the documentation. Purchaser shall also notify the Bureau of Land Management prior to their development and manufacturing of rock.
- 1613b - Controlled blasting techniques shall be employed during production blasting to contain blasted rock. (The quarry shall be shot in multiple shots with no more than 5,000 CY per blast with a 8-millisecond time delay between shots).
- 1614a - Existing (and oversized) rock on the quarry floor shall be utilized before drilling and shooting new rock. (Oversized boulders shall not be wasted but shall be broken and utilized concurrent with acceptable material).
- 1615 - Operations on the quarry site shall be so conducted that, both during and after completion of work, erosion will be minimized and sediment will not enter streams or other bodies of water. Waste or disposal areas and quarry access roads shall be located, constructed, and maintained in a manner that will prevent

sediment from entering live streams or other bodies of water. Noncombustible debris and silt-laden water material resulting from the quarry operations shall be placed in such waste or disposal areas as (shown on the plans) (and) (directed by the Authorized Officer).

- 1616 - Upon completion of quarrying operations, overburden and waste materials shall be disposed of in accordance with requirements of the approved pit plan or in a manner approved in writing by the Weyerhaeuser Authorized Officer.
- 1617 - Upon completion of quarrying operations, required site reclamation measures shall be performed to the satisfaction of the Weyerhaeuser Authorized Officer.

EROSION CONTROL - 1700

- 1701 - This work shall consist of measures to control soil erosion or water pollution during the construction operation through the use of berms, dikes, dams, sediment basins, fiber mats, netting, gravel, mulches, grasses, slope drains, and other erosion control devices or methods in accordance with these specifications and conforming to the lines, grades, dimensions and typical cross sections shown on the plans.
- 1704 - The erosion control provisions specified under this Subsection shall be coordinated with the Soil Stabilization requirements of Section 1800 and the Geotextile requirement of Section 1300.
- 1708 - Newly constructed and renovated roads to be carried over the winter period, shall be blocked to vehicular traffic and waterbars installed.
- 1708a - Road segments not completed during dry weather periods shall be winterized, by providing a well-drained roadway using waterbars, maintaining drainage, and performing additional measures necessary to minimize erosion and other damage to the roadway, as directed by the Authorized Officer. Portions of roads not having surface rock in place will be blocked or barricaded to prevent vehicular traffic. A winterization plan shall be submitted to the Authorized Officer no later than September 15th of each harvest season.
- 1711 - The Purchaser shall construct sediment catch basins with straw bales at the following locations: 2-5-31.2 (MP. 0.324, 0.333, 0.451, 0.461, 0.567, 0.662, 0.708, 0.813, 1.959), 2-5-31.5 (Sta. 6+59), 2-6-15.0 (MP. 0.226, 0.425, 0.445, 0.551, 0.696, 1.016, 1.214, 1.506, 1.515, 1.689), 2-6-20.4 (MP. 0.248, 0.259), 2-6-21.1 (Sta. 7+17, 7+81), 2-6-21.2 (MP. 0.232), and 2-6-21.3 East (Sta. 10+31).

Construct sediment catch basins to the dimensions of the sediment catch basin detail on Pg. 52 of Exhibit C.

SOIL STABILIZATION – 1800

- 1801 - This work shall consist of seeding on designated cut, fill, borrow, disposal, and special areas in accordance with these specifications and as shown on the plans. This work is not required for road acceptance under Section 18 of this contract. Grass seed will be furnished by the Government. Straw Mulch shall be furnished by the Government.
- 1802a - Soil stabilization work consisting of seeding and mulching shall be performed on new road construction, road renovation and improvement, landings, borrow sites, and disposal sites in accordance with these specifications and as shown on the plans. The seed shall be spread at a rate of sixty (60) pounds/acre, (to be determined by the Authorized Officer based on visual observation of trial applications).
- 1803 - Soil stabilization work as specified under Subsection 1802a shall be performed during the following seasonal periods:

From	To
August 1	October 15

The Authorized Officer may modify the above seasonal dates to conform to existing weather conditions and changes in the construction schedule.

- 1809 - Mulch material conforming to the requirements of Subsections 1809a and 1809b shall be furnished by the Government and shall be delivered to the work area in a dry state. Material to be used in the mulching operation may be stockpiled along the road designated for treatment.
- 1809a - Straw mulch shall be from oats, wheat, rye, or other approved grain crops which are free from noxious weeds, mold, or other objectionable materials. Straw mulch shall be in an air-dry condition and suitable for placing with power spray equipment.
- 1809b - Grass straw mulch shall be from perennial grass or, if specified, an annual rye grass, from which the seed has been removed. The straw shall be free from Bentgrass, Canada Thistle, Tansy Ragwort, Skeleton weed, and other noxious

weed seed. The grass straw shall be from fields which have passed the current year's field inspection of the Oregon Grass Seed Certification program, or from fields certified by the County Agent, or by seed companies purchasing the seed.

- 1810 - Bulk mulching material required under these specifications shall be delivered to the work area bound either by twine, string or hemp rope. Wire binding will not be permitted.
- 1811 - The Purchaser shall apply to the disturbed soils that are wet and/or within fifty (50) feet each side of "live stream" locations and all disposal sites a mixture of grass seed and straw mulch material at the application rate of six (6) pounds seed/acre and three thousand (3000) pounds straw mulch/acre (to be determined by Authorized Officer based on visual observation of trial applications).
- 1814 - The Purchaser may reduce the application rate on partially covered slopes and refrain from application on areas already well stocked with grass or on rock surfaces as determined by the Authorized Officer.
- 1815b - Dry Method - Blowers, mechanical seeders, seed drills, landscape seeders, cultipaker seeders, fertilizer spreaders, or other approved mechanical seeding equipment may be used when seed and fertilizer are to be applied in dry form.
- 1819 - The Purchaser shall notify the Authorized Officer at least three (3) days in advance of date he intends to commence the specified soil stabilization work.
- 1824 - Twine, rope, sacks, and other debris resulting from the soil-stabilization operation shall be picked up and disposed of to the satisfaction of the Authorized Officer.

ROADSIDE BRUSHING - 2100

- 2101 - This work shall consist of the removal of vegetation from the road prism - variable distance, and inside curves in accordance with these specifications and conforming to the lines, grades, dimensions, and typical cross sections shown on the Roadside Brushing Detail Sheet of this exhibit, at designated locations as shown in the plans.
- 2102 - Roadside brushing may be performed mechanically with self powered, self-propelled equipment, or manually with hand tools, including chain saws.
- 2103 - Vegetation cut manually or mechanically less than six (6) inches in diameter shall be cut to a maximum height of two (2) inches above the ground surface or above obstructions such as rocks or stumps on cut and fill slopes and all limbs below the six (6) inch area will be severed from the trunk.
- 2104 - Trees in excess of six (6) inches in diameter shall be limbed, so that no limbs extend into the treated area or over the roadbed to a height of fourteen (14) feet

above the running surface of the roadway on cut and fill slopes, within the road prism-variable distance. Limbs shall be cut to within four (4) inches of the trunk to produce a smooth vertical face. Removal of trees larger than six (6) inches in diameter for sight distance or safety may be directed by the Authorized Officer.

- 2105 - Vegetation that is outside of the road prism-variable distance that protrudes into the road prism and within fourteen (14) feet in elevation above the running surface shall be cut, to within four (4) inches of the trunk to produce a smooth vertical face.
- 2106 - Vegetative growth capable of growing one (1) foot in height or higher shall be cut, within the road prism-variable distance or as directed by the Authorized Officer.
- 2107 - Inside curves shall be brushed out for a sight distance of two hundred (200) feet chord distance and/or a middle ordinate distance of twenty-five (25) feet, whichever is achieved first. Overhanging limbs and vegetation in excess of one (1) foot in height, shall be cut within these areas.
- 2109 - Debris resulting from this operation shall be scattered downslope from the roadway. Debris shall not be allowed to accumulate in concentrations. Debris in excess of one (1) foot in length and two (2) inches in diameter shall not be allowed to remain on cut slopes, ditches, roadways or water courses, or as directed by the Authorized Officer.
- 2112 - Roadside brushing shall be performed during the following seasonal periods:

*From	To
June 1	October 15

*Brushing may occur during the “wet season” given the following guidelines are followed:

- 1) Activity would be suspended when conditions exist that could generate sediment inputs into streams, such as times of intense or prolonged rainfall where water in ditches is flowing, or streamflow, as measured above and below the effects of the road, becomes discolored.
- 2) Activity would be suspended when road surface shows signs of serious deterioration such as excessive rutting or pumping of fines from the sub-grade.
- 3) Activity would be suspended upon decision of Authorized Officer.

- 2113 - Roadside brushing shall be accomplished on the following road segments: 2-5-29.0, 2-5-31.2, 2-5-31.3, 2-5-31.4, 2-5-31.6, 2-6-15.0, 2-6-15.9, 2-6-19.0, 2-6-20.4, 2-6-20.5, 2-6-21.0, and 2-6-21.2.
- 2116 - Traffic warning signs shall be required at each end of the work area. Signs shall meet the requirements of the Manual on Uniform Traffic Devices.

SLOPE STAKING - 2300

- 2301 - This work shall consist of slope staking (and referencing) road locations from slope stake notes furnished by the BLM in accordance with these specifications and conforming to the lines, grades, dimensions, and typical cross sections shown on the plans.
- 2302 - Slope stakes shall consist of (1-3/4 inch x 1/4 inch) smooth-finished wood slats of good quality, approximately eighteen (18) inches in length and tipped with red luminous paint.
- 2303 - Slope stakes shall be set as follows:
 - (a) A slope stake shall be set at the top of the cut slope for cut and fill and full bench sections.
 - (b) (For fill sections, only the uphill side shall be staked, unless otherwise specified).
 - (c) (For balanced sections both sides of the road shall be staked.)
 - (d) Stakes shall be set at a maximum interval of one hundred (100) feet and at a maximum interval of fifty (50) feet on curves.
 - (e) The slope stake shall be left in the slope stake location at time of staking. The Purchaser shall reset the slope stakes after completion of clearing and grubbing operations, where needed.
- 2304 - A reference marker consisting of a yellow plastic tag nailed or stapled to the base of a stump or tree shall be set for each slope stake. If no stumps or trees are available, a stake identical to that used for slope staking may be used. Reference markers shall be readily visible from the slope stake and shall be set outside of the posted right-of-way.
- 2309 - Stationing used is "L" or final location stationing.
- 2310 - Stakes shall be marked with black-lumber crayon or with a permanent waterproof

felt-tip marker.

- 2311 - Slope and reference stakes shall be set to the following standards of accuracy:

maximum allowable horizontal error +/-	Two (2) feet
maximum allowable vertical error +/-	One (1) foot

- 2313 - The BLM will slope stake and reference and furnish the Purchaser the resulting notes in advance of construction on the roads shown below:

Road No.	Approximate Sta/Mi.
2-6-21.9	Sta. 0+00 – 29+95
2-6-21.10	Sta. 0+00 – 4+36

- 2314 - Data for slope staking is available at the BLM Northwest Oregon District (Tillamook Field Office). P - Ground, Grade, Shift, and Template information shall be used to determine actual slope staked location.

BARRICADES AND CONTROL DEVICES - 2700

- 2701 - This work will consist of furnishing and placement of barricades, warning signs, and other protection required to prevent injury to people and damage to property due to culvert installations, brushing, and other construction work. Purchaser shall submit a site plan showing how the specifications in this section and of Sec. 42 will be accomplished.
- 2702 - Maintain condition, operation, and effectiveness of traffic control devices throughout period of use. Materials used for the temporary structures and controls are property of Contractor and shall be removed from Government land when need for their service has ended.

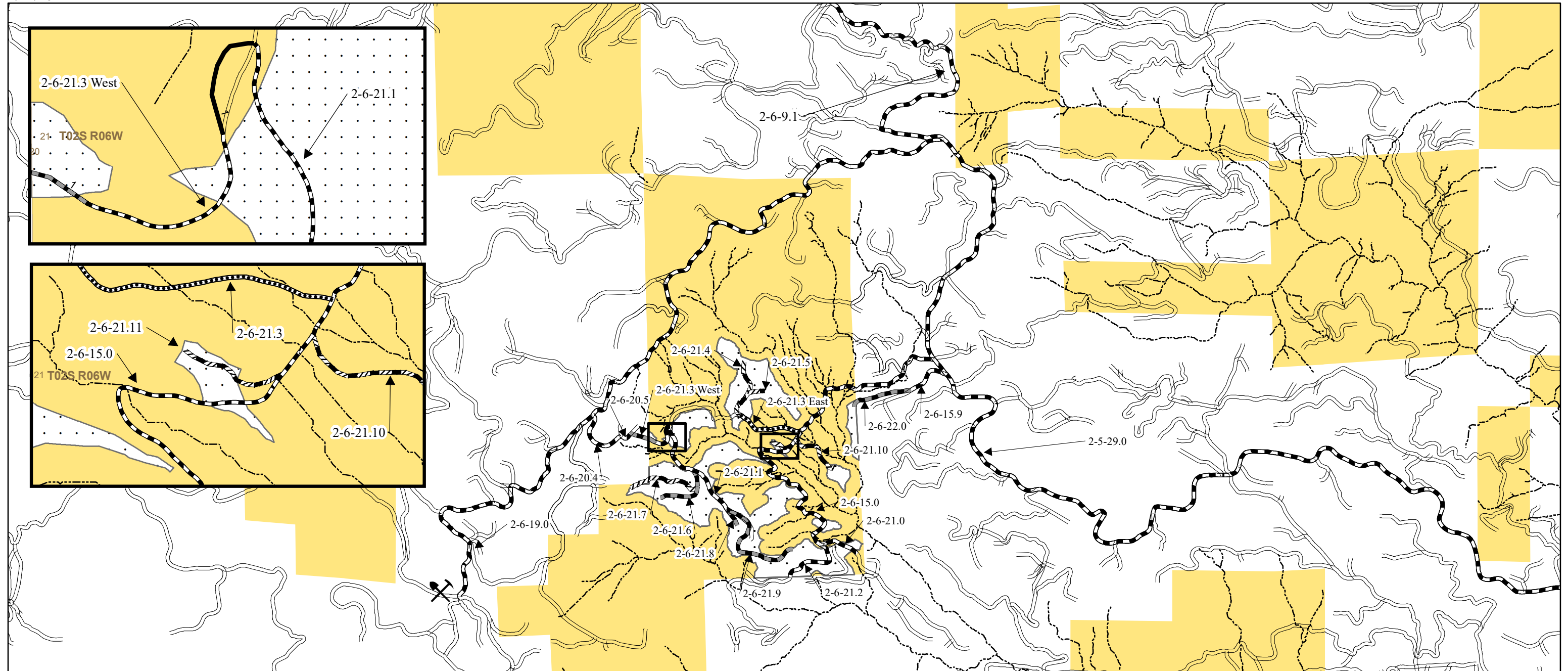








United States Department of Interior
 BUREAU OF LAND MANAGEMENT
 NORTHWEST OREGON DISTRICT - OREGON
 Road Plan Map


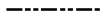


The Sentinel Timber Sale
 Contract NO. ORN04-TS-2021-0401
 Exhibit C
 Page 47 of 66

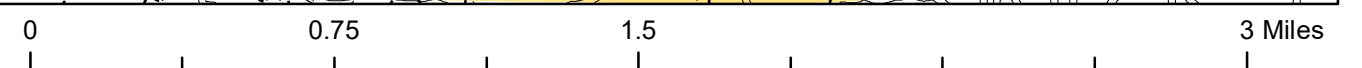
4/14/2021

T. 02S. R. 6W. Sections 16, 20, & 21 W.M. - NORTHWEST OREGON DISTRICT - OREGON
 T. 02S. R. 5W. Sections 31 W.M. - NORTHWEST OREGON DISTRICT - OREGON



-  Weyerhaeuser Rock Quarry
-  Rocked surfaced road to be improved, Open after use
-  Rocked surfaced road to be constructed, Open after use
-  Rocked surfaced road to be renovated, Open after use
-  Natural surfaced road to be constructed, Decommission after use
-  Natural surfaced road to be renovated, Decommission after use

-  Existing Roads
-  Streams
-  The Sentinel Project Area
-  Bureau of Land Management



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification. Prepared By: Austin Bettis

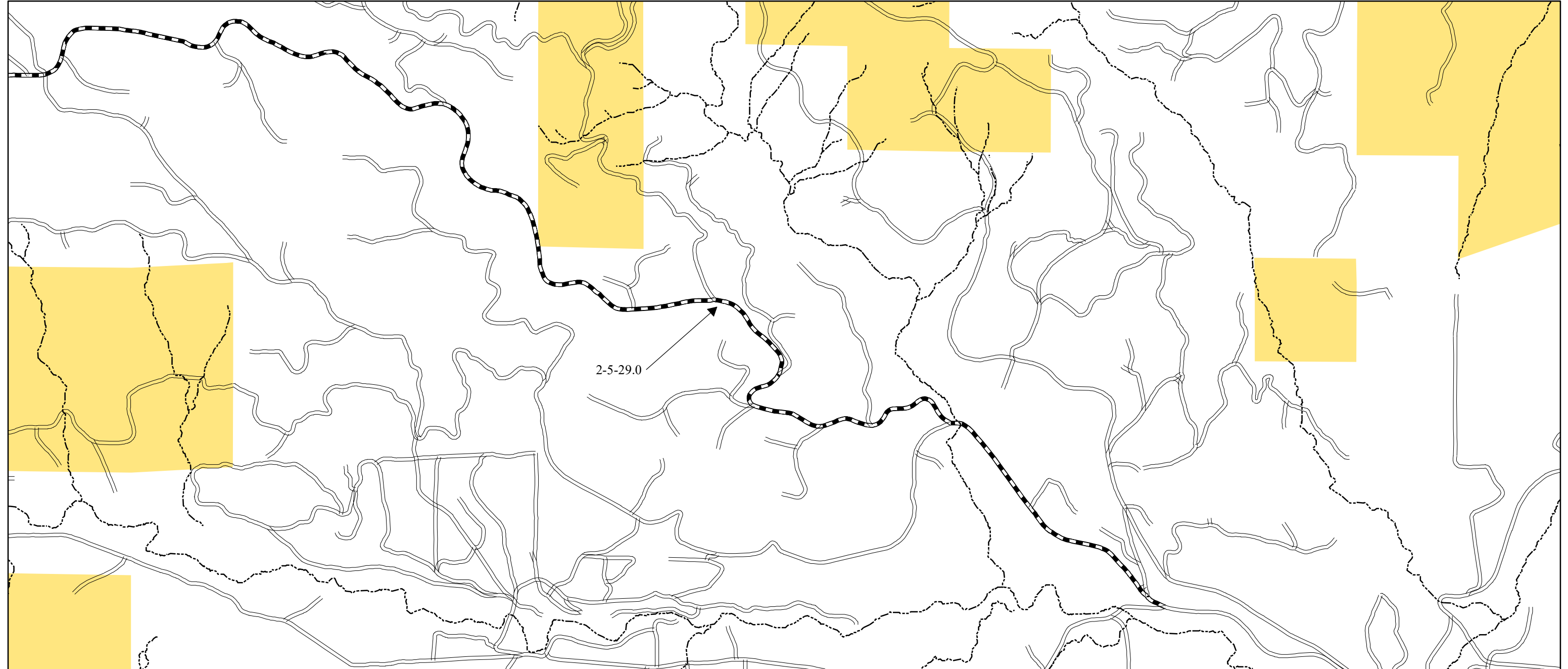



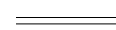

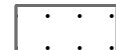

United States Department of Interior
 BUREAU OF LAND MANAGEMENT
 NORTHWEST OREGON DISTRICT - OREGON
 Road Plan Map

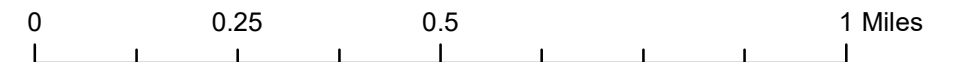
The Sentinel Timber Sale
 Contract NO. ORN04-TS-2021-0401
 Exhibit C
 Page 48 of 66

12/15/2020

T. 02S. R. 6W. Sections 16, 20, & 21 W.M. - NORTHWEST OREGON DISTRICT - OREGON
 T. 02S. R. 5W. Sections 31 W.M. - NORTHWEST OREGON DISTRICT - OREGON



-  Rocky surfaced road to be renovated, Open after use
-  Existing Roads
-  Streams
-  The Sentinel Project Area
-  Bureau of Land Management



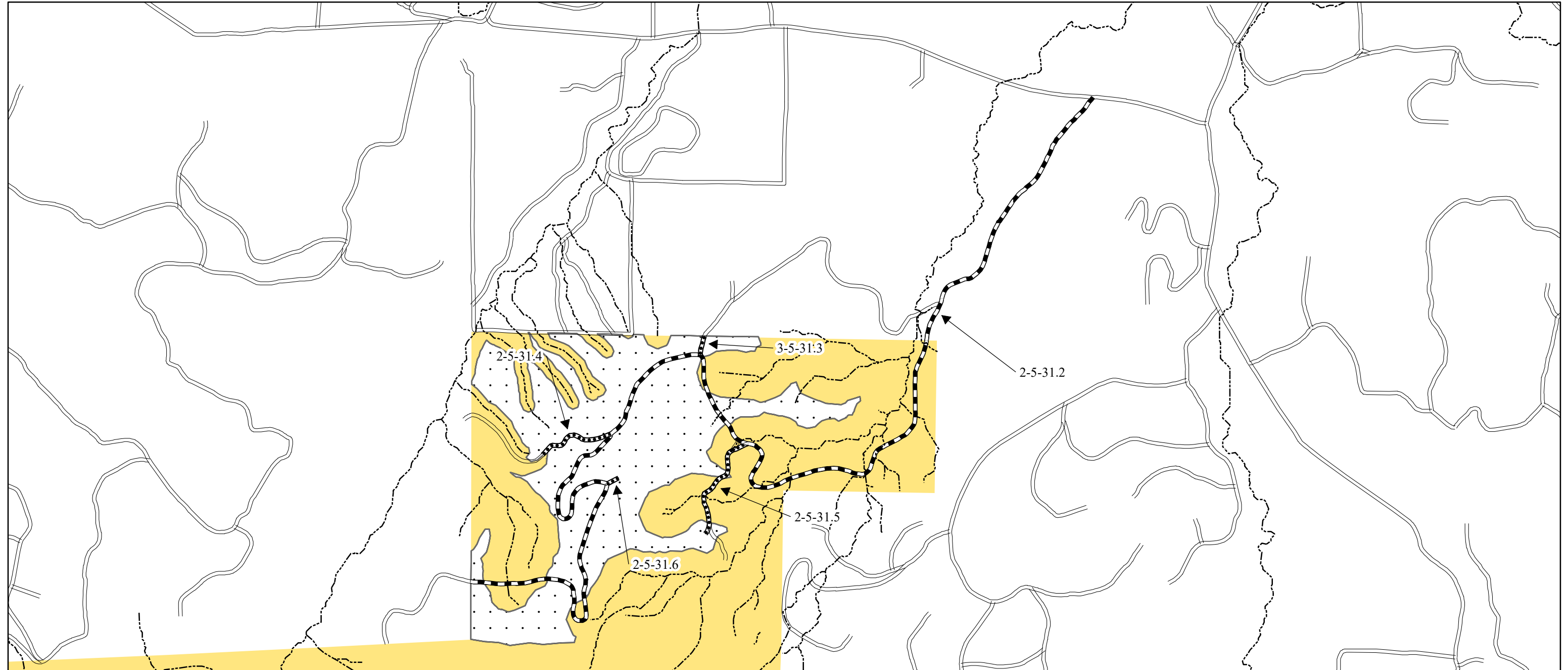
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification. Prepared By: Austin Bettis





United States Department of Interior
 BUREAU OF LAND MANAGEMENT
 NORTHWEST OREGON DISTRICT - OREGON
 Road Plan Map

12/15/2020

T. 02S. R. 6W. Sections 16, 20, & 21 W.M. - NORTHWEST OREGON DISTRICT - OREGON
 T. 02S. R. 5W. Sections 31 W.M. - NORTHWEST OREGON DISTRICT - OREGON



 Rocked surfaced road to be renovated, Open after use

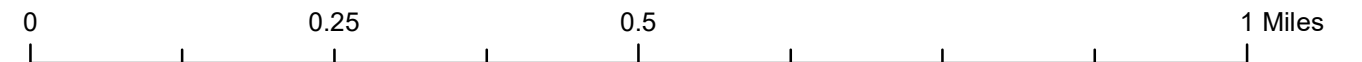
 Natural surfaced road to be renovated, Decommission after use

 Existing Roads

 Streams

 The Sentinel Project Area

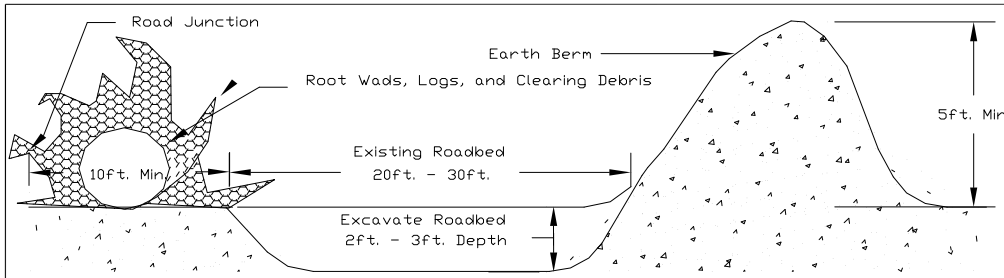
 Bureau of Land Management



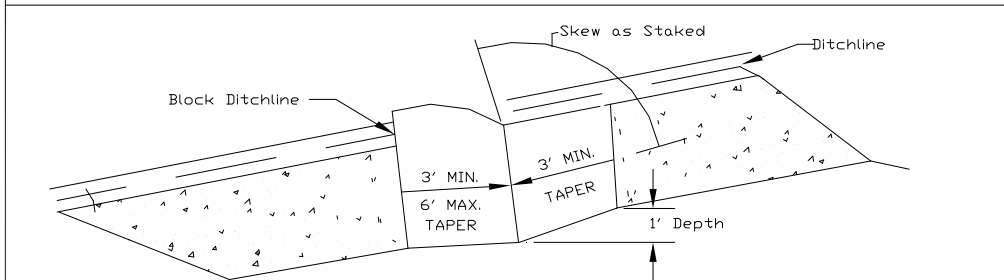
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification. Prepared By: Austin Bettis

U.S. DEPT. OF THE INTERIOR
 Bureau of Land Management
 NORTHWEST OREGON DISTRICT OFFICE - OREGON

Earth Barricade, Waterdip, Drivable and Non-Drivable Waterbar Details



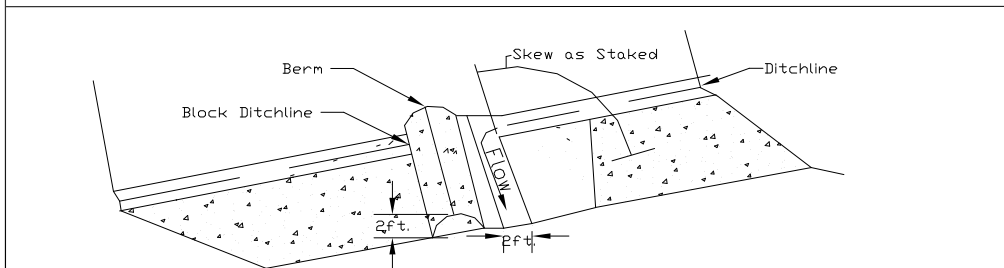
EARTH BARRICADE CONSTRUCTION



DRIVABLE WATERBAR CONSTRUCTION

NOTE:

1. DITCHLINE IS TO BE BLOCKED WITH EXCAVATED MATERIAL TO PREVENT DITCH WATER FROM BYPASSING WATERBAR.
2. EXCESS MATERIAL SHALL BE UNIFORMLY SPREAD ALONG ROADWAY. NO MATERIAL WILL BE ALLOWED BEYOND THE OUTER ROAD EDGE.

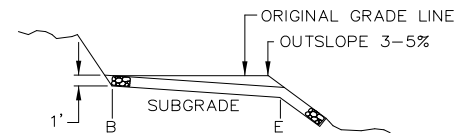
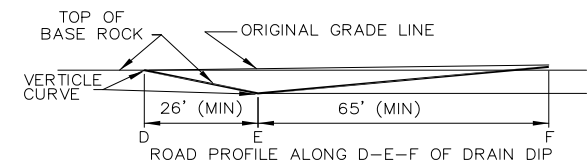
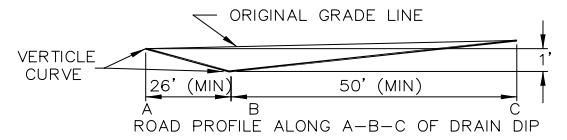
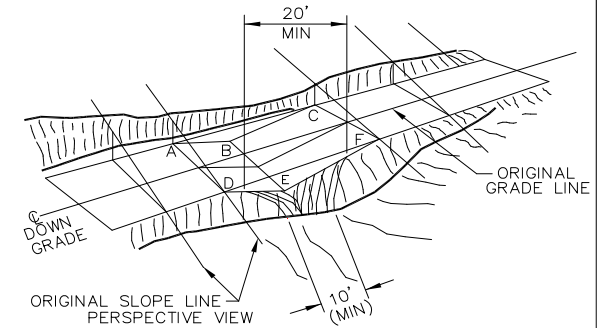


NON-DRIVABLE WATERBAR CONSTRUCTION

WATER DIP DETAIL

Not to Scale

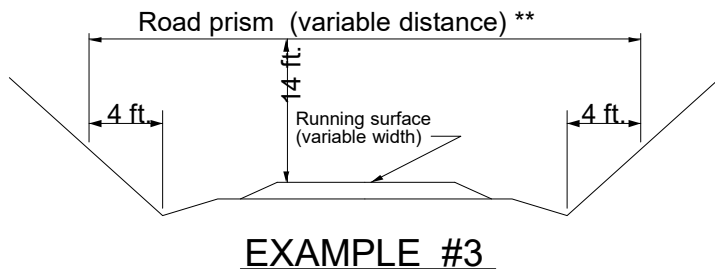
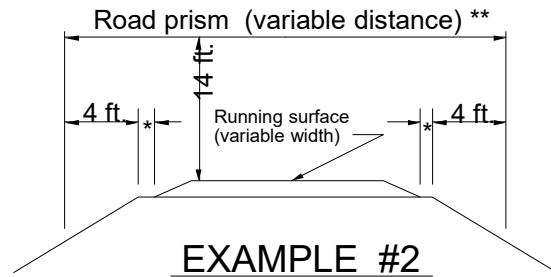
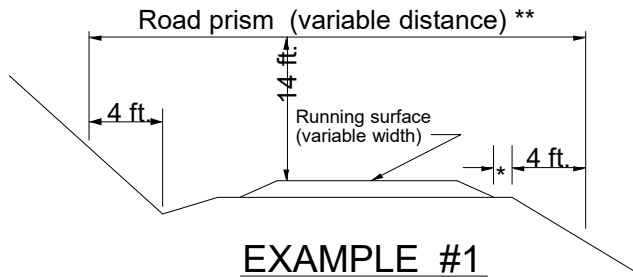
NOTE: PLAN OF DIP SHOWN IS FOR OUTSLOPED ROLLING DIP, DIPS MAY BE EITHER INSLOPED OR OUTSLOPED. WHEN INSLOPED, DIPS SHALL DISCHARGE INTO A CULVERT, DROP INLET, OR OVERSIDE DRAIN, OR DRAINAGE DITCH. WHEN OUTSLOPED, THEY SHALL DISCHARGE INTO AN OVERSIDE DRAIN OR ON TO NATURAL GROUND. THE MINIMUM CROSS GRADE FROM "B" TO "E" IS 4% GREATER THAN THE ORIGINAL ROAD GRADE. SKEW LINE B-E TO FIT LOW POINT IN DRAW, IF LOCATED IN NATURAL DRAIN.



ROCK SPILL APRON 15' WIDE WITH MATERIAL AS SHOWN ON SCHEDULE OF ITEMS TO TOE OF FILL.

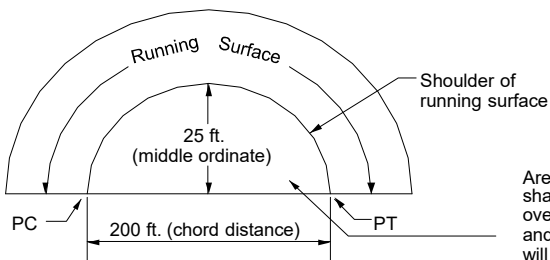
U.S. DEPT. OF THE INTERIOR
 Bureau of Land Management
 NORTHWEST OREGON DISTRICT OFFICE - OREGON

BRUSHING DETAILS



(NO SCALE)

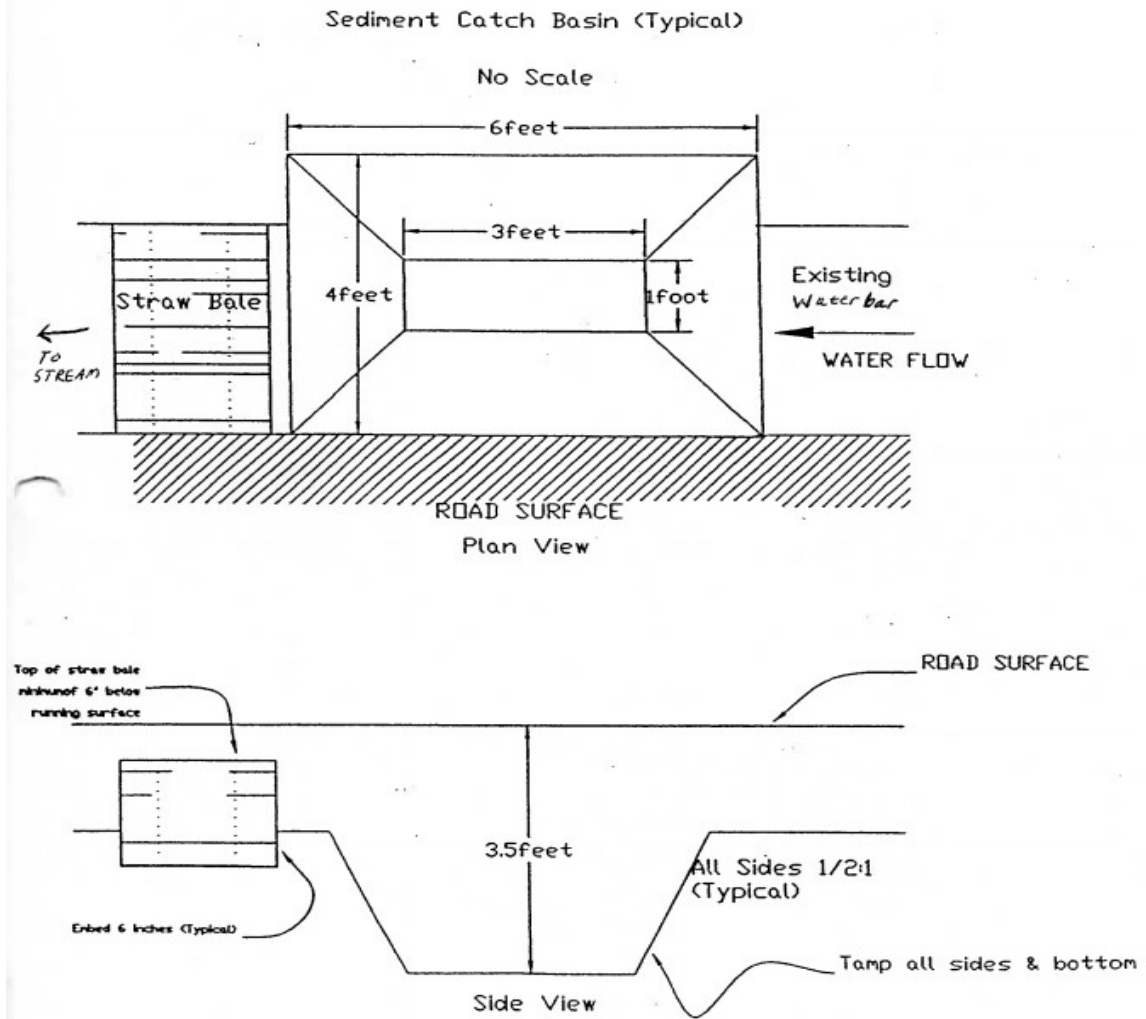
- * Variable distance between running surface and start of fill slope
- ** All areas within the variable distance shall be free of all vegetation capable of growing one (1) foot in height or higher and all overhanging limbs and branches 14 feet in elevation above the running surface



SIGHT DISTANCE DIAGRAM

Area to be cut: shall be free of overhanging limbs and all vegetation will be cut to a maximum height of one (1) foot.

U.S. DEPT. OF THE INTERIOR
Bureau of Land Management
NORTHWEST OREGON DISTRICT OFFICE - OREGON
Sediment Catch Basin with Straw Bale Details



Culvert List

CULVERT LOCATIONS							DOWNSPOUT(d) or STANDPIPE(s) *4				AS BUILT			ROCK			REMARKS *6
DESIGNED *2							SIZE	TYPE	LENGTH	TYPE OF ELBOW *5	SIZE	GAGE	LENGTH	RIP RAP (GRADING)		Structure inside pipe	
Road #	Sta./ M.P	SIZE	GAGE	LENGTH	CULVERT GRADE	INSTALL TYPE *3								(a)	(b)		
2-5-31.2	0.003	18"	--	36'	--	--	--	--	--	--	--	--	--	--	--	Replace Existing Culvert as marked in the field and directed by Authorized Officer. Place 15 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 10 CY 1-1/2"-0" Crushed Rock.	
	0.017	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	Replace Existing Culvert as marked in the field and directed by Authorized Officer. Place 10 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 10 CY 1-1/2"-0" Crushed Rock. Install metal inlet marker.	
	0.113	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	Replace Existing Culvert as marked in the field and directed by Authorized Officer. Place 10 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 10 CY 1-1/2"-0" Crushed Rock. Install metal inlet marker.	
	0.329	24"	--	45'	--	--	--	--	--	--	--	--	40	--	--	Stream Crossing. Salvage Existing Culvert and Replace Existing Culvert as marked in the field and directed by Authorized Officer (approx. 8' fill @ CL). Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 15 CY 1-1/2"-0" Crushed Rock. Place 40 CY Class 5 RipRap @ outlet as fill armor/energy dissipater. Install metal inlet marker	
	0.376	18"	--	35'	--	--	--	--	--	--	--	--	--	--	--	Replace Existing Culvert as marked in the field and directed by Authorized Officer. Place 15 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 10 CY 1-1/2"-0" Crushed Rock. Install metal inlet marker.	
	0.455	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CPP.	
	0.476	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CPP.	
	0.562	24"	--	40'	--	--	--	--	--	--	--	--	5	--	--	Stream Crossing. Replace Existing Culvert as marked in the field and directed by Authorized Officer. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 15 CY 1-1/2"-0" Crushed Rock. Place 5 CY Class 5 RipRap @ outlet as energy dissipater. Install metal inlet marker	
	0.659	24"	--	35'	--	--	--	--	--	--	--	--	--	--	--	Stream Crossing. Replace Existing Culvert as marked in the field and directed by Authorized Officer. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 15 CY 1-1/2"-0" Crushed Rock. Install metal inlet marker.	
	0.689	42"	14	75'	--	--	--	--	--	--	--	--	20	--	--	Stream Crossing. Replace Existing Culvert as marked in the field and directed by Authorized Officer (approx. 19' fill @ CL). Place 45 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 30 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 20 CY 1-1/2"-0" Crushed Rock. Place 20 CY Class 5 RipRap @ outlet as fill armor/energy dissipater. Install metal inlet marker.	
	0.702	24"	--	50'	--	--	--	--	--	--	--	10	--	--	--	Stream Crossing. Replace Existing Culvert as marked in the field and directed by Authorized Officer (approx. 9.5' fill @ CL). Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 15 CY 1-1/2"-0" Crushed Rock. Place 10 CY Class 5 Rip-Rap @ inlet to form a catch basin and disconnect ditch from stream at MP 0.689. Install metal inlet marker.	
	0.807	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CMP.	
	0.862	36"	14	60'	--	--	--	--	--	--	--	--	20	--	--	Stream Crossing. Replace Existing Culvert as marked in the field and directed by Authorized Officer (approx. 14' fill @ CL). Place 35 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 30 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 25 CY 1-1/2"-0" Crushed Rock. Place 20 CY Class 5 RipRap @ outlet as fill armor/energy dissipater. Install metal inlet marker.	
	0.880	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	Replace Existing Culvert as marked in the field and directed by Authorized Officer (approx. 7' fill @ CL). Place 10 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 10 CY 1-1/2"-0" Crushed Rock. Install metal inlet marker.	
	0.957	24"	--	35'	--	--	--	--	--	--	--	--	--	--	--	Stream Crossing. Replace Existing Culvert as marked in the field and directed by Authorized Officer. Place 15 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 10 CY 1-1/2"-0" Crushed Rock. Install metal inlet marker.	
	1.043	18"	--	40'	--	--	--	--	--	--	--	--	--	--	--	Replace Existing Culvert as marked in the field and directed by Authorized Officer. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 15 CY 1-1/2"-0" Crushed Rock. Install metal inlet marker.	
	1.199	18"	--	40'	--	--	--	--	--	--	--	--	--	--	--	Replace Existing Culvert as marked in the field and directed by Authorized Officer. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 15 CY 1-1/2"-0" Crushed Rock. Install metal inlet marker.	
	1.266	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CMP.	
	1.340	18"	--	40'	--	--	--	--	--	--	--	--	--	--	--	Replace Existing Culvert as marked in the field and directed by Authorized Officer. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 15 CY 1-1/2"-0" Crushed Rock. Install metal inlet marker.	
	1.389	18"	--	40'	--	--	--	--	--	--	--	--	--	--	--	Replace Existing Culvert as marked in the field and directed by Authorized Officer. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 15 CY 1-1/2"-0" Crushed Rock. Install metal inlet marker.	
	1.584	18"	--	40'	--	--	--	--	--	--	--	--	--	--	--	Replace Existing Culvert as marked in the field and directed by Authorized Officer. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 15 CY 1-1/2"-0" Crushed Rock. Install metal inlet marker.	

Gage Chart		
Gage	Dec. Inches	
	Steel	Alum.
10	.138	.135
12	.109	.105
14	.079	.075
16	.064	.060

1. Designed culvert lengths and locations are approximate.

*2. all culverts have 2-2/3" x 1/2"

unless otherwise noted.

**** Corrugated plastic pipe (CPP), Type S (double wall) shall be used for culvert sizes 24" and smaller. All larger culverts shall be aluminized steel. Culverts 20' in length or smaller shall be one piece (no joints). No Culvert piece shall be shorter than 6 foot. Minimization of banding is required.

*4. Downspout or Standpipe Types

- 1) Full *** Downspouts and stand pipes (under 36" diameter) shall be CPP, Type C (single wall).
- 2) Half
- 3) Flume

- *5. 1) Conventional or Fabricated
- 2) Turner type
- 3) Slip joint

*6. Include special sections, structures, headwalls, footings & other data.

Culvert List

CULVERT LOCATIONS							DOWNSPOUT(d) or STANDPIPE(s) *4				AS BUILT			ROCK			REMARKS *6
DESIGNED *2														RIP RAP (GRADING)			
														(a) (b)			
Road #	Sta./ M.P	SIZE	GAGE	LENGTH	CULVERT GRADE	INSTALL TYPE *3	SIZE	TYPE	LENGTH	TYPE OF ELBOW *5	SIZE	GAGE	LENGTH	INLET	OUTLET	Structure inside pipe	
2-5-31.2	1.871	18"	--	40'	--	--	--	--	--	--	--	--	--	--	--	--	Replace Existing Culvert as marked in the field and directed by Authorized Officer. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 15 CY 1-1/2"-0" Crushed Rock. Install metal inlet marker.
	1.955	24"	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Replace Existing Culvert as marked in the field and directed by Authorized Officer. Place 15 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 10 CY 1-1/2"-0" Crushed Rock. Install metal inlet marker.
2-5-31.4	2+14	18"	--	40'	--	--	--	--	--	--	--	--	--	--	--	--	Replace Existing Culvert as marked in the field and directed by Authorized Officer. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 15 CY 1-1/2"-0" Crushed Rock. Install metal inlet marker.
	4+10	18"	--	40'	--	--	--	--	--	--	--	--	--	--	--	--	Replace Existing Culvert as marked in the field and directed by Authorized Officer (approx. 8' fill @ CL). Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 15 CY 1-1/2"-0" Crushed Rock. Install metal inlet marker.
2-5-31.5	2+55	18"	--	40'	--	--	--	--	--	--	--	--	--	--	--	--	Install New Culvert as marked in field and directed by Authorized Officer (approx. 7.5' fill @ CL). Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 15 CY 1-1/2"-0" Crushed Rock. Install inlet marker.
	6+37	24"	--	60'	--	--	--	--	--	--	--	--	--	50	--	--	Install New Culvert as marked in field and directed by Authorized Officer (approx. 6' fill @ CL). Place 25 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 15 CY 1-1/2"-0" Crushed Rock. Place 50 CY Class 5 RipRap @ outlet for fill armor. Install metal inlet marker.
2-6-15.0 (Whiteface Rd.)	0.230	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CMP.
	0.394	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Excavate and cut off 3' of existing CPP to allow for proper drainage. Install metal inlet marker on existing CPP.
	0.432	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CMP.
	0.449	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CMP.
	0.479	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Excavate and clean buried inlet. Install metal inlet marker on existing CMP.
	0.519	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CMP.
	0.532	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CMP.
	0.556	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CMP.
	0.589	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CMP.
	0.611	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CMP.
	0.641	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CMP.

Gage Chart		
Gage	Dec. Inches	
	Steel	Alum.
10	.138	.135
12	.109	.105
14	.079	.075
16	.064	.060

1. Designed culvert lengths and locations are approximate.
*2. all culverts have 2-2/3" x 1/2" unless otherwise noted.

*4. Downspout or Standpipe Types
1) Full *** Downspouts and stand pipes (under 36" diameter) shall be CPP, Type C (single wall).
2) Half
3) Flume

*5. 1) Conventional or Fabricated
2) Turner type
3) Slip joint
*6. Include special sections, structures, headwalls, footings & other data.

**** Corrugated plastic pipe (CPP), Type S (double wall) shall be used for culvert sizes 24" and smaller. All larger culverts shall be aluminized steel. Culverts 20' in length or smaller shall be one piece (no joints). No Culvert piece shall be shorter than 6 foot. Minimization of banding is required.

Culvert List

CULVERT LOCATIONS							DOWNSPOUT(d) or STANDPIPE(s) *4				AS BUILT			ROCK			REMARKS *6
DESIGNED *2														RIP RAP (GRADING)			
Road #	Sta./ M.P	SIZE	GAGE	LENGTH	CULVERT GRADE	INSTALL TYPE *3	SIZE	TYPE	LENGTH	TYPE OF ELBOW *5	SIZE	GAGE	LENGTH	INLET	OUTLET	Structure inside pipe	
2-6-15.0 (Whiteface Rd.)	0.658	24"	--	30'	--	--	--	--	--	--	--	--	--	--	20	--	Replace Existing Culvert as marked in field and directed by Authorized Officer (approx. 6' fill @ CL). Place 15 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 10 CY 1-1/2"-0" Crushed Rock. Place 20 CY Class 5 RipRap @ outlet for fill armor. Install metal inlet marker.
	0.674	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CMP.
	0.698	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CMP.
	0.788	--	--	--	--	--	--	--	--	--	--	--	--	--	10	--	Remove 2' of existing pipe at outlet. Place 10 CY Class 5 RipRap @ outlet as energy dissipater. Install metal inlet marker on existing CMP.
	0.796	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CMP.
	0.814	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CPP.
0.844	18"	--	--	35'	--	--	--	--	--	--	--	--	--	--	20	--	Replace Existing Culvert as marked in field and directed by Authorized Officer (approx. 6' fill @ CL). Place 15 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 10 CY 1-1/2"-0" Crushed Rock. Place 20 CY Class 5 RipRap @ outlet for fill armor. Install metal inlet marker.
0.879	18"	--	--	40'	--	--	--	--	--	--	--	--	--	--	30	--	Replace Existing Culvert as marked in field and directed by Authorized Officer (approx. 7' fill @ CL). Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 15 CY 1-1/2"-0" Crushed Rock. Place 30 CY Class 5 RipRap @ outlet for fill armor. Install metal inlet marker.
0.905	24"	--	--	40'	--	--	--	--	--	--	--	--	--	--	20	--	Replace Existing Culvert as marked in field and directed by Authorized Officer (approx. 7.5' fill @ CL). Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 15 CY 1-1/2"-0" Crushed Rock. Place 20 CY Class 5 RipRap @ outlet for fill armor. Install metal inlet marker.
0.989	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CPP.
1.170	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CPP.
1.178	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CPP.
1.221	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CPP.
1.298	18"	--	--	40'	--	--	--	--	--	--	--	--	--	--	30	--	Replace Existing Culvert as marked in field and directed by Authorized Officer (approx. 8.5' fill @ CL). Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 15 CY 1-1/2"-0" Crushed Rock. Place 30 CY Class 5 RipRap @ outlet for fill armor. Install metal inlet marker.
1.366	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Excavate and clean catch basin. Install metal inlet marker on existing CPP.
1.436	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CPP.
1.465	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CPP.
1.510	24"	--	--	50'	--	--	--	--	--	--	--	--	--	--	120	--	Stream Crossing. Replace Existing Culvert as marked in field and directed by Authorized Officer (approx. 10' fill @ CL). Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 15 CY 1-1/2"-0" Crushed Rock. Place 120 CY Class 5 RipRap @ outlet for fill armor/energy dissipater. Install metal inlet marker.
1.595	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Excavate and clean catch basin. Install metal inlet marker on existing CPP.
1.663	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Excavate and clean catch basin. Install metal inlet marker on existing CPP.
1.689	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CPP.
2-6-15.9	0.131	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Existing Catch Basin is too deep, fix with compacted native material. Install metal inlet marker on existing CPP.
	0.207	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CPP.
2-6-20.4	0.081	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Existing Catch Basin is too deep, fix with compacted native material. Install metal inlet marker on existing CPP.
	0.195	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CPP.
	0.255	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CPP.

Gage Chart		
Gage	Dec. Inches	
	Steel	Alum.
10	.138	.135
12	.109	.105
14	.079	.075
16	.064	.060

1. Designed culvert lengths and locations are approximate.

*2. all culverts have 2-2/3" x 1/2"

unless otherwise noted.

**** Corrugated plastic pipe (CPP), Type S (double wall) shall be used for culvert sizes 24" and smaller. All larger culverts shall be aluminized steel. Culverts 20' in length or smaller shall be one piece (no joints). No Culvert piece shall be shorter than 6 foot. Minimization of banding is required.

*4. Downspout or Standpipe Types

- 1) Full *** Downspouts and stand pipes (under 36" diameter) shall be CPP, Type C (single wall).
- 2) Half
- 3) Flume

- *5. 1) Conventional or Fabricated
- 2) Turner type
- 3) Slip joint

*6. Include special sections, structures, headwalls, footings & other data.

Culvert List

CULVERT LOCATIONS							DOWNSPOUT(d) or STANDPIPE(s) *4				AS BUILT			ROCK			REMARKS *6
DESIGNED *2														RIP RAP (GRADING)			
														(a) (b)			
Road #	Sta./ M.P	SIZE	GAGE	LENGTH	CULVERT GRADE	INSTALL TYPE *3	SIZE	TYPE	LENGTH	TYPE OF ELBOW *5	SIZE	GAGE	LENGTH	INLET	OUTLET	Structure inside pipe	
2-6-20.5	0.006	18"	--	40'	--	--	--	--	--	--	--	--	--	--	--	--	Salvage Existing Culvert and Replace Existing Culvert as marked in field and directed by Authorized Officer. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Install metal inlet marker.
	0.081	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Excavate and clean catch basin. Install metal inlet marker on existing CPP.
2-6-21.0	0.054	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CMP.
	0.095	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Salvage Existing Culvert and Replace Existing Culvert as marked in field and directed by Authorized Officer. Place 10 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 10 CY 1-1/2"-0" Crushed Rock. Install metal inlet marker.
	0.138	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Replace Existing Culvert as marked in field and directed by Authorized Officer. Place 10 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 10 CY 1-1/2"-0" Crushed Rock. Install metal inlet marker.
2-6-21.1	1+07	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Install New Culvert as marked in field and directed by Authorized Officer. Place 10 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Install metal inlet marker.
	3+94	18"	--	35'	--	--	--	--	--	--	--	--	--	--	--	--	Install New Culvert as marked in field and directed by Authorized Officer. Place 10 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Install metal inlet marker.
	6+57	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Install New Culvert with lead-off ditch as marked in field and directed by Authorized Officer. Place 10 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Install metal inlet marker.
	7+50	42"	14	40'	--	--	--	--	--	--	--	--	30	60	--	--	Stream Crossing. Install New Culvert as marked in field and directed by Authorized Officer (approx. 7' fill @ CL). Place 30 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Place 30 CY Class 5 RipRap @ inlet for fill armor/stabilization wall. Place 60 CY Class 5 RipRap @ outlet for fill armor. Install metal inlet marker.
	9+31 - 9+74	24"	14	35'	--	--	--	--	--	--	--	--	--	--	--	--	Install a French Drain with a 24" Perforated Culvert as marked in field and directed by Authorized Officer (approx. 5' fill @ CL). French Drain drawings available upon request. Wrap 280 CY 1-1/2"-3/4" Crushed Drain Rock with 375 SY of non-woven geo-synthetic fabric. Install metal inlet marker.
	11+45	18"	--	30'	--	--	18"	2	10'	--	--	--	--	30	--	--	Install New Culvert as marked in field and directed by Authorized Officer. Place 10 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Place 30 CY Class 5 RipRap @ outlet as fill armor/energy dissipater. Install metal inlet marker.
	17+89	18"	--	30'	--	--	18'	2	10'	--	--	--	--	20	--	--	Install New Culvert as marked in field and directed by Authorized Officer (approx. 7' fill @ CL). Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Place 20 CY Class 5 RipRap @ outlet as fill armor/energy dissipater. Install metal inlet marker.
	21+58	18"	--	35'	--	--	--	--	--	--	--	--	--	10	--	--	Install New Culvert as marked in field and directed by Authorized Officer (approx. 6' fill @ CL). Place 15 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Place 10 CY Class 5 RipRap @ outlet as fill armor/energy dissipater. Install metal inlet marker.
	25+34	18"	--	35'	--	--	--	--	--	--	--	--	--	10	--	--	Install New Culvert as marked in field and directed by Authorized Officer (approx. 6.5' fill @ CL). Place 15 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Place 10 CY Class 5 RipRap @ outlet as fill armor/energy dissipater. Install metal inlet marker.

<table border="1"> <thead> <tr> <th colspan="3">Gage Chart</th> </tr> <tr> <th rowspan="2">Gage</th> <th colspan="2">Dec. Inches</th> </tr> <tr> <th>Steel</th> <th>Alum.</th> </tr> </thead> <tbody> <tr> <td>10</td> <td>.138</td> <td>.135</td> </tr> <tr> <td>12</td> <td>.109</td> <td>.105</td> </tr> <tr> <td>14</td> <td>.079</td> <td>.075</td> </tr> <tr> <td>16</td> <td>.064</td> <td>.060</td> </tr> </tbody> </table>			Gage Chart			Gage	Dec. Inches		Steel	Alum.	10	.138	.135	12	.109	.105	14	.079	.075	16	.064	.060	<p>1. Designed culvert lengths and locations are approximate.</p> <p>*2. all culverts have 2-2/3" x 1/2" unless otherwise noted.</p> <p>**** Corrugated plastic pipe (CPP), Type S (double wall) shall be used for culvert sizes 24" and smaller. All larger culverts shall be aluminized steel. Culverts 20' in length or smaller shall be one piece (no joints). No Culvert piece shall be shorter than 6 foot. Minimization of banding is required.</p>	<p>*4. Downspout or Standpipe Types</p> <p>1) Full *** Downspouts and stand pipes (under 36" diameter) shall be CPP, Type C (single wall).</p> <p>2) Half</p> <p>3) Flume</p>	<p>*5. 1) Conventional or Fabricated 2) Turner type 3) Slip joint</p> <p>*6. Include special sections, structures, headwalls, footings & other data.</p>
Gage Chart																									
Gage	Dec. Inches																								
	Steel	Alum.																							
10	.138	.135																							
12	.109	.105																							
14	.079	.075																							
16	.064	.060																							

Culvert List

CULVERT LOCATIONS							DOWNSPOUT(d) or STANDPIPE(s) *4				AS BUILT			ROCK RIP RAP (GRADING)			REMARKS *6	
DESIGNED *2														(a)				(b)
Road #	Sta./ M.P	SIZE	GAGE	LENGTH	CULVERT GRADE	INSTALL TYPE *3	SIZE	TYPE	LENGTH	TYPE OF ELBOW *5	SIZE	GAGE	LENGTH	INLET	OUTLET	Structure inside pipe		
2-6-21.2	0.055	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Construct a lead-off ditch. Install metal inlet marker on existing CPP.	
	0.137	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CPP.	
	0.227	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Use metal T posts to reattach existing downspout. Install metal inlet marker on existing CPP.	
2-6-21.3 East	3+44	30"	14	56'	--	--	--	--	--	--	--	--	--	5	10	--	Stream Crossing. Install New Culvert as marked in field and directed by Authorized Officer. Place 35 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 30 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 25 CY 1-1/2"-0" Crushed Rock. Place 5 CY Class 5 Rip-Rap @ inlet for fill armor. Place 10 CY Class 5 RipRap @ outlet for fill armor/energy dissipater. Install metal inlet marker.	
	5+13	18"	--	40'	--	--	--	--	--	--	--	--	--	--	--	--	Install New Culvert as marked in field and directed by Authorized Officer. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 15 CY 1-1/2"-0" Crushed Rock. Install metal inlet marker.	
	9+83	24"	--	50'	--	--	--	--	--	--	--	--	--	--	10	--	Stream Crossing. Install New Culvert as marked in field and directed by Authorized Officer. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 15 CY 1-1/2"-0" Crushed Rock. Place 10 CY Class 5 RipRap @ outlet for fill armor. Install metal inlet marker.	
	11+71	18"	--	35'	--	--	--	--	--	--	--	--	--	--	--	--	Install New Culvert as marked in field and directed by Authorized Officer (approx. 6' fill @ CL). Place 15 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 10 CY 1-1/2"-0" Crushed Rock. Install metal inlet marker.	
	16+86	18"	--	35'	--	--	--	--	--	--	--	--	--	--	20	--	Install New Culvert as marked in field and directed by Authorized Officer (approx. 8' fill @ CL). Place 15 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 10 CY 1-1/2"-0" Crushed Rock. Place 20 CY Class 5 RipRap @ outlet for fill armor. Install metal inlet marker.	
	20+50	18"	--	40'	--	--	--	--	--	--	--	--	--	--	--	--	Install New Culvert with lead-off ditch as marked in field and directed by Authorized Officer. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 15 CY 1-1/2"-0" Crushed Rock. Install metal inlet marker.	
2-6-21.3 West	4+44	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Install New Culvert with lead-off ditch as marked in field and directed by Authorized Officer. Place 10 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Install Metal Inlet Marker.	
	11+93	18'	--	45'	--	--	--	--	--	--	--	--	--	--	--	--	Install New Culvert as marked in field and directed by Authorized Officer. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Install metal inlet marker.	
2-6-21.4	15+41	18"	--	40'	--	--	--	--	--	--	--	--	--	--	--	--	Install New Culvert as marked in field and directed by Authorized Officer. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 15 CY 1-1/2"-0" Crushed Rock. Install metal inlet marker.	
2-6-21.7	0+00	18"	--	40'	--	--	--	--	--	--	--	--	--	--	--	--	Install New Culvert as marked in field and directed by Authorized Officer. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock.	
	2+36	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Install New Culvert as marked in field and directed by Authorized Officer. Place 10 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Install metal inlet marker.	
	4+09	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Install New Culvert as marked in field and directed by Authorized Officer. Place 10 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Install metal inlet marker.	
	7+97	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Install New Culvert as marked in field and directed by Authorized Officer. Place 10 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Install metal inlet marker.	
	10+05	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Install New Culvert as marked in field and directed by Authorized Officer. Place 10 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Install metal inlet marker.	
	12+59	18"	--	35'	--	--	--	--	--	--	--	--	--	--	--	--	Install New Culvert as marked in field and directed by Authorized Officer. Place 15 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Install metal inlet marker.	
	15+41	18"	--	40'	--	--	--	--	--	--	--	--	--	--	--	--	Install New Culvert as marked in field and directed by Authorized Officer. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Install metal inlet marker.	
2-6-21.9	0+00	18"	--	38'	--	--	18"	2	10'	--	--	--	--	--	--	--	Install New Culvert with downspout as marked in the field and directed by Authorized Officer. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Install metal inlet marker.	

Gage Chart		
Gage	Dec. Inches	
	Steel	Alum.
10	.138	.135
12	.109	.105
14	.079	.075
16	.064	.060

1. Designed culvert lengths and locations are approximate.

*2. all culverts have 2-2/3" x 1/2"

unless otherwise noted.

**** Corrugated plastic pipe (CPP), Type S (double wall) shall be used for culvert sizes 24" and smaller. All larger culverts shall be aluminized steel. Culverts 20' in length or smaller shall be one piece (no joints). No Culvert piece shall be shorter than 6 foot. Minimization of banding is required.

*4. Downspout or Standpipe Types

- 1) Full *** Downspouts and stand pipes (under 36" diameter) shall be CPP, Type C (single wall).
- 2) Half
- 3) Flume

*5. 1) Conventional or Fabricated
2) Turner type
3) Slip joint

*6. Include special sections, structures, headwalls, footings & other data.

Culvert List

CULVERT LOCATIONS							DOWNSPOUT(d) or STANDPIPE(s) *4				AS BUILT			ROCK			REMARKS *6
DESIGNED *2														RIP RAP (GRADING)			
Road #	Sta./ M.P	SIZE	GAGE	LENGTH	CULVERT GRADE	INSTALL TYPE *3	SIZE	TYPE	LENGTH	TYPE OF ELBOW *5	SIZE	GAGE	LENGTH	(a) INLET	(b) OUTLET	Structure inside pipe	
2-6-21.9	2+70	18"	--	42'	--	--	--	--	--	--	--	--	--	--	--	--	Install New Culvert as marked in field and directed by Authorized Officer. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Install metal inlet marker.
	4+97	18"	--	36'	--	--	--	--	--	--	--	--	--	--	--	--	Install New Culvert with lead-off ditch as marked in field and directed by Authorized Officer. Place 15 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Install metal inlet marker.
	8+18	18"	--	44'	--	--	18"	2	10'	--	--	--	--	--	--	--	Install New Culvert with downspout as marked in field and directed by Authorized Officer. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Install metal inlet marker.
	10+57	18"	--	30'	--	--	18"	2	10'	--	--	--	--	--	--	--	Install New Culvert with downspout as marked in field and directed by Authorized Officer. Place 10 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Install metal inlet marker.
	15+77	18"	--	32'	--	--	18"	2	10'	--	--	--	--	--	--	--	Install New Culvert with downspout as marked in field and directed by Authorized Officer. Place 10 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Install metal inlet marker.
	20+56	18"	--	38'	--	--	--	--	--	--	--	--	--	--	--	--	Install New Culvert with lead-off ditch as marked in field and directed by Authorized Officer. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Install metal inlet marker.
	24+47	18"	--	38'	--	--	18"	2	10'	--	--	--	--	--	--	--	Install New Culvert with downspout as marked in field and directed by Authorized Officer. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Install metal inlet marker.
2-6-21.10	2+40	18"	--	40'	--	--	--	--	--	--	--	--	--	40	--	--	Install New Culvert as marked in field and directed by Authorized Officer. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 15 CY 1-1/2"-0" Crushed Rock. Place 40 CY Class 5 RipRap @ outlet for fill armor. Install metal inlet marker.
	7+48	18"	--	50'	--	--	--	--	--	--	--	--	--	--	--	--	Install New Culvert as marked in field and directed by Authorized Officer (approx. 11' fill @ CL). Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 15 CY 1-1/2"-0" Crushed Rock. Install metal inlet marker.
2-6-21.11	0+27	18'	--	50'	--	--	--	--	--	--	--	--	--	--	--	--	Install New Culvert as marked in field and directed by Authorized Officer. Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 15 CY 1-1/2"-0" Crushed Rock.
	3+98	18'	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Install New Culvert as marked in field and directed by Authorized Officer. Place 10 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 10 CY 1-1/2"-0" Crushed Rock. Install metal inlet marker.
2-6-22.0	3+82	18"	--	35'	--	--	--	--	--	--	--	--	--	--	--	--	Install New Culvert as marked in field and directed by Authorized Officer. Place 15 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Install metal inlet marker.
	6+39	18"	--	50'	--	--	18"	2	10'	--	--	--	10	20	--	--	Install New Culvert with downspout as marked in field and directed by Authorized Officer (approx. 9' fill @ CL). Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Place 10 CY Class 5 RipRap @ inlet for fill armor. Place 20 CY Class 5 RipRap @ outlet for fill armor. Install metal inlet marker.
	12+38	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Install New Culvert as marked in field and directed by Authorized Officer. Place 10 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Install metal inlet marker.
2-5-29.0 (Toll Rd)	0.212	24"	--	50'	--	--	--	--	--	--	--	--	40	100	--	--	Stream Crossing. Install New Culvert as marked in field and directed by Authorized Officer (approx. 11' fill @ CL). Place 20 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 15 CY 1-1/2"-0" Crushed Rock. Place 40 CY Class 5 RipRap @ inlet for fill armor. Place 100 CY Class 5 RipRap @ outlet as fill armor/energy dissipater. Install metal inlet marker.
	0.346	48"	14	56'	--	--	--	--	--	--	--	--	70	100	--	--	Stream Crossing. Replace Existing Culvert as marked in field and directed by Authorized Officer (approx. 12.5' fill @ CL). Place 40 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 30 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 25 CY 1-1/2"-0" Crushed Rock. Place 70 CY Class 5 RipRap @ inlet for fill armor. Place 100 CY Class 5 RipRap @ outlet as fill armor/energy dissipater. Install metal inlet marker.
2-6-9.1	0.304	30"	14	45'	--	--	--	--	--	--	--	--	--	40	--	--	Stream Crossing. Replace Existing Culvert as marked in field and directed by Authorized Officer (approx. 13' fill @ CL). Place 30 CY 1-1/2"-0" Crushed Bedding/Backfill Rock. Spread 25 CY 6" Jaw Run Base Rock over Pipe for Surfacing capped with 20 CY 1-1/2"-0" Crushed Rock. Place 40 CY Class 5 RipRap @ outlet as fill armor. Install metal inlet marker.

Gage Chart		
Gage	Dec. Inches	
	Steel	Alum.
10	.138	.135
12	.109	.105
14	.079	.075
16	.064	.060

1. Designed culvert lengths and locations are approximate.

*2. all culverts have 2-2/3" x 1/2"

unless otherwise noted.

**** Corrugated plastic pipe (CPP), Type S (double wall) shall be used for culvert sizes 36" and smaller. All larger culverts shall be aluminized steel. Culverts 20' in length or smaller shall be one piece (no joints). No Culvert piece shall be shorter than 6 foot. Minimization of banding is required.

*4. Downspout or Standpipe Types

- 1) Full
- 2) Half
- 3) Flume

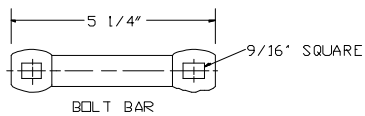
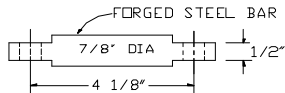
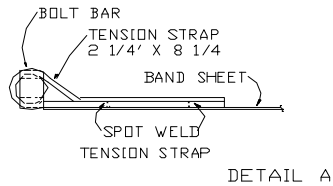
*** Downspouts and stand pipes (under 36" diameter) shall be CPP, Type C (single wall).

*5. 1) Conventional or Fabricated
2) Turner type
3) Slip joint

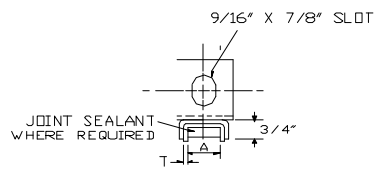
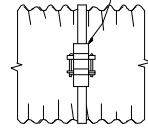
*6. Include special sections, structures, headwalls, footings & other data.

U.S. DEPT. OF THE INTERIOR
 Bureau of Land Management
 NORTHWEST OREGON DISTRICT OFFICE - OREGON
CULVERT BAND DETAILS

NOTE:
 DESIGN VARIATIONS IN FASTENERS,
 (STRAPS, BARS & WELDS) WHICH
 PROVIDE A TENSILE STRENGTH OF
 7500 LBS. ARE PERMISSIBLE.



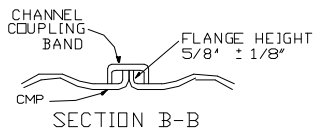
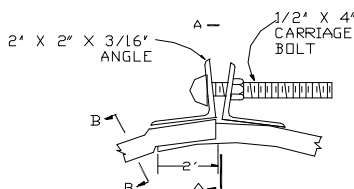
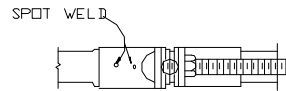
TENSION STRAP
 AND BOLT BAR.
 SEE DETAIL A.



DIMENSIONS IN INCHES

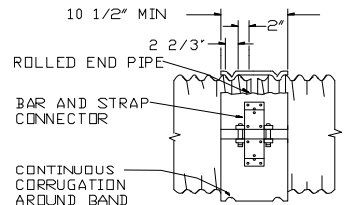
T	A	PIPE WALL THICKNESS
.079	3/4	.109 OR LIGHTER
.109	1	.138 OR HEAVIER

SECTION A-A



CHANNEL
 BAND
 COUPLER

NOTE:
 AS AN ALTERNATE TO SWEDGE, AN
 OVERSIZE BRIDGE CLIP MAY BE USED.

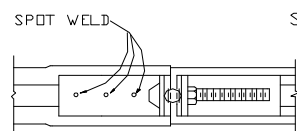
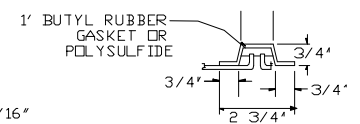
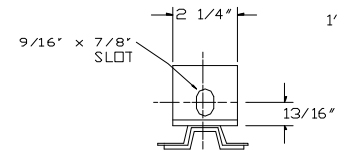


THE HUGGER COUPLER BAND OR AN APPROVED EQUIVALENT COUPLER BAND SHALL BE MADE OF THE SAME MATERIAL AND FINISH AS THE PIPES JOINED. THE COUPLER BANDS SHALL HAVE A MINIMUM WIDTH OF 10 1/2 INCHES AND MAY BE TWO NUMERICAL THICKNESSES LIGHTER THAN THE GAGE OR THICKNESS DESIGNATED FOR THE CONDUIT JOINED. THE BAND SHALL BE DESIGNED TO BE DRAWN TOGETHER WITH TWO 1/2 INCH BOLTS THROUGH USE OF A BAR AND STRAP SUITABLY WELDED TO THE BAND. THE BAND SHALL ENGAGE AND MESH WITH THE SECOND ANNULAR CORRUGATION INWARD FROM THE END OF EACH OF THE CONDUIT SECTIONS JOINED.

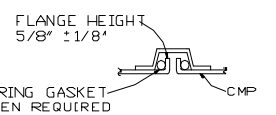
STANDARD CONSTRUCTION IS 1 PIECE 12' THRU 48' AND 2 PIECE 54' AND ABOVE

GASKETS AND "HUGGER" TYPE BANDS, OR AN APPROVED EQUIVALENT COUPLER, SHALL BE INSTALLED INSTALLED ON ALL 30" AND LARGER METAL PIPES.

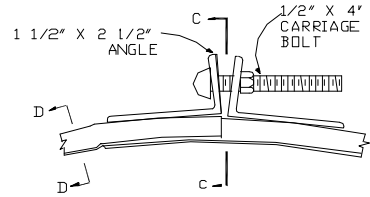
"HUGGER" COUPLER BANDS



SECTION C-C



SECTION D-D
 SHOWN WITH ALTERNATE TYPES
 OF JOINT SEALERS



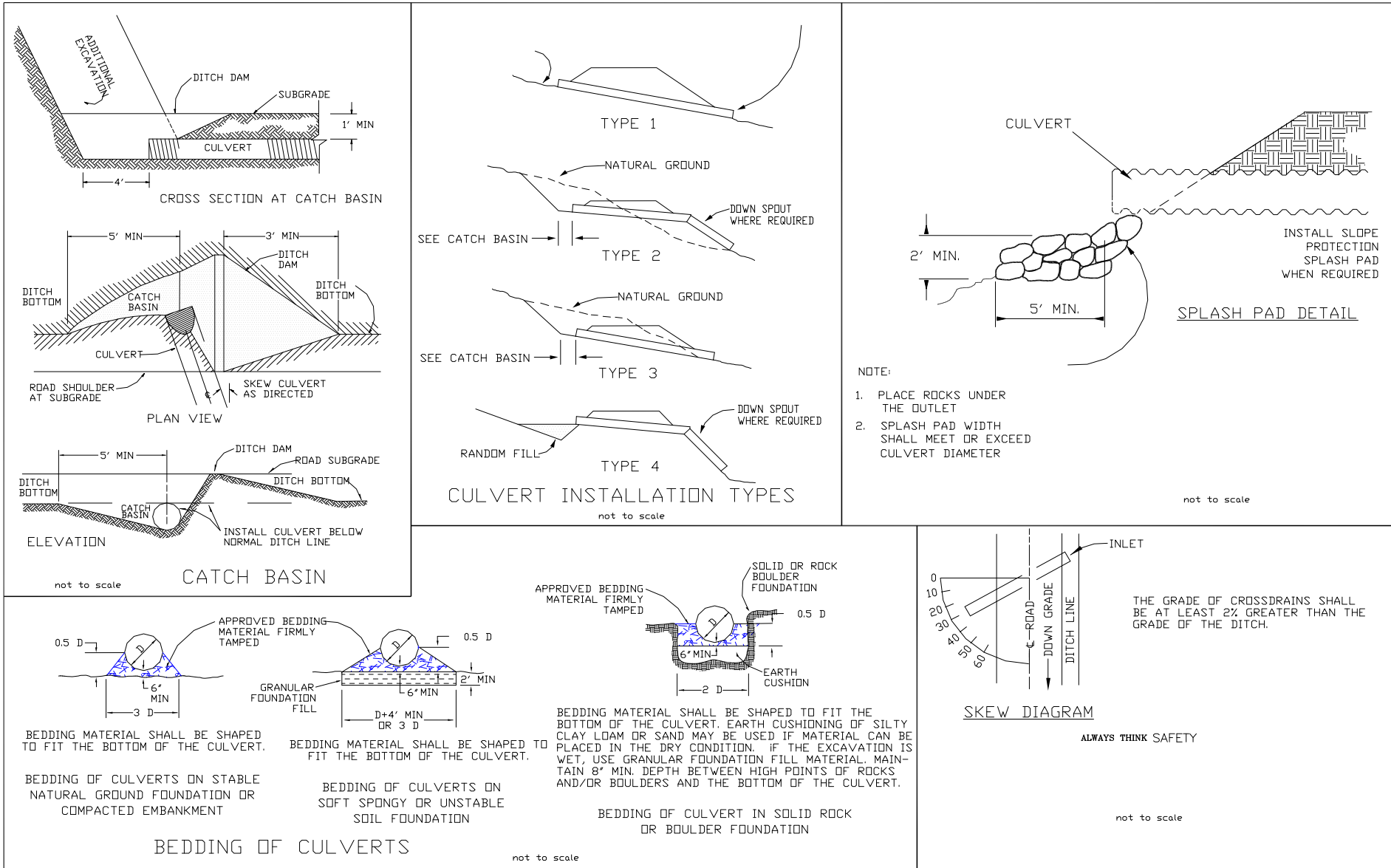
FLANGED END COUPLER

CULVERT SIZE INCHES	STANDARD COUPLER BANDS CORRUGATED							
	STD. ANNULAR		HELICAL		3' x 1'		6' x 1'	
	WIDTH	NO. OF BOLTS	WIDTH	NO. OF BOLTS	WIDTH	NO. OF BOLTS	WIDTH	NO. OF BOLTS
UNDER 18	7	2	7	2				
18 TO 54	12	3	12	3	14	3	18	3
OVER 54	24	5	24	5	24	5	24	4

DATA IN THIS BLOCK DOES NOT APPLY TO PERFORATED PIPE UNDERDRAIN. FOR BANDS WITH "PUNCH-OUT" TYPE CONNECTIONS, 2 BOLTS ARE PERMISSIBLE FOR EACH LAP. BANDS SHALL LAP 1/2 WIDTH ONTO EACH SECTION OF PIPE AND MUST FULLY ENCLOSE THE JOINT FORMING A NEARLY WATERTIGHT CONNECTION.

- Ⓐ BANDS WITH ANGLES
- Ⓑ BANDS WITH TENSION TYPE CONNECTIONS

U.S. DEPT. OF THE INTERIOR
 Bureau of Land Management
 NORTHWEST OREGON DISTRICT OFFICE - OREGON
CULVERT INSTALLATION DETAILS



ROCK VOLUMES TOTALS

ROAD SEGMENT: 2-5-31.2			MILEAGE: 0.000 - 2.009				
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Spot Rock	---	---	---	---	360
Road Rock	6" Jaw Run	Base Rock	---	---	---	---	200
Culverts	1-1/2"-0"	Spot Rock	---	---	---	---	265
Culverts	6" Jaw Run	Base Rock	---	---	---	---	350
Culverts	1-1/2"-0"	Bedding/Backfill	---	---	---	---	370
Fill Armor/Dissipater Outlets	RipRap: Class 5	MP 0.329, 0.689, 0.862	---	---	---	---	80
Dissipater Outlet	RipRap: Class 5	MP 0.562	---	---	---	---	5
Fill Armor Inlet	RipRap: Class 5	MP 0.702	---	---	---	---	10

ROAD SEGMENT: 2-5-31.3			STATION: 0+00 - 1+62				
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Spot Rock	---	---	---	---	10
Road Rock	6" Jaw Run	Base Rock	---	---	---	---	20

ROAD SEGMENT: 2-5-31.4			STATION: 0+00 - 5+68				
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Spot Rock	---	---	---	---	10
Road Rock	6" Jaw Run	Base Rock	---	---	---	---	20
Culverts	1-1/2"-0"	Spot Rock	---	---	---	---	30
Culverts	6" Jaw Run	Base Rock	---	---	---	---	40
Culverts	1-1/2"-0"	Bedding/Backfill	---	---	---	---	40

ROAD SEGMENT: 2-5-31.5			STATION: 0+00 - 9+11				
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Spot Rock	---	---	---	---	10
Road Rock	6" Jaw Run	Base Rock	---	---	---	---	20
Culverts	1-1/2"-0"	Spot Rock	---	---	---	---	30
Culverts	6" Jaw Run	Base Rock	---	---	---	---	40
Culverts	1-1/2"-0"	Bedding/Backfill	---	---	---	---	45
Fill Armor Outlet	RipRap: Class 5	MP 0.329, 0.689, 0.862	---	---	---	---	50

ROAD SEGMENT: 2-5-31.6			STATION: 0+00 - 1+38				
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Spot Rock	---	---	---	---	10
Road Rock	6" Jaw Run	Base Rock	---	---	---	---	20

ROCK VOLUMES TOTALS

ROAD SEGMENT: 2-6-15.0			MILEAGE: 0.000 - 1.749				
Application	Rock Size and Type	Location/Number	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Spot Rock	---	---	---	---	470
Road Rock	6" Jaw Run	Base Rock	---	---	---	---	240
Culverts	1-1/2"-0"	Spot Rock	---	---	---	---	80
Culverts	6" Jaw Run	Base Rock	---	---	---	---	110
Culverts	1-1/2"-0"	Bedding/Backfil	---	---	---	---	110
Lined Ditch	Pitrun	MP (0.465 - 0.479) (0.571 - 0.641)	---	---	---	---	35
Fill Armor Outlet	RipRap: Class 5	MP 0.658, 0.879, 0.905, 1.298	---	---	---	---	100
Dissipater Outlet	RipRap: Class 5	MP 0.788	---	---	---	---	10
Fill Armor/Dissipater Outlet	RipRap: Class 5	MP 0.844, 1.510	---	---	---	---	140

ROAD SEGMENT: 2-6-15.9			MILEAGE: 0.000 - 0.211				
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Rock: 0.000 - 0.211	2"	10	111	9	120
Road Rock	1-1/2"-0"	Spot Rock	---	---	---	---	30
Road Rock	6" Jaw Run	Base Rock	---	---	---	---	100

ROAD SEGMENT: 2-6-20.4			MILEAGE: 0.000 - 0.277				
Application	Rock Size and Type	Location/Number	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Rock: 0.000 - 0.277	2"	10	146	12	158
Road Rock	1-1/2"-0"	Spot Rock	---	---	---	---	20
Road Rock	6" Jaw Run	Base Rock	---	---	---	---	50
Lined Ditch	Pitrun	MP 0.211 - 0.277	---	---	---	---	30

ROCK VOLUMES TOTALS

ROAD SEGMENT: 2-6-20.5			MILEAGE: 0.000 - 0.081				
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Rock: 0.000 - 0.056	4"	19	56	34	90
Road Rock	6" Jaw Run	Base Rock: 0.000 - 0.056	9"	46	136	82	218
Road Rock	1-1/2"-0"	Spot Rock	---	---	---	---	30
Road Rock	6" Jaw Run	Base Rock	---	---	---	---	20
Culverts	1-1/2"-0"	Bedding/Backfill	---	---	---	---	20

ROAD SEGMENT: 2-6-21.0			MILEAGE: 0.000 - 0.225				
Application	Rock Size and Type	Location/Number	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Spot Rock	---	---	---	---	60
Road Rock	6" Jaw Run	Base Rock	---	---	---	---	40
Culverts	1-1/2"-0"	Spot Rock	---	---	---	---	20
Culverts	6" Jaw Run	Base Rock	---	---	---	---	20
Culverts	1-1/2"-0"	Bedding/Backfill	---	---	---	---	20

ROAD SEGMENT: 2-6-21.1			STATION: 0+00 - 28+94				
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Rock: 0+00 - 28+94	4"	19	550	74	624
Road Rock	6" Jaw Run	Base Rock: 0+00 - 28+94	9"	46	1,331	185	1,516
Road Rock	1-1/2"-0"	Spot Rock	---	---	---	---	30
Road Rock	6" Jaw Run	Base Rock	---	---	---	---	60
Culverts	1-1/2"-0"	Bedding/Backfill	---	---	---	---	120
Drain Rock	1-1/2"-3/4"	Sta. 9+31 - 9+74	---	---	---	---	280
Fill Armor Outlet	RipRap: Class 5	Sta. 7+50, 17+89, 21+58, 25+34	---	---	---	---	100
Fill Armor/Stabilization Wall Inlet	RipRap: Class 5	Sta. 7+50,	---	---	---	---	30
Fill Armor/Dissipater Outlet	RipRap: Class 5	Sta. 11+45	---	---	---	---	30

ROAD SEGMENT: 2-6-21.2			MILEAGE: 0.000 - 0.304				
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Spot Rock	---	---	---	---	100
Road Rock	6" Jaw Run	Base Rock	---	---	---	---	100

ROCK VOLUMES TOTALS

ROAD SEGMENT: 2-6-21.3 East			STATION: 0+00 - 20+50				
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Spot Rock	---	---	---	---	10
Road Rock	6" Jaw Run	Base Rock	---	---	---	---	20
Culverts	1-1/2"-0"	Spot Rock	---	---	---	---	90
Culverts	6" Jaw Run	Base Rock	---	---	---	---	120
Culverts	1-1/2"-0"	Bedding/Backfill	---	---	---	---	125
Fill Armor Outlet	RipRap: Class 5	Sta. 9+83, 16+86	---	---	---	---	30
Fill Armor Inlet	RipRap: Class 5	Sta. 3+44	---	---	---	---	5
Fill Armor/Dissipater Outlet	RipRap: Class 5	Sta. 3+44	---	---	---	---	10

ROAD SEGMENT: 2-6-21.3 West			STATION: 0+00 - 15+09				
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Rock: 0+00 - 15+09	4"	19	287	41	328
Road Rock	6" Jaw Run	Base Rock: 0+00 - 15+09	9"	46	694	103	797
Road Rock	1-1/2"-0"	Spot Rock	---	---	---	---	50
Road Rock	6" Jaw Run	Base Rock	---	---	---	---	100
Culverts	1-1/2"-0"	Bedding/Backfill	---	---	---	---	30

ROAD SEGMENT: 2-6-21.4			STATION: 0+00 - 17+60				
Application	Rock Size and Type	Location/Number	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Culverts	1-1/2"-0"	Spot Rock	---	---	---	---	15
Culverts	6" Jaw Run	Base Rock	---	---	---	---	20
Culverts	1-1/2"-0"	Bedding/Backfill	---	---	---	---	20

ROAD SEGMENT: 2-6-21.6			STATION: 0+00 - 17+20				
Application	Rock Size and Type	Location/Number	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Rock: 0+00 - 17+20	4"	19	327	44	371
Road Rock	6" Jaw Run	Base Rock: 0+00 - 17+20	9"	46	791	110	901
Road Rock	1-1/2"-0"	Spot Rock	---	---	---	---	80
Road Rock	6" Jaw Run	Base Rock	---	---	---	---	150
Culverts	1-1/2"-0"	Bedding/Backfill	---	---	---	---	95
Fill Armor	RipRap: Class 5	Sta. 12+21 - 15+61	---	---	---	---	50

ROCK VOLUMES TOTALS

ROAD SEGMENT: 2-6-21.7			STATION: 0+00 - 21+00				
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Spot Rock	---	---	---	---	10
Road Rock	6" Jaw Run	Base Rock	---	---	---	---	20

ROAD SEGMENT: 2-6-21.8			STATION: 0+00 - 4+36				
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Rock: 0+00 - 4+36	4"	19	83	8	91
Road Rock	6" Jaw Run	Base Rock: 0+00 - 4+36	9"	46	201	21	222
Road Rock	1-1/2"-0"	Spot Rock	---	---	---	---	40
Road Rock	6" Jaw Run	Base Rock	---	---	---	---	70

ROAD SEGMENT: 2-6-21.9			STATION: 0+00 - 29+95				
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Rock: 0+00 - 29+95	4"	19	569	107	676
Road Rock	6" Jaw Run	Base Rock: 0+00 - 29+95	9"	46	1,378	265	1,643
Road Rock	1-1/2"-0"	Spot Rock	---	---	---	---	120
Road Rock	6" Jaw Run	Base Rock	---	---	---	---	270
Culverts	1-1/2"-0"	Bedding/Backfill	---	---	---	---	135

ROAD SEGMENT: 2-6-21.10			STATION: 0+00 - 14+40				
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Spot Rock	---	---	---	---	10
Road Rock	6" Jaw Run	Base Rock	---	---	---	---	20
Culverts	1-1/2"-0"	Spot Rock	---	---	---	---	30
Culverts	6" Jaw Run	Base Rock	---	---	---	---	40
Culverts	1-1/2"-0"	Bedding/Backfill	---	---	---	---	40
Fill Armor Outlet	RipRap: Class 5	Sta. 2+40	---	---	---	---	40
Fill Armor	RipRap: Class 5	Sta. 7+23 - 7+73	---	---	---	---	120

ROCK VOLUMES TOTALS

ROAD SEGMENT: 2-6-21.11			STATION: 0+00 - 5+45				
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Spot Rock	---	---	---	---	10
Road Rock	6" Jaw Run	Base Rock	---	---	---	---	20
Culverts	1-1/2"-0"	Spot Rock	---	---	---	---	25
Culverts	6" Jaw Run	Base Rock	---	---	---	---	30
Culverts	1-1/2"-0"	Bedding/Backfill	---	---	---	---	30

ROAD SEGMENT: 2-6-22.0			STATION: 0+00 - 16+24				
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Rock: 0+00 - 16+24	4"	19	309	41	350
Road Rock	6" Jaw Run	Base Rock: 0+00 - 16+24	9"	46	747	103	850
Road Rock	1-1/2"-0"	Spot Rock	---	---	---	---	50
Road Rock	6" Jaw Run	Base Rock	---	---	---	---	90
Culverts	1-1/2"-0"	Bedding/Backfill	---	---	---	---	45
Fill Armor Outlet	RipRap: Class 5	Sta. 6+39	---	---	---	---	20
Fill Armor Inlet	RipRap: Class 5	Sta. 6+39	---	---	---	---	10

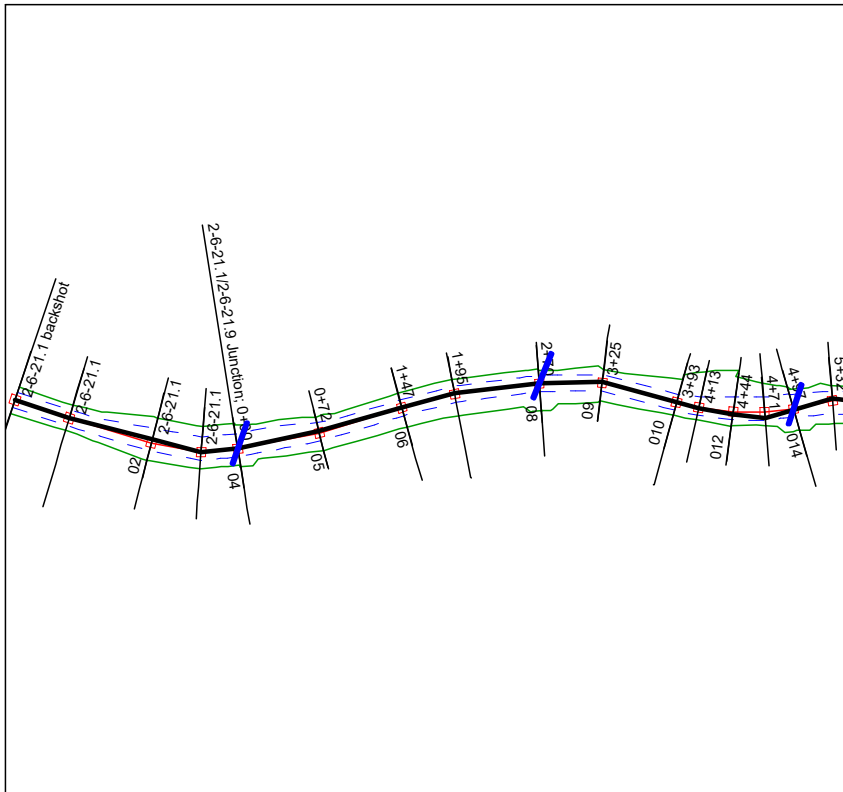
ROAD SEGMENT: 2-5-29.0			MILEAGE: 0.000 - 11.191				
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Spot Rock	---	---	---	---	200
Culverts	1-1/2"-0"	Spot Rock	---	---	---	---	40
Culverts	6" Jaw Run	Base Rock	---	---	---	---	50
Culverts	1-1/2"-0"	Bedding/Backfill	---	---	---	---	60
Fill Armor/Dissipater Outlet	RipRap: Class 5	MP 0.212, 0.346	---	---	---	---	200
Fill Armor Inlet	RipRap: Class 5	MP 0.212, 0.346	---	---	---	---	110

ROAD SEGMENT: 2-6-19.0			MILEAGE: 0.000 - 0.491				
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Spot Rock	---	---	---	---	50

ROAD SEGMENT: 2-6-9.1			MILEAGE: 0.000 - 1.608				
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Culverts	1-1/2"-0"	Spot Rock	---	---	---	---	20
Culverts	6" Jaw Run	Base Rock	---	---	---	---	25
Culverts	1-1/2"-0"	Bedding/Backfill	---	---	---	---	30
Fill Armor Outlet	RipRap: Class 5	MP 0.304	---	---	---	---	40

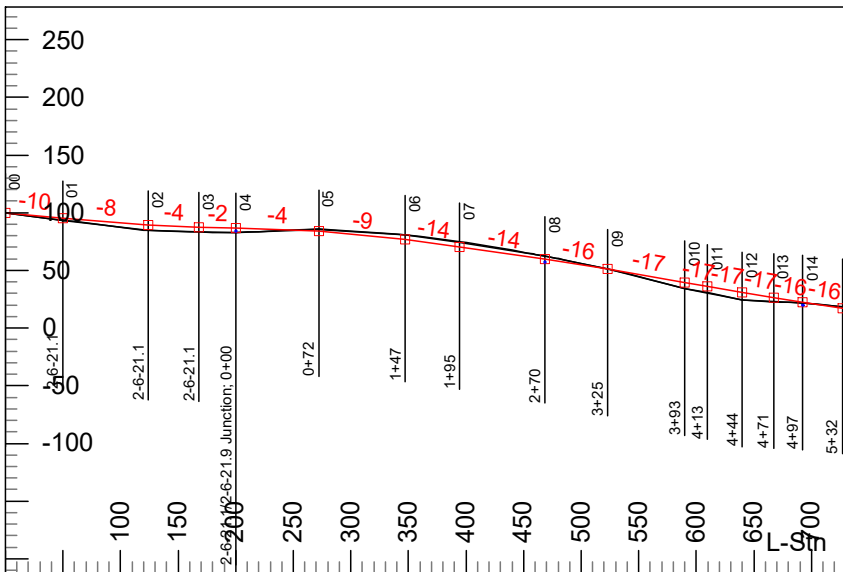
ORN04 - TS2021 - 0401 APPENDIX C1

The Sentinel TIMBER SALE 2-6-21.9 (Stations 0+00 - 29+95)



Plan View

Legend	
	Plan L-line Location
	Plan P-line Location
	Plan Road Edges
	Plan Cross Section Line
	Profile Subgrade
	Profile P-line Topograph

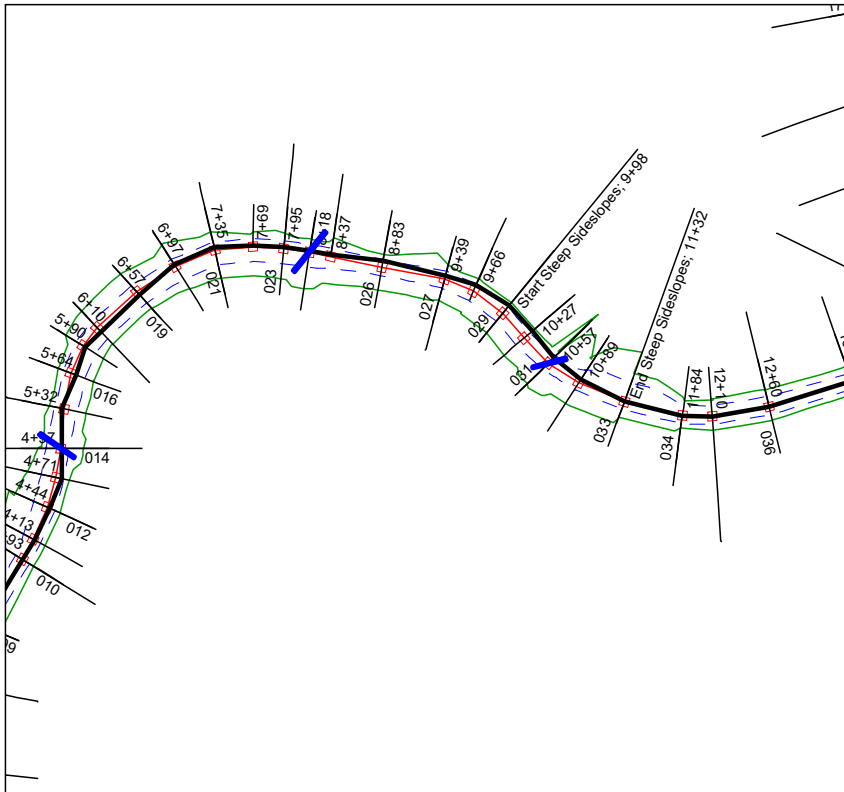


Profile View

Index	H.Offset ft.	Cut Dp. ft.	Rd. Wd. L ft.	Rd. Wd. R ft.	SG Cut V. Cu. Yd.	SG Fill V. Cu. Yd.	Comment
00	0.0	0.0	7.0	7.0	3.9	35.7	2-6-21.1 backsh
01	0.0	-1.5	7.0	7.0	0.0	254.2	2-6-21.1
02	3.0	-4.6	12.9	7.0	0.0	245.4	2-6-21.1
03	0.0	-4.0	13.0	7.0	0.0	166.8	2-6-21.1
04	0.0	-4.0	13.0	7.0	0.0	166.8	2-6-21.1/2-6-21.
05	2.0	2.1	9.1	7.0	70.2	96.1	0+72
06	0.0	4.0	7.0	7.0	339.8	0.0	1+47
07	1.0	4.6	7.0	7.0	317.0	0.0	1+95
08	0.0	2.8	7.0	7.0	542.8	0.0	2+70
09	1.0	0.3	7.0	7.0	225.8	17.5	3+25
010	0.0	-5.3	7.0	7.0	37.7	150.1	3+93
011	-1.0	-5.8	9.4	7.0	0.0	134.5	4+13
012	-2.0	-6.8	13.0	7.0	0.0	317.9	4+44
013	-5.0	-4.0	13.0	7.0	0.3	205.7	4+71
014	-1.0	-0.6	12.7	7.3	25.1	79.5	4+97
015	2.0	1.5	8.6	11.4	83.8	7.5	5+32
016					77.9	4.0	

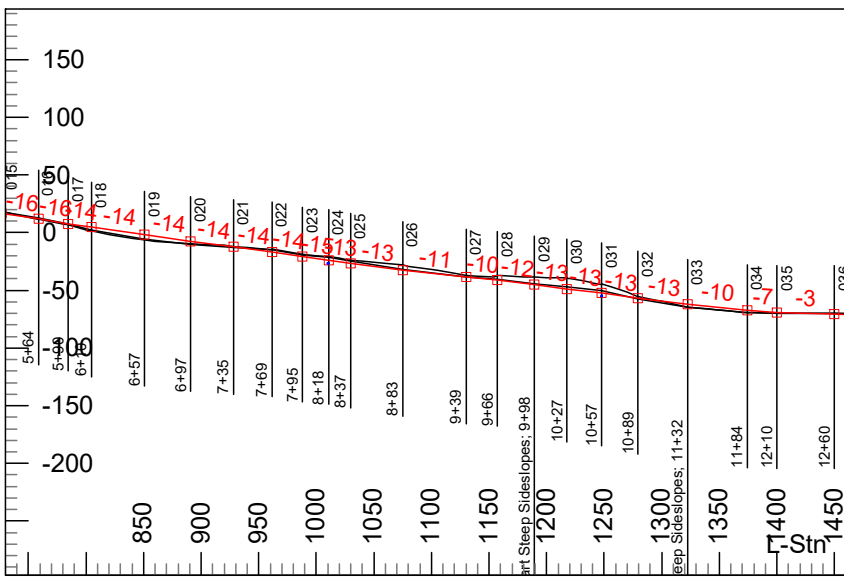
ORN04 - TS2021 - 0401 APPENDIX C1

The Sentinel TIMBER SALE 2-6-21.9 (Stations 0+00 - 29+95)



Plan View

Legend	
	Plan L-line Location
	Plan P-line Location
	Plan Road Edges
	Plan Cross Section Line
	Profile Subgrade
	Profile P-line Topograph

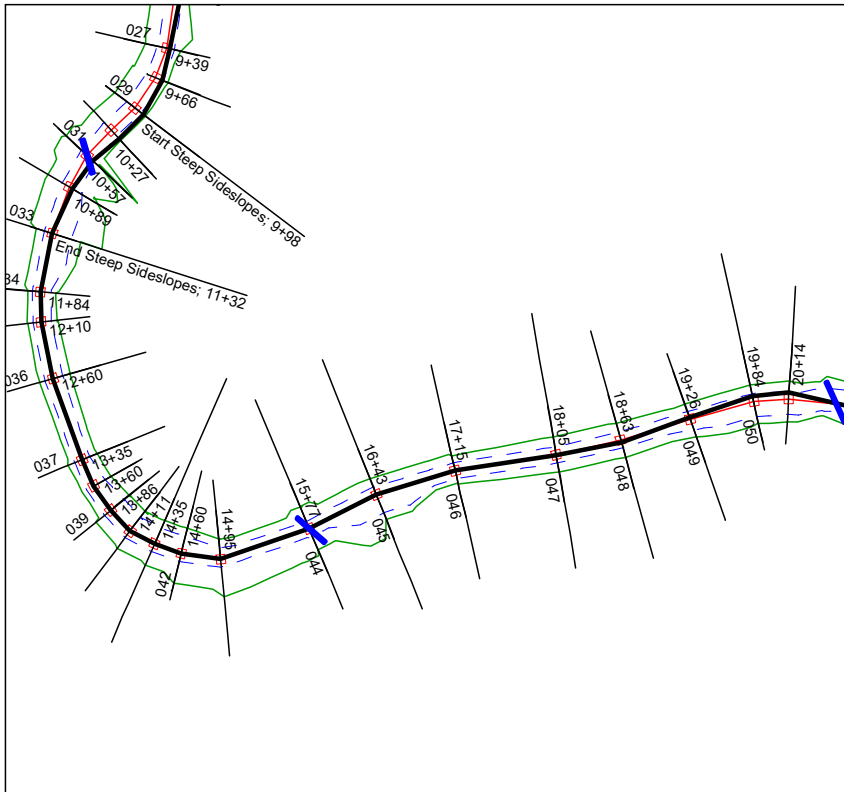


Profile View

Index	H.Offset ft.	Cut Dp. ft.	Rd. Wd. L ft.	Rd. Wd. R ft.	SG Cut V. Cu. Yd.	SG Fill V. Cu. Yd.	Comment
016	-5.0	-0.1	7.0	13.0	41.5	16.3	5+64
017	-2.0	-0.9	7.0	13.0	13.0	63.2	5+90
018	-5.0	-3.6	7.0	13.0	12.3	227.6	6+10
019	-4.0	-4.9	7.0	13.0	31.8	146.9	6+57
020	2.0	-2.2	7.0	13.0	123.5	58.2	6+97
021	2.5	0.3	7.0	13.0	177.2	9.5	7+35
022	1.0	2.5	7.0	13.0	197.2	5.9	7+69
023	1.0	1.8	7.0	13.0	245.5	1.4	7+95
024	1.5	3.4	7.0	12.9	196.4	1.2	8+18
025	1.5	2.4	7.0	10.7	293.7	5.5	8+37
026	6.0	4.0	7.0	7.0	288.1	17.2	8+83
027	3.0	1.1	7.0	8.0	118.9	2.1	9+39
028	6.0	4.1	7.0	9.0	269.1	0.0	9+66
029	9.0	6.5	7.0	9.0	336.0	0.0	Start Steep Side
030	10.0	9.5	7.0	9.0	433.6	24.3	10+27
031	7.0	8.3	8.9	7.1	320.4	51.1	10+57
032	3.0	1.3	12.0	7.0	160.4	227.5	10+89
033	0.0	-2.5	17.0	7.0	27.8	149.3	End Steep Sides
034	0.0	-2.0	9.0	7.0			11+84

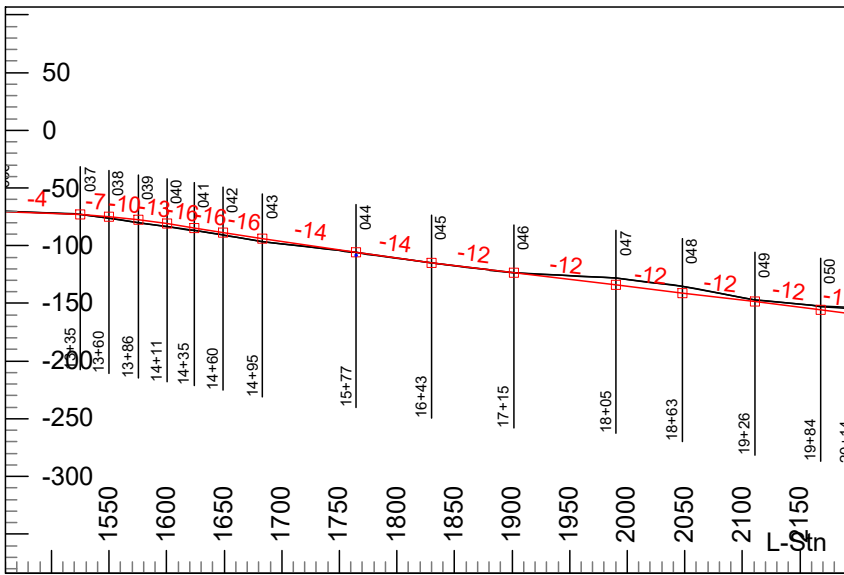
ORN04 - TS2021 - 0401 APPENDIX C1

The Sentinel TIMBER SALE 2-6-21.9 (Stations 0+00 - 29+95)



Plan View

Legend	
	Plan L-line Location
	Plan P-line Location
	Plan Road Edges
	Plan Cross Section Line
	Profile Subgrade
	Profile P-line Topograph

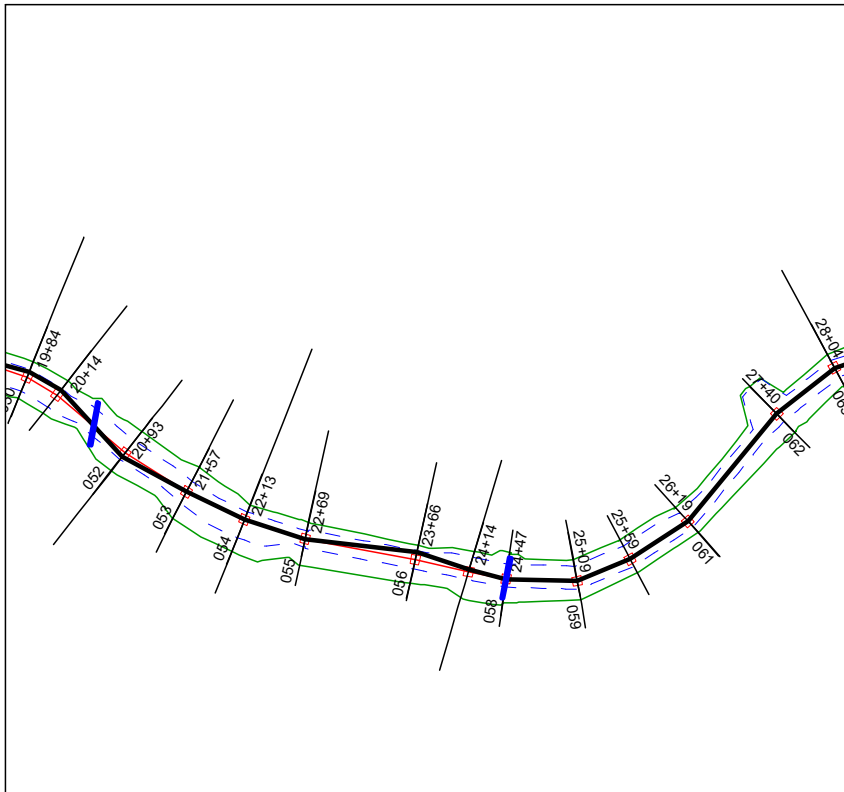


Profile View

Index	H.Offset ft.	Cut Dp. ft.	Rd. Wd. L ft.	Rd. Wd. R ft.	SG Cut V. Cu. Yd.	SG Fill V. Cu. Yd.	Comment
037	0.0	0.5	7.0	7.0	17.6	7.6	13+35
038	0.0	-1.3	10.9	7.0	8.0	34.3	13+60
039	0.0	-2.5	15.0	7.0	9.3	66.3	13+86
040	0.0	-2.8	15.0	7.0	10.5	69.3	14+11
041	0.0	-2.5	15.0	7.0	18.8	74.6	14+35
042	0.0	-2.3	15.0	7.0	26.7	126.6	14+60
043	0.0	-2.3	9.8	7.0	105.1	265.8	14+95
044	0.0	-0.5	7.0	7.0	119.5	218.0	15+77
045	0.0	-0.3	7.0	17.0	79.9	60.3	16+43
046	0.0	0.0	7.0	7.0	367.2	0.5	17+15
047	0.0	6.0	7.0	7.0	462.1	0.0	18+05
048	-2.0	5.9	7.0	7.0	305.8	0.0	18+63
049	1.5	1.5	7.0	9.5	240.7	0.0	19+26
050	5.0	2.7	7.0	13.0	176.7	0.0	19+84
051	6.0	4.9	7.0	13.0	100.9	279.4	20+14
052							

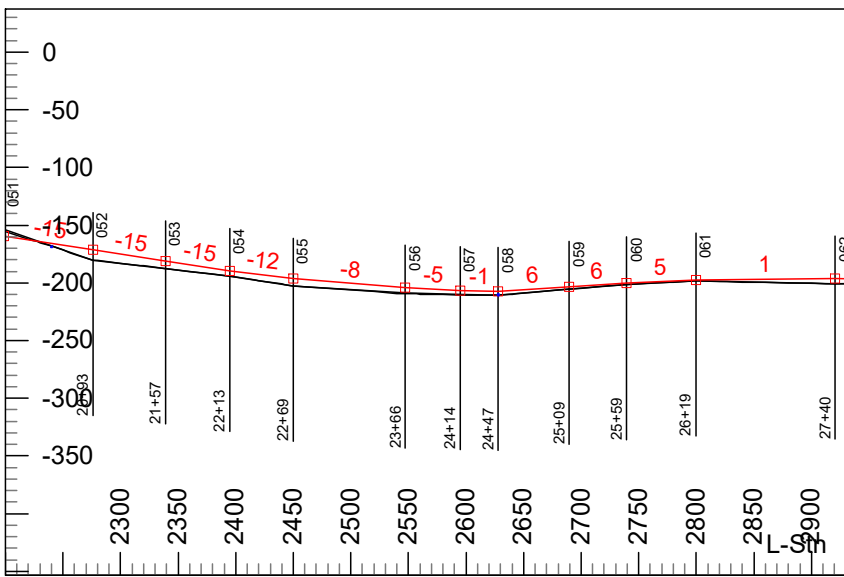
ORN04 - TS2021 - 0401 APPENDIX C1

The Sentinel TIMBER SALE 2-6-21.9 (Stations 0+00 - 29+95)



Plan View

Legend	
	Plan L-line Location
	Plan P-line Location
	Plan Road Edges
	Plan Cross Section Line
	Profile Subgrade
	Profile P-line Topograph

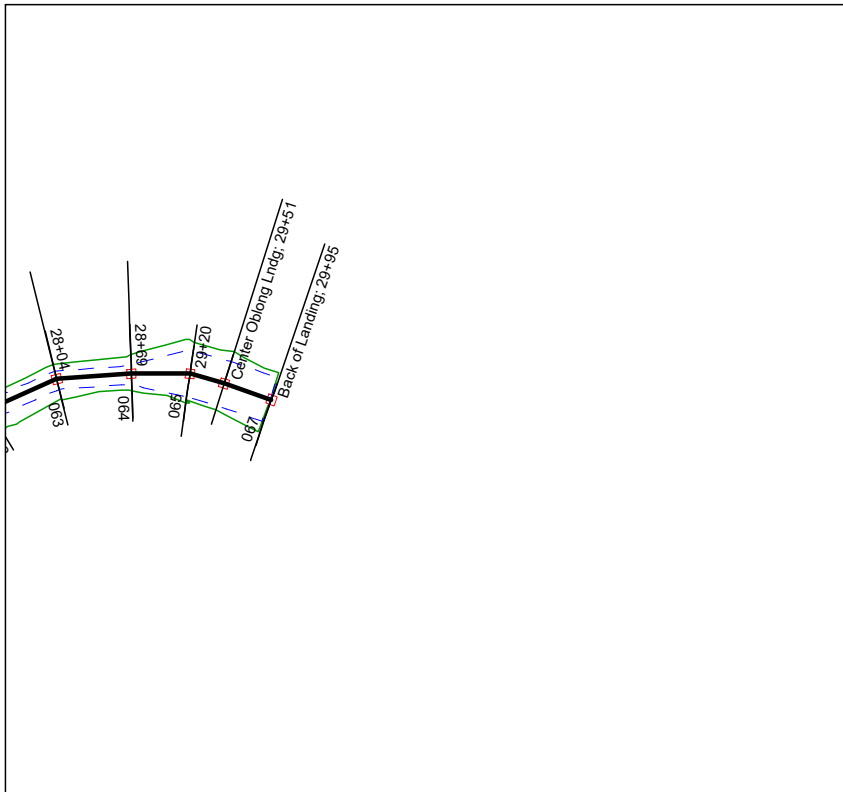


Profile View

Index	H.Offset ft.	Cut Dp. ft.	Rd. Wd. L ft.	Rd. Wd. R ft.	SG Cut V. Cu. Yd.	SG Fill V. Cu. Yd.	Comment
052	-4.0	-8.6	13.0	7.0	0.0	624.8	20+93
053	0.0	-6.5	10.3	11.4	0.0	500.5	21+57
054	0.0	-4.6	7.0	17.0	0.0	399.6	22+13
055	0.0	-6.0	7.0	7.0	0.0	636.3	22+69
056	7.0	-5.0	8.0	8.0	0.0	636.3	23+66
057	2.0	-4.0	13.0	7.0	1.0	228.0	24+14
058	0.0	-3.8	13.0	7.0	10.2	160.9	24+47
059	0.0	-2.0	13.0	7.0	23.0	188.7	25+09
060	0.0	-1.0	13.0	7.0	16.8	75.7	25+59
061	0.0	-1.0	10.3	7.0	19.1	61.5	26+19
062	0.0	-4.8	32.0	9.0	5.1	421.0	27+40
063	0.0				6.5	239.3	

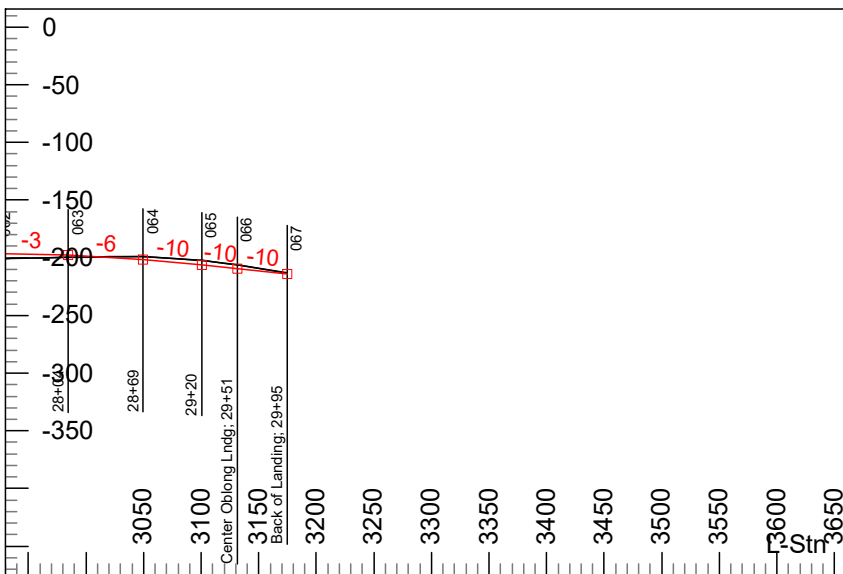
ORN04 - TS2021 - 0401 APPENDIX C1

The Sentinel TIMBER SALE 2-6-21.9 (Stations 0+00 - 29+95)



Plan View

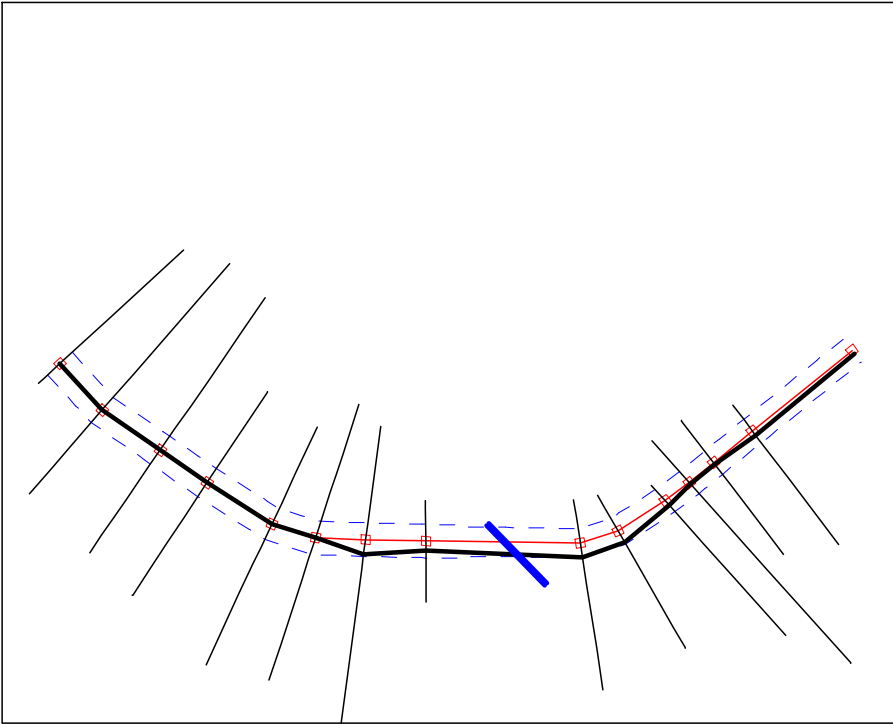
Legend	
	Plan L-line Location
	Plan P-line Location
	Plan Road Edges
	Plan Cross Section Line
	Profile Subgrade
	Profile P-line Topograph



Profile View

Index	H.Offset ft.	Cut Dp. ft.	Rd. Wd. L ft.	Rd. Wd. R ft.	SG Cut V. Cu. Yd.	SG Fill V. Cu. Yd.	Comment
063	0.0	-1.8	7.0	9.0	86.8	44.6	28+04
064	0.0	2.5	7.7	9.6	369.9	6.4	28+69
065	0.0	4.0	20.0	20.0	233.5	5.4	29+20
066	0.0	3.5	20.0	20.0	89.1	50.4	Center Oblong L
067	0.0	1.0	0.1	0.1			Back of Landing

ORN04 - TS2021 - 0401 APPENDIX C1

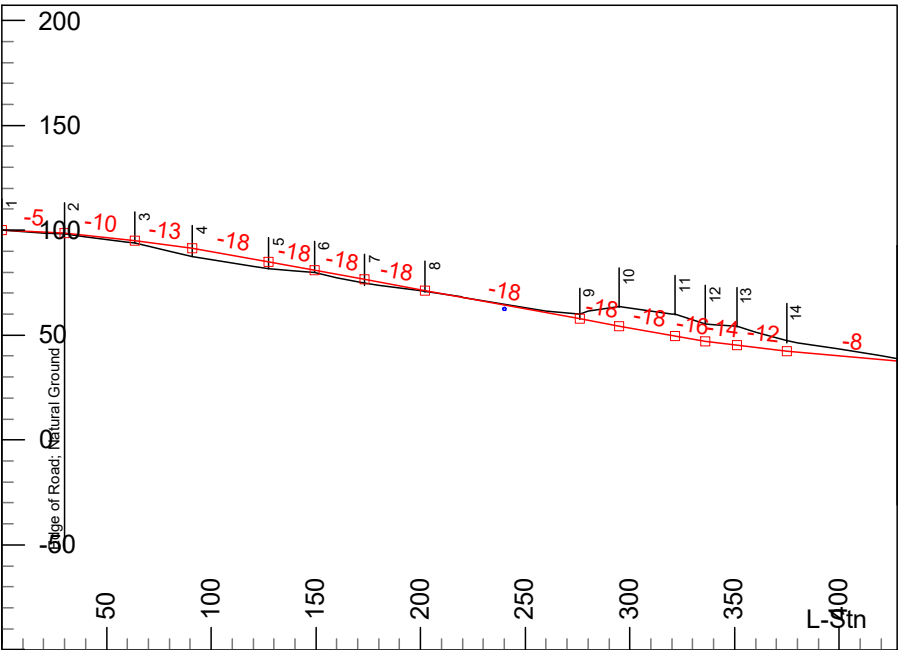


Plan View

The Sentinel TIMBER SALE 2-6-21.10 (Stations 0+00 - 4+36)

Legend

	Plan L-line Location
	Plan P-line Location
	Plan Road Edges
	Plan Cross Section Lines
	Profile Subgrade
	Profile P-line Topography



Profile View

Index	H.Offset ft.	Cut Dp. ft.	Rd. Wd. L ft.	Rd. Wd. R ft.	SG Cut V. Cu. Yd.	SG Fill V. Cu. Yd.	Comment
1	0.0	0.0	8.0	8.0			CL of 2-6-15.0; Edge of Road; N
2	0.0	-0.3	8.0	8.0	1.3	8.5	
3	0.0	-1.3	8.0	8.0	3.1	23.9	
4	0.0	-4.0	8.0	8.0	0.0	91.2	
5	0.0	-3.3	8.0	8.0	0.0	138.6	
6	0.0	-1.3	8.0	8.0	0.1	40.5	
7	-7.0	-2.0	8.0	8.0	0.1	36.1	
8	-4.5	-0.3	8.0	8.0	2.0	32.2	
9	-7.0	2.3	7.0	7.0	57.8	9.6	
10	-6.0	9.3	7.0	7.0	123.4	0.0	
11	-3.0	10.6	7.0	7.0	285.9	0.0	
12	-1.0	8.1	7.0	7.0	147.2	0.0	
13	-1.0	9.0	7.0	7.0	140.5	0.0	
14	-2.5	5.0	7.0	7.0	175.6	0.0	
15					192.5	0.7	

ROAD MAINTENANCE SPECIFICATIONS

General road maintenance specifications are designated by numeric symbols according to the type of work performed as follows:

SECTION	DESCRIPTION
3000	General
3100	Operational Maintenance
3200	Seasonal Maintenance
3300	Final Maintenance
3400	Other Maintenance
3500	Decommissioning

GENERAL - 3000

- 3001 The Purchaser shall be required to maintain all roads as shown on the Exhibit E maps of this contract in accordance with Sections 3000, 3100, 3200, 3300, 3400, and 3500 of this exhibit.
- 3002 The Purchaser shall maintain the cross section of existing dirt or graveled roads to the existing geometric standards. Any roads required to be constructed, improved, or renovated under terms of this contract shall be maintained to the geometric standards required in Exhibit C of this contract.
- 3003 The minimum required maintenance on any Purchaser maintained roads shall include the provisions specified in Subsections 3101, 3104, and 3105.
- 3004 The Purchaser shall be responsible for providing timely maintenance and cleanup on any roads with logging units substantially completed prior to moving operations to other roads. The maximum length of non-maintained or non-cleanup of the road prism shall not exceed the sum of one (1) mile at any time. Release of maintenance requirements may be granted, upon written request, when the conditions specified in Sections 3300 and 3400 are met satisfactorily.

OPERATIONAL MAINTENANCE - 3100

- 3101 The Purchaser shall blade and shape the road surface and shoulders with a motor grader, when directed by the Authorized Officer. Banks shall not be undercut. Back blading with tractors or similar equipment will be allowed only around landings and other areas when approved by the Authorized Officer.
- 3102 The Purchaser shall furnish and place 990 cu.yds. of aggregate conforming to the requirements in Sections 1200 of Exhibit C of this contract on the roadway at locations and in the amounts designated by the Authorized Officer.
- 705** cu.yds. - To be placed on BLM controlled roads as directed by Authorized Officer (maintenance rock: Sections 42.w.).
- 285** cu yds – To be placed on non-BLM controlled roads as directed by the Authorized Officer (maintenance rock: Section 42.ff.)
- This aggregate shall be used to repair surface failures and areas of depleted surface depth excluding damages covered by Section 12 of this contract. The aggregate shall be furnished, hauled, placed, spread, and compacted by use of dump trucks, water trucks, and motor grader or similar equipment.

- 3104 The purchaser shall perform other road cleanup including removal of debris, fallen timber, bank slough, and slides which can practicably be accomplished by a motor grader, rubber tired front end bucket loader, rubber tired backhoe or comparable equipment, and by the use of hand tools.
- 3104a Removal of bank slough and slide material includes placement of material at the nearest designated, suitable disposal site where material cannot erode into streams, lakes, or reservoirs or cause undue damage to road fill slopes which have been planted or mulched to control soil erosion as directed by the Authorized Officer.
- 3104b The Purchaser shall be responsible for removal of all slides or slough, up to fifteen station yards in quantity, at any one site. This work includes unlimited multiple sites on all roads required to be maintained by the purchaser.
- Prior to removal of any slough or slide material exceeding fifteen station yards at any one site, the Purchaser and the Authorized Officer or their Authorized Representatives shall agree in writing, in the field, to the quantity of material, method of disposal, and the disposal site. Work may commence immediately after agreement.
- Upon completion of agreed upon work, a reduction in timber sale purchase price will be made to offset the cost of the work, based on current BLM Road Cost Guide. Adjustments in purchase price for completed work shall be made as necessary and no less than once per year when actual work is ongoing.
- 3105 The Purchaser shall be responsible for maintaining normal flow in drainage structures. This includes cleaning out drainage ditches, catch basins, clearing pipe inverts of sediment and other debris lodged in the barrel of the pipe, and maintaining water dips and waterbars using equipment specified in Subsection 3104 and other culvert cleaning and flushing equipment.
- 3108 The Purchaser shall avoid fouling gravel or bituminous surfaces through covering with earth and debris from side ditches, slides or other sources. The Purchaser shall also avoid blading surfacing material off the running surface of the roadway. (Skidding of logs on the roadway in or outside designated logging units is not authorized without prior written approval by the Authorized Officer. Repair required caused by such skidding activity is not considered maintenance and shall be repaired at the Purchaser's expense.)

SEASONAL MAINTENANCE - 3200

- 3201 The Purchaser shall perform preventative maintenance at the end of Purchaser's hauling each season and during non-hauling periods which occur between other

operations on the contract area. This includes requirements specified in Section 3100.

- 3202 The purchaser shall perform and complete maintenance specified in Sections 3000, 3100, and 3200 on all roads maintained by him, during times when there is a low potential to deliver sediment to streams, as determined by Authorized Officer, and as specified in Subsection 3203, after initial commencement of construction or logging operations. Thereafter, all roads shall have continuous preventive maintenance and road cleanup. This includes all roads used and not used during the preceding operating seasons.
- 3203 The Purchaser shall complete road cleanup and maintenance, as specified in Section 3100, at the completion of logging operations on any roads located in an area separate from the area where logging activities will resume.
- 3204 The Purchaser shall be responsible for performing post storm inspections and maintenance during the winter season to minimize erosion and potential road or watershed damage.

FINAL MAINTENANCE - 3300

- 3301 The Purchaser shall complete final maintenance and/or damage repairs on all roads used under terms of their contract within thirty (30) calendar days following the completion of hauling and in accordance with Sec. 16(b) of this contract. This work shall include any maintenance and/or damage repairs specified in Sections 3000, 3100, and 3200 necessary to meet the conditions specified in Subsection 3002 and shall be executed in accordance with Subsection 3302 of this section.

The Authorized Officer may grant acceptance of Purchaser's maintenance responsibility in part where certain individual roads or road segments are no longer of any use to the Purchaser's remaining removal operations, providing that all contract requirements as specified under Sec. 16(b), Special Provisions (Sections 3000, 3100, 3200 and 3300 of the maintenance specifications) have been completed and a relinquishment of cutting and removal rights on cutting units tributary to these roads is signed by the Purchaser. Request for partial acceptance must be submitted in writing by the Purchaser.

- 3302 The Purchaser shall perform final road maintenance only when weather or soil moisture conditions are suitable for normal maintenance equipment operations as determined by the Authorized Officer.

If final maintenance is delayed after the date required in Subsection 3301 of this contract by adverse soil moisture or unsuitable equipment operating conditions, the Purchaser will be notified by the Authorized Officer when soil moisture and equipment operating conditions are suitable. The Purchaser shall then be required to complete final maintenance within 30 days.

OTHER MAINTENANCE - 3400

- 3401 The Purchaser shall repair any damage to road surfaces that was specified under Subsection 3108. This repair includes restoring the roadway to the designed standard and replacement of surfacing with approved surface material. This repair is not limited to use of equipment specified in Subsection 3104.
- 3402 The Purchaser shall be permitted to remove ice and snow from roads authorized for use under this contract only when prior written approval has been secured from the Authorized Officer. The Purchaser shall submit a written request for permission to remove ice and snow in advance of the date operations are to begin.
- Upon receiving written authorization for ice or snow removal, the Purchaser will perform the work according to the conditions and equipment requirements set forth in the authorization.
- 3405 The Purchaser shall be required to furnish and apply lignin sulfonate dust palliatives, not to exceed two applications per year (Between July 15 – September 15th, or as otherwise directed by Authorized Officer), in accordance with these specifications
- The Purchaser shall be required to furnish and apply water for dust abatement during dry conditions in months of high potential for rainfall (typically May 1st - July 15th) as directed by Authorized Officer. Up to two applications per day could be required as needed for dust abatement.
- This work shall be performed upon acceptance of the required road construction, renovation, or improvement work and be placed prior to any timber and rock hauling.
- When timber and rock hauling has commenced, the Purchaser shall apply the required dust palliative during the hauling season when haul exceeds 15 passes as directed by the Authorized Officer.
- When lignin sulfonate is used, apply it according to the label, do not apply within 24 hours of a forecasted rain event, and do not apply within 25 feet of a stream channel or other waterbody.

The specified dust palliative shall be applied evenly over the specified road surface width of the following roads:

Road No.	From Sta./M.P.	to Sta./M.P.	Spread Width
Fairdale Road - MP starts at Toll Road Junction	0.000	0.085	20
Fairdale Road	0.124	0.254	20
Fairdale Road	0.323	0.681	20
Fairdale Road	0.869	1.287	20
Fairdale Road	2.516	2.826	20
Fairdale Road	4.219	4.389	20
Flying M Road	0.000	0.044	30
Flying M Road	0.155	0.191	30
*Toll Road	0.000	0.700	20
**1-6-36.0	0.630	0.838	14

*Purchaser shall only be required to apply the specified dust palliative between July 15th, 2023 – September 15th, 2023.

**Purchaser shall apply up to two applications of only water for dust palliative whenever this road is utilized or per the Authorized Officer.

Turnouts and extra widening shall not be included in addition to the spread width.

3405a Additional lignin sulfonate dust palliative may be required at the option of the Authorized Officer, not to exceed two applications per year, when the functional qualities of the dust palliative have been reduced or become ineffective due to third party damage, rain, or other events not under the control of the purchaser.

3405b The Purchaser shall notify Weyerhaeuser Company and Yamhill County along the roads to be treated of the planned application of lignin sulfonate dust palliatives at least (3) days prior to the work. Warning signs shall be posted at key intersections to alert users that the road is being treated. All signs shall be removed by the Purchaser within (thirty) days of treatment.

- 3406b The prepared roadbed shall be approved by the Authorized Officer prior to application of the specified dust palliative.
- 3407 The Purchaser shall furnish in duplicate, commercial certification signed by vendor of compliance with the lignin sulfonate dust palliatives material requirements specified under Subsection (3412a) (3412b). Commercial certification includes the date, identification number of truck or trailer, net mass, and brand name with each shipment. Also provide the net volume and specific gravity at 60 degrees F, percent solids by mass, and PH.
- 3408 Dust palliatives shall be applied with standard commercial distribution equipment operated in a manner that the material is uniformly applied on variable widths of surface at controlled rates.
- 3409 The Purchaser shall notify the Authorized Officer a minimum of (3) days in advance of application of required dust palliative.
- 3410 The Purchaser shall submit an application schedule for all dust palliative work to the Authorized Officer for approval. All work shall be in accordance with the approved plan.
- 3411 Required lignin sulfonate dust palliatives shall only be applied when the atmospheric temperature is at least 45° F and steady or rising and when the weather is not foggy or rainy. Do not apply dust palliative if rain is anticipated within 24 hours of application or when the ground is frozen.
- 3412 The Purchaser shall apply to the prepared roadbed specified under Subsection 3405, a lignin sulfonate dust palliative conforming to the material requirements of Subsection (3412a) (3412b). The rate of application shall be 0.5 gallons per yd² surface. A second application at the rate of 0.5 gallons per yd² shall be applied at a time designated by the Authorized Officer.
- Applied materials not penetrating the road surface shall be blade mixed with additional water into the top 1 to 1½ inches of the surfacing at the Contractor's expense.
- 3412a If required, the lignin sulfonate shall be field diluted within the application vehicle and be circulated at least 5 minutes to assure mixing. An air gap shall be provided between any water source and the materials being diluted. Accidental spills shall be contained to prevent entry in water courses or ponded water. The surface of adjacent structures and trees shall be protected from spattering or marring.

Water used to dilute lignin sulfonate concentrate shall be clean and free of oil, salt, acid, alkali, vegetable matter, or any other substance that contaminates the finished product.

3412b Specifications for Lignin Sulfonate:

Lignin sulfonate shall be the chemical residue produced as a byproduct of the acid sulfite pulping process and supplied as a water solution. The base cation shall be ammonia, calcium, or sodium. The product shall be water soluble to allow field dilution. Dilute with water until the mixture contains a minimum 48 percent concentration with the following properties:

Solids	50%
Specific gravity	1.25
PH, AASHTO T289	4.5 min.

Ensure that the material does not exceed the following chemical constituents:

phosphorous	25.00 ppm
cyanide	0.20 ppm
arsenic	5.00 ppm
copper	0.20 ppm
lead	1.00 ppm
mercury	0.05 ppm
chromium	0.50 ppm
cadium	0.20 ppm
barium	10.00 ppm
selenium	5.00 ppm
zinc	10.00 ppm

Apply when the ambient air temperature is 45° F or above.

3413 Sampling of lignin sulfonate material may be required to validate certificates furnished by the Purchaser. When sampling is directed by the Government, the actual samples will be taken by the Purchaser or his representative in the presence of the Authorized Officer.

DECOMMISSIONING – 3500

3501 Decommissioning on the following roads shall consist of removing cross drains and draw culverts. Work includes subsoiling, spread government supplied grass seed, installing non-drivable waterbars, scattering slash, removing culverts, and blocking roads from access by vehicles. This work is *not* required for road acceptance under Section 18 of this contract.

Road No or Site	From Sta/MP	To Sta/MP	Length
2-6-21.4	0+00	17+60	1,760 feet.
2-6-21.5	0+00	5+87	587 feet.
2-6-21.3 East	16+86	20+50	364 feet.

3501c Decommissioning on the following roads shall consist of removing cross drains and draw culverts. Work includes installing non-drivable waterbars and blocking roads from access by vehicles. This work is *not* required for road acceptance under Section 18 of this contract.

Road No or Site	From Sta/MP	To Sta/MP	Length
2-6-21.3 East	0+00	16+86	1,686 feet.

3501c Decommissioning on the following roads shall consist of *not* removing cross drains and draw culverts. Work includes installing non-drivable waterbars and blocking roads from access by vehicles. This work is *not* required for road acceptance under Section 18 of this contract.

Road No or Site	From Sta/MP	To Sta/MP	Length
2-5-31.4	0+00	5+68	568 feet.
2-5-31.5	0+00	9+11	911 feet.
2-5-31.6	0+00	1+38	138 feet.
2-6-21.7	0+00	21+00	1,708 feet.
2-6-21.10	0+00	14+40	1,440 feet.
2-6-21.11	0+00	5+45	545 feet.

3501d Stabilization of the following roads shall consist of installing drivable waterbars/waterdips (as directed). This work is *not* required for road acceptance under Section 18 of this contract.

Road No or Site	From Sta/MP	To Sta/MP	Length
2-6-21.8	0+00	4+36	436 feet.

3504 Decommissioning and Stabilization work shall be completed after all harvesting activities requiring that road segment have ceased, unless otherwise authorized in writing by the Authorized Officer. All decommissioning and stabilization work shall be performed during times when there is a low potential to deliver sediment to streams, as determined by the Authorized Officer (except in-stream work, which is in North Yamhill River Watershed:

From	To
July 15	September 30

3505 Where draw crossing fill material is to be excavated and removed, the finished bottom of draw profile shall be reestablished to its original channel grade, and resulting adjacent banks shall be constructed to a 2:1 backslope ratio.

3507 Culverts and Inlet Markers removed during decommissioning shall become the property of the BLM. All culverts and bands removed from the roadbed shall be recovered in such a manner as to preserve the pipe from rips and holes. The Purchaser shall be responsible for delivering culvert materials to the BLM Cedar Creek Storage Facility (SW¼ sec. 5, T. 3 S., R. 6 W., WM.) and for payment of any fees required. This task shall be done prior to termination of this contract.

3509 Decommissioned roads shall have access blocked with barricades as shown on Exhibit C page 50. Stumps and woody debris used in the construction of barricades shall be material piled and stored during the clearing and grubbing process of road construction.

3511 Subsoiling shall be accomplished by using excavator attachments, log loader tongs, or other acceptable equipment capable of de-compacting the soil to a depth of 18 inches. The full width of the roadbed shall be loosened by the subsoiling operation, with no portion of the bed having been left at the original compacted density. Ripper entries into the roadbed shall be spaced where total subgrade subsoiling is accomplished.

3513 Waterbars (drivable and non-drivable)/Waterdips shall be installed across full width of roadway at locations marked in the field by Authorized Officer and constructed to the dimensions of the waterbar detail on Page 50 of Exhibit C.

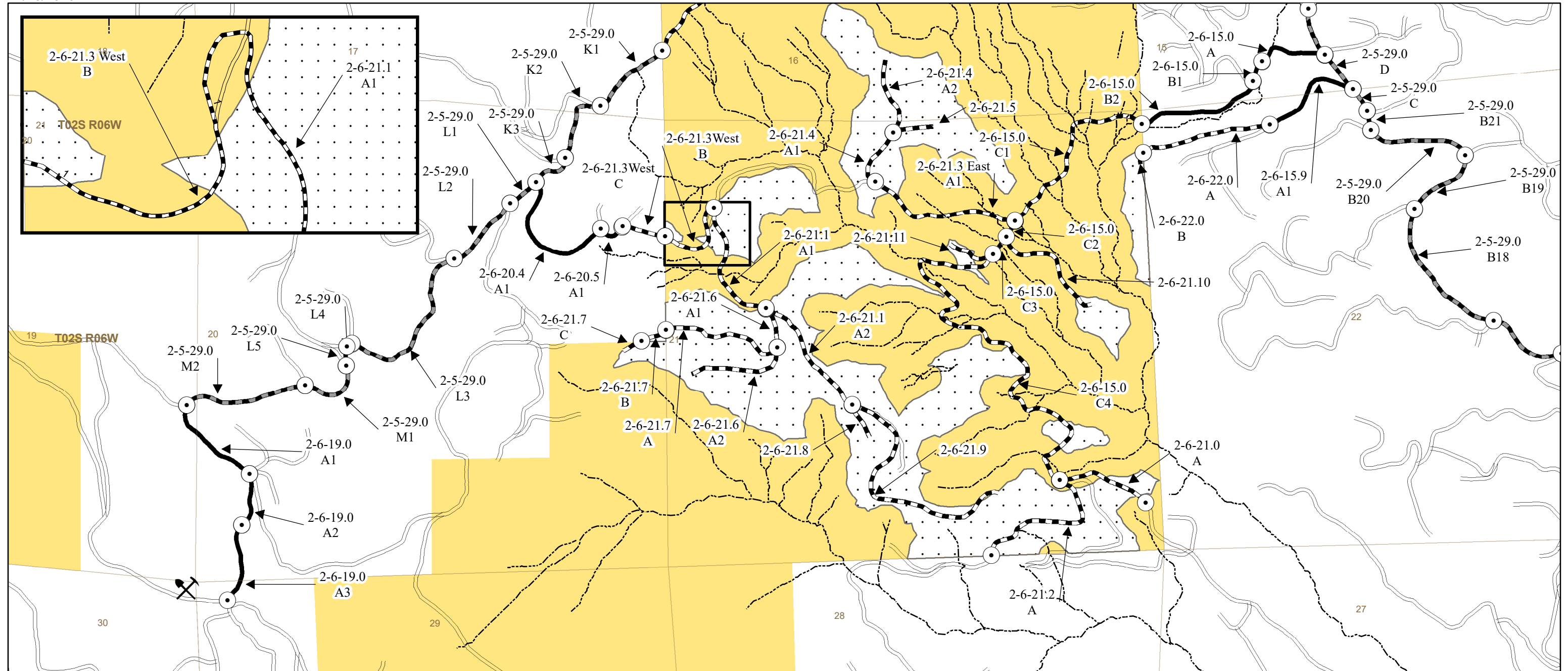


United States Department of Interior
 BUREAU OF LAND MANAGEMENT
 NORTHWEST OREGON DISTRICT - OREGON
 Road Plan Map

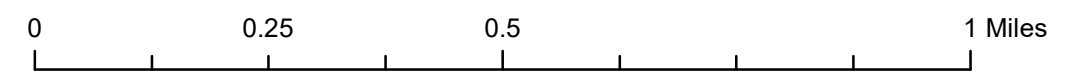
The Sentinel Timber Sale
 Contract NO. ORN04-TS-2021-0401
 Exhibit E
 Page 1 of 6

12/15/2020

T. 02S. R. 6W. Sections 16, 20, & 21 W.M. - NORTHWEST OREGON DISTRICT - OREGON
 T. 02S. R. 5W. Sections 31 W.M. - NORTHWEST OREGON DISTRICT - OREGON



- Segment Breaks
- Weyerhaeuser Rock Quarry
- BLM controlled road - Purchaser Maintenance
- Weyerhaeuser controlled road - Purchaser Maintenance
- Weyerhaeuser controlled road - Weyerhaeuser Maintenance
- Existing Roads
- Streams
- The Sentinel Project Area
- Bureau of Land Management



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification. Prepared By: Austin Bettis

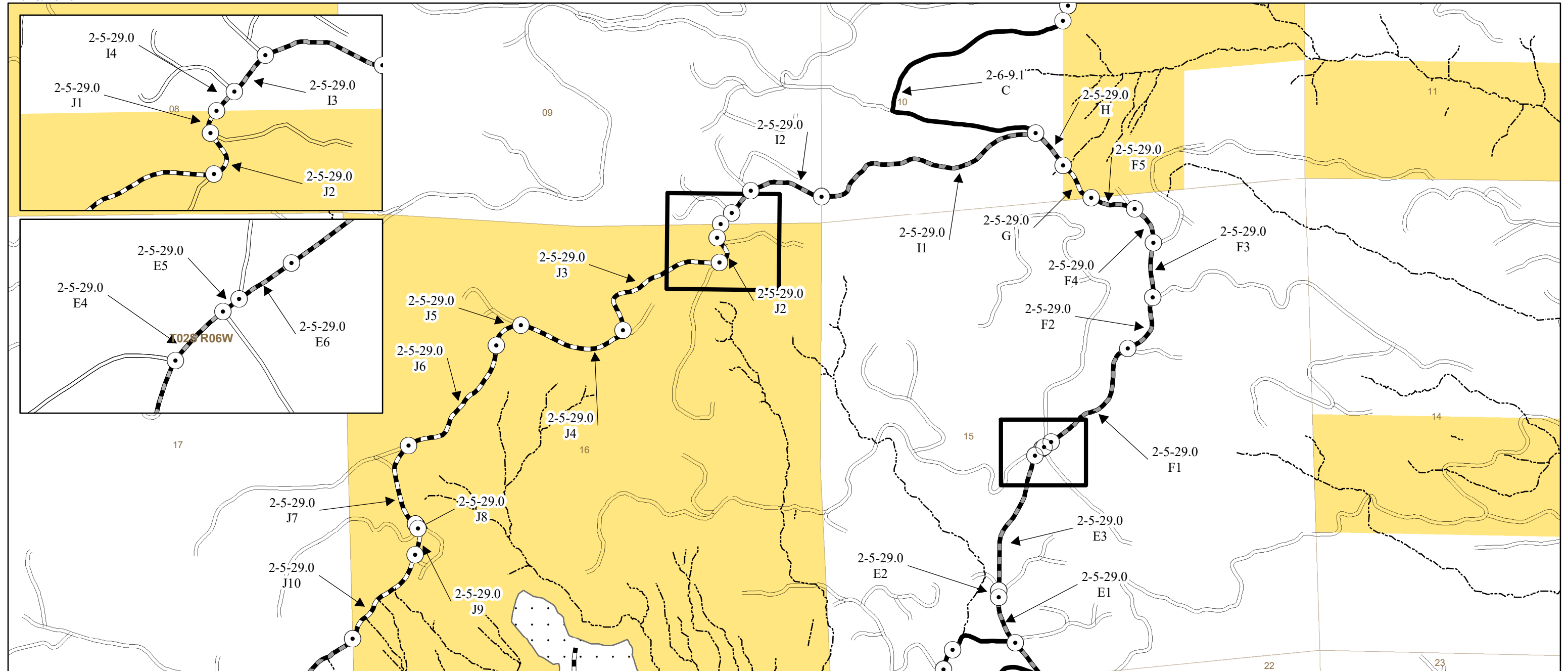


United States Department of Interior
 BUREAU OF LAND MANAGEMENT
 NORTHWEST OREGON DISTRICT - OREGON
 Road Plan Map

The Sentinel Timber Sale
 Contract NO. ORN04-TS-2021-0401
 Exhibit E
 Page 2 of 6

12/15/2020

T. 02S. R. 6W. Sections 16, 20, & 21 W.M. - NORTHWEST OREGON DISTRICT - OREGON
 T. 02S. R. 5W. Sections 31 W.M. - NORTHWEST OREGON DISTRICT - OREGON



- Segment Breaks
- Streams
- BLM controlled road - Purchaser Maintenance
- Weyerhaeuser controlled road - Purchaser Maintenance
- Weyerhaeuser controlled road - Weyerhaeuser Maintenance

- Existing Roads
- The Sentinel Project Area
- Bureau of Land Management



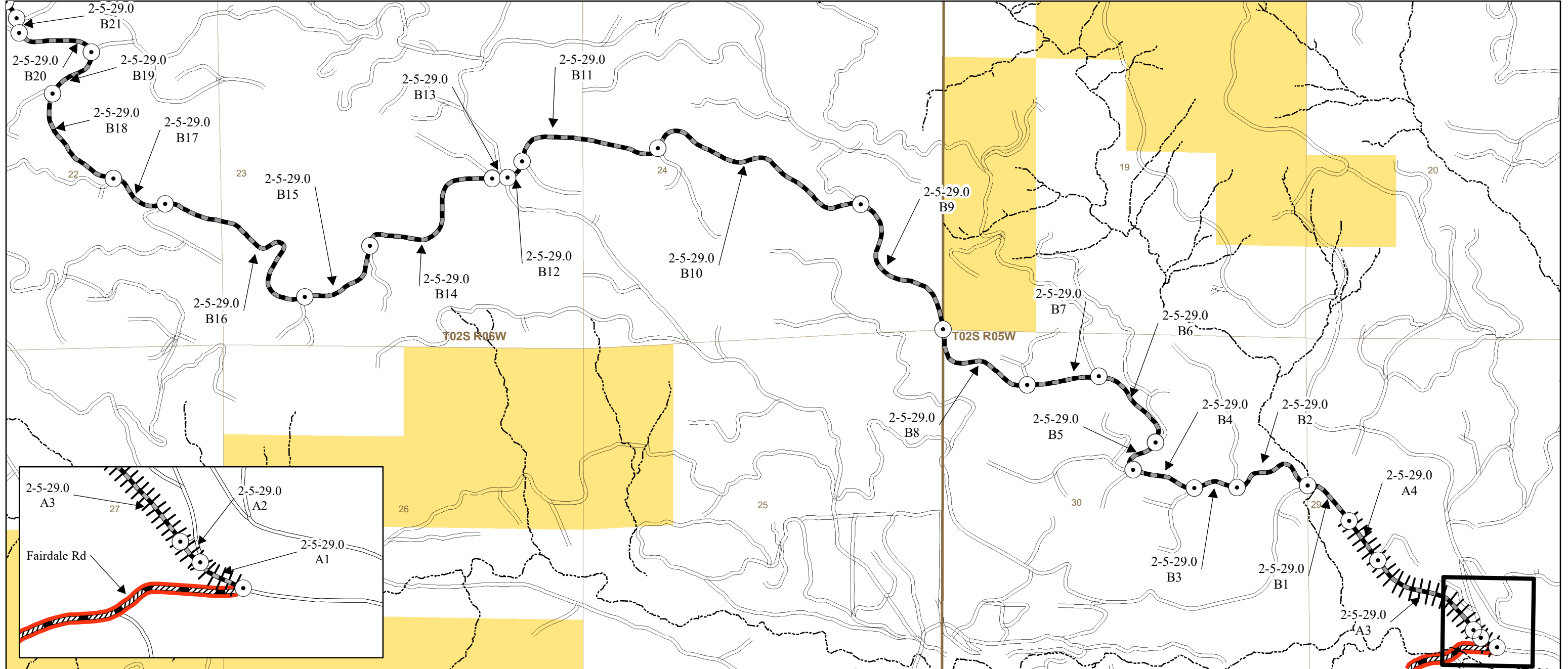
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification. Prepared By: Austin Bettis

United States Department of Interior
 BUREAU OF LAND MANAGEMENT
 NORTHWEST OREGON DISTRICT - OREGON
 Road Plan Map

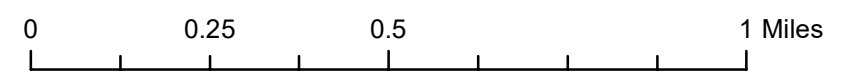


T. 02S. R. 6W. Sections 16, 20, & 21 W.M. - NORTHWEST OREGON DISTRICT - OREGON
 T. 02S. R. 5W. Sections 31 W.M. - NORTHWEST OREGON DISTRICT - OREGON

12/15/2020



- Segment Breaks
- Streams
- ▨▨▨▨▨ County controlled road - Purchaser Maintenance
- ▬▬▬▬▬ Weyerhaeuser controlled road - Weyerhaeuser Maintenance
- ▬▬▬ Existing Roads
- ▬ Lignin Application Location (Year 1 & 2)
- ▬▬▬▬▬ Lignin Application Location (Year 3 Only)
- ▭▭▭▭▭ The Sentinel Project Area
- ▭ Bureau of Land Management



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification. Prepared By: Austin Bettis

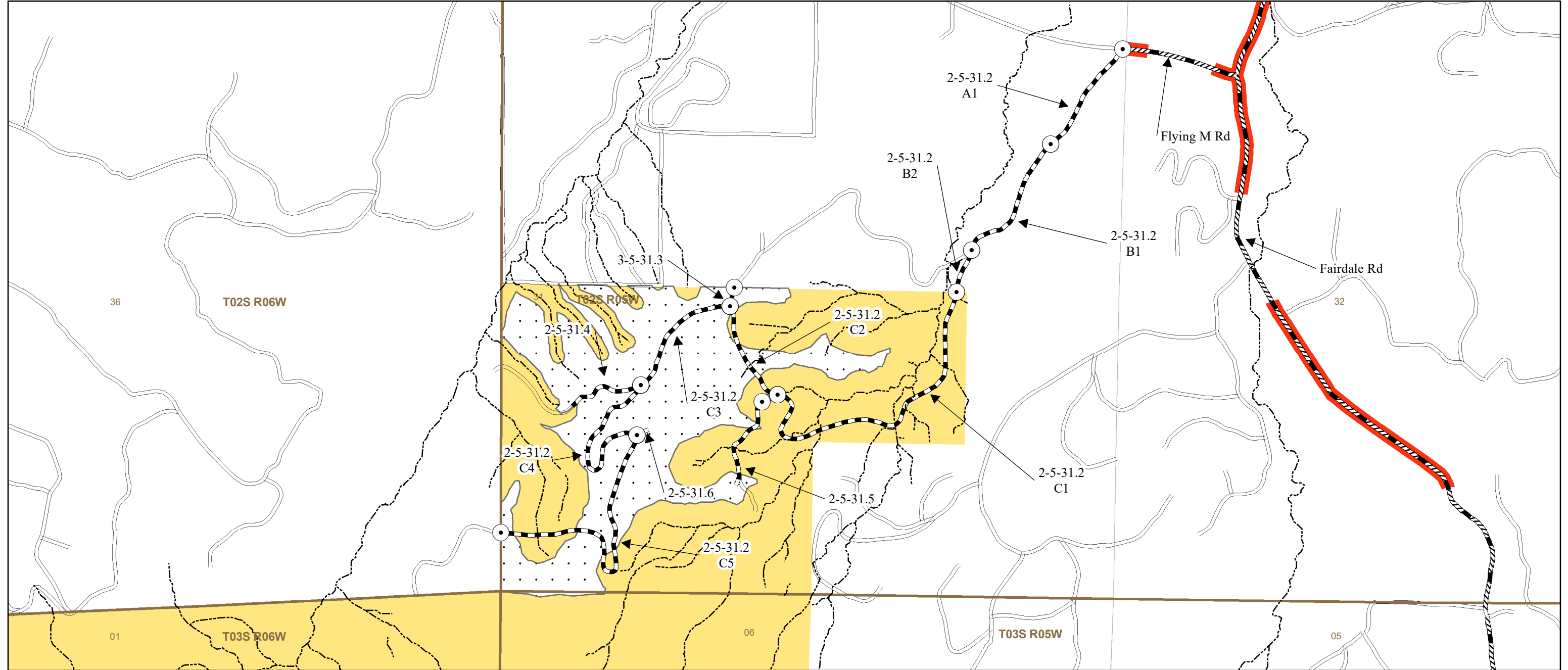




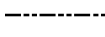



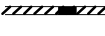

United States Department of Interior
 BUREAU OF LAND MANAGEMENT
 NORTHWEST OREGON DISTRICT - OREGON
 Road Plan Map

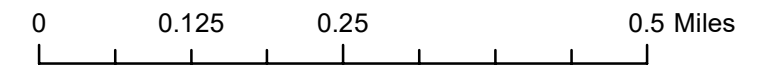
The Sentinel Timber Sale
 Contract NO. ORN04-TS-2021-0401
 Exhibit E
 Page 4 of 6

12/15/2020

T. 02S. R. 6W. Sections 16, 20, & 21 W.M. - NORTHWEST OREGON DISTRICT - OREGON
 T. 02S. R. 5W. Sections 31 W.M. - NORTHWEST OREGON DISTRICT - OREGON



-  Segment Breaks
-  Lignin Application Location (Year 1 & 2)
-  Streams
-  The Sentinel Project Area
-  BLM controlled road - Purchaser Maintenance
-  Bureau of Land Management
-  County controlled road - Purchaser Maintenance
-  Existing Roads



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification. Prepared By: Austin Bettis

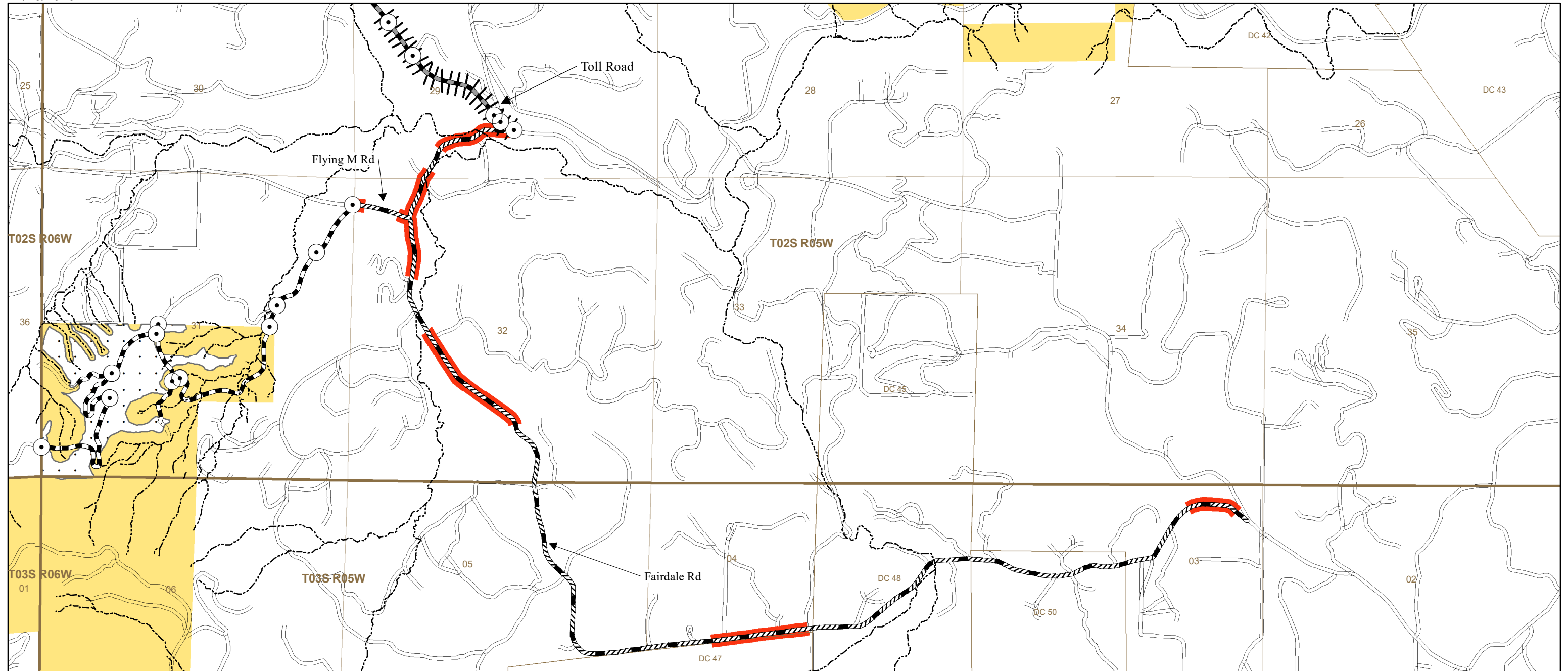



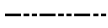
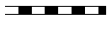





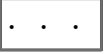

United States Department of Interior
 BUREAU OF LAND MANAGEMENT
 NORTHWEST OREGON DISTRICT - OREGON
 Road Plan Map

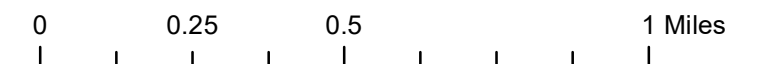
The Sentinel Timber Sale
 Contract NO. ORN04-TS-2021-0401
 Exhibit E
 Page 5 of 6

12/15/2020

T. 02S. R. 6W. Sections 16, 20, & 21 W.M. - NORTHWEST OREGON DISTRICT - OREGON
 T. 02S. R. 5W. Sections 31 W.M. - NORTHWEST OREGON DISTRICT - OREGON



-  Segment Breaks
-  Streams
-  BLM controlled road - Purchaser Maintenance
-  County controlled road - Purchaser Maintenance
-  Weyerhaeuser controlled road - Weyerhaeuser Maintenance
-  Existing Roads
-  Lignin Application Location (Year 1 & 2)
-  Lignin Application Location (Year 3 Only)
-  The Sentinel Project Area
-  Bureau of Land Management



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification. Prepared By: Austin Bettis

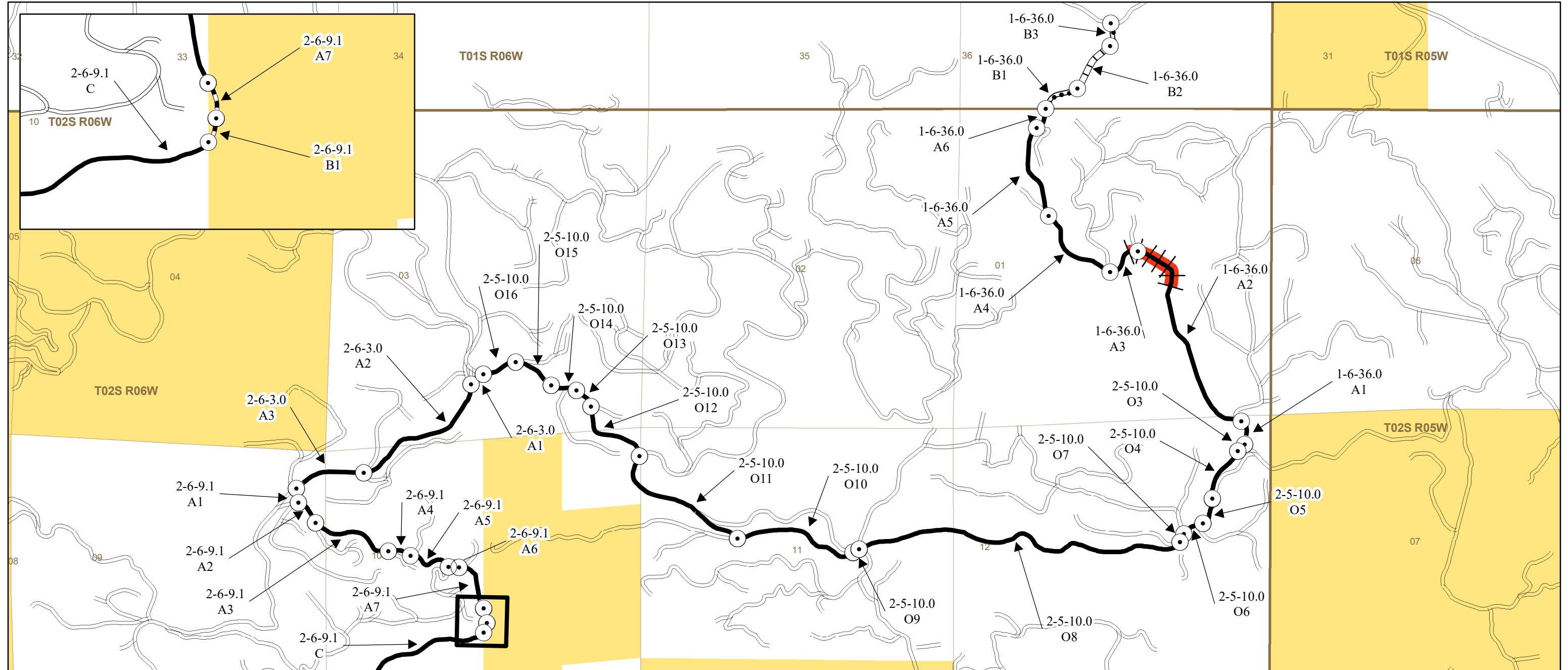


United States Department of Interior
 BUREAU OF LAND MANAGEMENT
 NORTHWEST OREGON DISTRICT - OREGON
 Road Plan Map

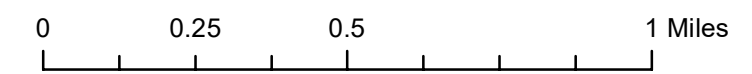
The Sentinel Timber Sale
 Contract NO. ORN04-TS-2021-0401
 Exhibit E
 Page 6 of 6

T. 02S. R. 6W. Sections 16, 20, & 21 W.M. - NORTHWEST OREGON DISTRICT - OREGON
 T. 02S. R. 5W. Sections 31 W.M. - NORTHWEST OREGON DISTRICT - OREGON

3/23/2021



- Segment Breaks
- ▬ BLM controlled road - Purchaser Maintenance
- BRJOC controlled road - Purchaser Maintenance
- ▭ ODF controlled road - Purchaser Maintenance
- ▬ Weyerhaeuser controlled road - Purchaser Maintenance
- Streams
- ▬ Existing Roads
- ▨ Water Application Location (During any water haul)
- ⋯ The Sentinel Project Area
- Bureau of Land Management



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification. Prepared By: Austin Bettis

COARSE WOODY DEBRIS (CWD) CREATION

The Purchaser shall select and treat a total of five hundred twenty-three (523) reserve trees in the CWD Creation Units shown on Exhibit F maps (pages 10-11) to create Coarse Woody Debris (CWD) by saw-topping, high-girdling, basal-girdling or felling. Treated trees will be marked with numbered aluminum tags and flagging. The Purchaser shall record the tree tag number, treatment type, tree data, and UTM coordinates for all treated trees on the Wildlife Tree Data Recording Forms (Illustration #4).

Treatment of trees to create CWD within any given unit shall not start until all yarding operations within that unit are complete. The Purchaser must provide a proposed schedule of work to the Authorized Officer at least one week prior to commencing the CWD creation activities.

CWD Creation per CWD Unit

CWD Unit Number ¹ (section)	Acres within CWD Unit ¹	Total Trees	Saw-Top	High Girdle	Basal Girdle	Fell	Tree Size to be Selected ² (inches at DBH)
1 (21)	14	16	12	0	4	0	18 - 24
2 (16 & 21) Dispersed in harvest unit	46	32	32	0	0	0	30 - 36
2 (16 & 21) Within identified Retention Clumps		14	5	5	4	0	18-26
3 (21)	12	15	15	0	0	0	18 - 24
4A (21)	57	62	62	0	0	0	18 - 26
4B (21)	81	88	88	0	0	0	18 - 26
5 (31)	54	59	55	0	4	0	18 - 26
5RR (31)	23	237	50	50	50	87	Snags = 16 - 24 Fells = 50% 12-16" and 50% 16-32".
Totals	287	523	319	55	62	87	

¹ See Coarse Woody Debris Creation maps (Exhibit F pages 10-11)

² Select approximately 50% of the trees larger and 50% of the trees smaller than the median tree size for the given range unless stand conditions dictate otherwise. If only trees smaller than the appropriate size are available, select trees of the largest size class present. Do not select the largest, most dominant tree within any given area.

1. **Tree Selection** – The Purchaser shall select five hundred twenty-three (523) reserve trees to create CWD by saw-topping, high-girdling, basal-girdling or felling according to the following guidelines. Numbers of trees and tree sizes to be selected, specific to each CWD unit, are displayed in the table above. Placement of trees to be selected by treatment type within the

individual treatment units is displayed on the Coarse Woody Debris Creation maps (Exhibit F pages 10-11). The locations of the selected trees (individually or in small groups; distance from roads or property line) varies by treatment method; see treatment methods below for additional treatment-specific information concerning tree selection.

- Only healthy Douglas-fir trees shall be selected for treatment.
 - No trees marked with any existing metal tags shall be selected for treatment.
 - No trees with nests or any nest-like structures of any birds or mammals, or trees with defects such as cavities, platforms, mistletoe infection, or dead, forked/multiple and/or broken tops shall be selected.
 - Selected trees shall be evenly distributed throughout the CWD units. Within Unit 2, a portion of the selected trees, displayed in the table above, will be selected within identified retention clumps. When selecting trees, select approximately fifty (50) percent of the trees larger than the median tree size for the given range, and approximately fifty (50) percent of the trees smaller than the median tree size for the given range unless stand conditions dictate otherwise. If only trees smaller than the appropriate size are available, select trees of the largest size class present. Do not select the largest, most dominant tree within any given area.
- a. **Saw-topping and High-girdling:** Select healthy appearing Douglas-fir trees with live crown ratios greater than thirty (30) percent and with **average or larger** crown spread. If only trees with smaller live crown ratios than appropriate are available, select trees with the largest crown ratio present. Selected trees shall be located within the portion of the CWD units designated for Saw-topping and/or High-girdling (Exhibit F pages 10-11). Treatment types and selected trees shall be scattered uniformly throughout the units. Trees selected for saw-topping shall be selected singly. Trees selected for high-girdling shall be selected in groups of three (3) to five (5) trees. Trees selected for saw-topping or high-girdling shall not be located within seventy-five (75) feet of a drivable road (open after use) or a property line boundary where BLM land abuts non-federal ownership (Exhibit F pages 10-11).
- b. **Basal-girdling:** Select healthy Douglas-fir trees with live crown ratios **less** than thirty (30) percent and **smaller** than average crown spread. If only trees with larger live crown ratios than appropriate are available, select appropriately sized trees with the smallest crown ratio present. Selected trees shall be located within the portion of the CWD units designated for basal-girdling (Exhibit F pages 10-11) and selected in groups of three (3) to five (5) trees. Trees selected for basal-girdling shall not be located within approximately one hundred fifty (150) feet of a drivable road (open after use) or a property line boundary where BLM land abuts non-federal ownership (Exhibit F pages 10-11). Trees selected for basal-girdling shall be those trees which provide minimal amounts or no shade to streams (e.g., north side of stream channel and/or being an area where topography or tree location minimizes the shade afforded to stream by selected tree, such as being located several tree spacings from the stream channel).

- c. **Tree felling:** Select Douglas-fir trees with live crown ratios **less** than thirty (30) percent and **smaller** than average crown spread. If only trees with larger live crown ratios than appropriate are available, select appropriately sized trees with the smallest crown ratio present. Selected trees shall be located within the portion of the CWD unit designated for felling and shall be scattered uniformly throughout the unit (Exhibit F pages 10-11). Trees selected for felling shall be selected singly (not in groups). Trees selected for felling shall be located within one hundred (100) feet of the stream channel and selected so that when felled, the portion of the tree in contact with the stream channel would be at least six (6) inches in diameter. Trees selected for felling shall be those trees which provide minimal amounts or no shade to streams (e.g., north side of stream channel and/or being an area where topography or tree location minimizes the shade afforded to stream by selected tree, such as being located several tree spacings from the stream channel).

2. **CWD Treatments**

- a. **Saw-Topping** – severing the treetop within the live crown
1. The Purchaser shall climb and top selected trees at a height of at least sixty (60) feet above the ground at a point where approximately twenty to fifty (20-50) percent of the live crown remains; saw-topping heights shall be varied equally within this placement within the live crown (See Illustration 1). Topping shall be done with power tools (e.g., chainsaws).
 2. The Purchaser shall cut several V-type notches that are a minimum of six (6) cuts into the sawn top surface of the tree, each a minimum of six (6) inches deep.
 3. To the extent practicable, the Purchaser shall retain all green limbs and the largest dead limbs on the treated trees during the climbing and topping operations.
 4. Tree tops shall be completely severed from the tree and fall completely to the ground inside unit boundaries.
 5. To the extent practicable, the Purchaser shall directionally fall tops in order to not damage existing snags, under-story conifers, any tree containing a suspected nest of a bird or mammal, or any tree with defects such as hollow cavities, multiple tops, or decay, and avoid to contact with unburned burn piles and drivable roads.
 6. The Purchaser shall tie two (2) pieces of flagging of a color approved by the Authorized Officer around the bole of each treated tree, one (1) at a height of approximately twenty to thirty (20-30) feet above the ground and another at four and one-half (4.5) feet above the ground (measured from the uphill side of the tree).
 7. A small numbered aluminum tag shall be nailed to the base of the treated tree (uphill side). The tree tag number shall be recorded on the Wildlife Tree Data Recording Form.
- b. **High-Girdling** – girdling within the live crown

1. The Purchaser shall climb and girdle selected trees within the live crown at a point where approximately twenty to fifty (20-50) percent of the live crown remains below the point of girdling and at a height of at least sixty (60) feet above the ground; girdling heights shall be varied equally within this placement within the live crown. Girdling may be done with a hand tool or power tool and will consist of removing all bark and cambium in a ten to twelve (10-12) inch band completely around the main stem of the tree. (See Illustration #3)
2. Tool cuts must not penetrate more than one-half (0.5) inches into the wood of high-girdled trees.
3. Live limbs below the point of high-girdling shall not be removed. To the extent practicable, the Purchaser shall retain the largest dead limbs on the trees during the climbing and high-girdling operations.
4. The Purchaser shall tie three pieces of flagging of a color approved by the Authorized Officer to each high-girdled tree. One flag shall be tied on a branch visible from the ground near the point of girdle, a second flag shall be tied around the bole of the tree at a height of approximately twenty to thirty (20-30) feet above the ground and a third flag at four and one-half (4.5) feet above the ground (measured from the uphill side of the tree). The two highest flags shall extend at least four (4) feet from the knot.
5. A small numbered aluminum tag shall be nailed to the base of the treated tree (uphill side). The tree tag number shall be recorded on the Wildlife Tree Data Recording Form.

c. Basal-Girdling

1. The Purchaser shall basal-girdle selected trees by making three (3) parallel cuts around the bole of the tree between three (3) and four (4) feet above ground level measured on the uphill side of the tree; power tools may be used. Each cut must connect with itself completely around the tree and penetrate through the cambium layer into the wood at least one-half (0.5) inches, but not more than one and one-half (1.5) inches. The distance between the top cut and the bottom cut shall not exceed twelve (12) inches. (See Illustration #2)
2. The Purchaser shall tie a piece of flagging of a color approved by the Authorized Officer around the bole of each treated tree four and one-half (4.5) feet above the ground (measured from the uphill side of the tree).
3. A small numbered aluminum tag shall be nailed to the base of the treated tree (uphill side). The tree tag number shall be recorded on the Wildlife Tree Data Recording Form.

d. Felling

1. The Purchaser shall completely sever selected trees from the stump and fall them completely to the ground.
2. Stumps shall be no more than four and one-half (4.5) feet tall measured on the uphill side.

3. No part of a fallen tree shall rest outside of the CWD unit boundaries, or within one hundred fifty (150) feet of any drivable road.
4. Directionally fall trees toward the nearest mapped stream or stream channel.
5. Trees shall be felled into active stream channels only during the Oregon Department of Fish and Wildlife's (ODFW's) in-stream work window (July 15 – September 30) unless a waiver is obtained from ODFW by the BLM.
6. Directionally fall trees away from existing snags, under-story conifers, any tree containing a suspected nest of a bird or mammal, or any green tree with defect such as multiple tops, hollow cavities, or decay.
7. A small numbered aluminum tag shall be nailed to the base of the felled tree. The tree tag number shall be recorded on the Wildlife Tree Data Recording Form.

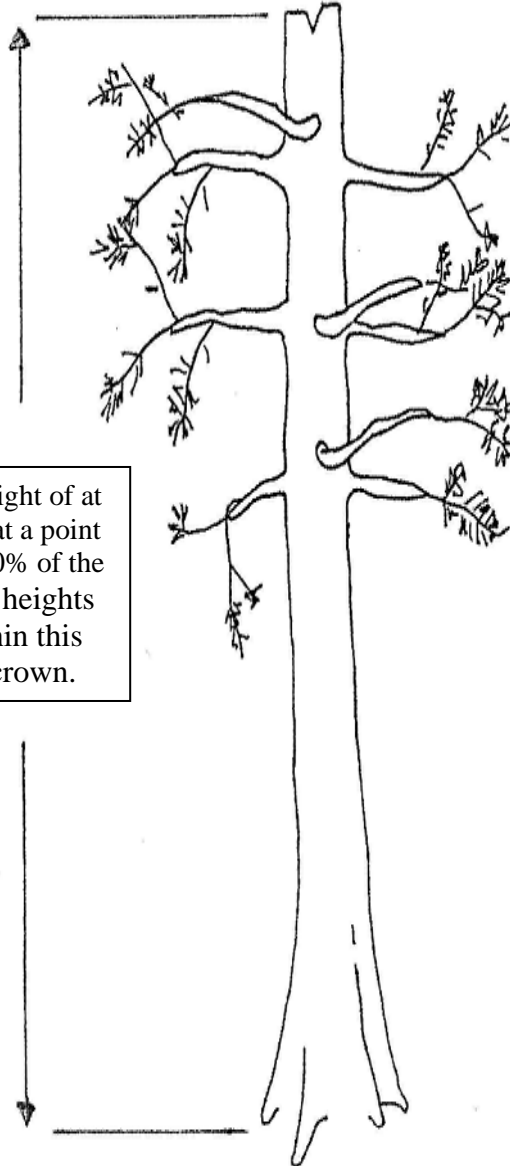
3. Documentation

- a. The Purchaser shall provide the location for all saw-topped, high-girdled, basal-girdled or felled trees by documenting the UTM coordinates using a GPS unit with NAD83 datum, zone 10. If acceptable GPS satellite coverage cannot be obtained at a site, the point shall be hand drawn onto a map and submitted to the Authorized Officer with the Wildlife Tree Data Recording Forms.
- b. The Purchaser shall provide the Wildlife Tree Data Recording Forms, UTM coordinates, and any hand drawn maps in a digital format once per week to the Authorized Officer for work completed during the previous week.
- c. All information recorded on the Wildlife Tree Data Recording Forms shall be legible, clear and reproducible on a black and white copy machine. All documents shall be reviewed by the Purchaser to ensure completeness, legibility, accuracy, and consistency in style before submitting them to the Authorized Officer.

ILLUSTRATION #1 – Saw-topping within the Live Crown

Cut a V-type notch or a “King’s Crown” (with a minimum of 6 cuts) into the sawn top surface, a minimum of 6 inches deep, to provide for a greater potential of future decay in the treetop. To the extent practicable, retain all green limbs and the largest dead limbs on the treated trees during the climbing and topping operation.

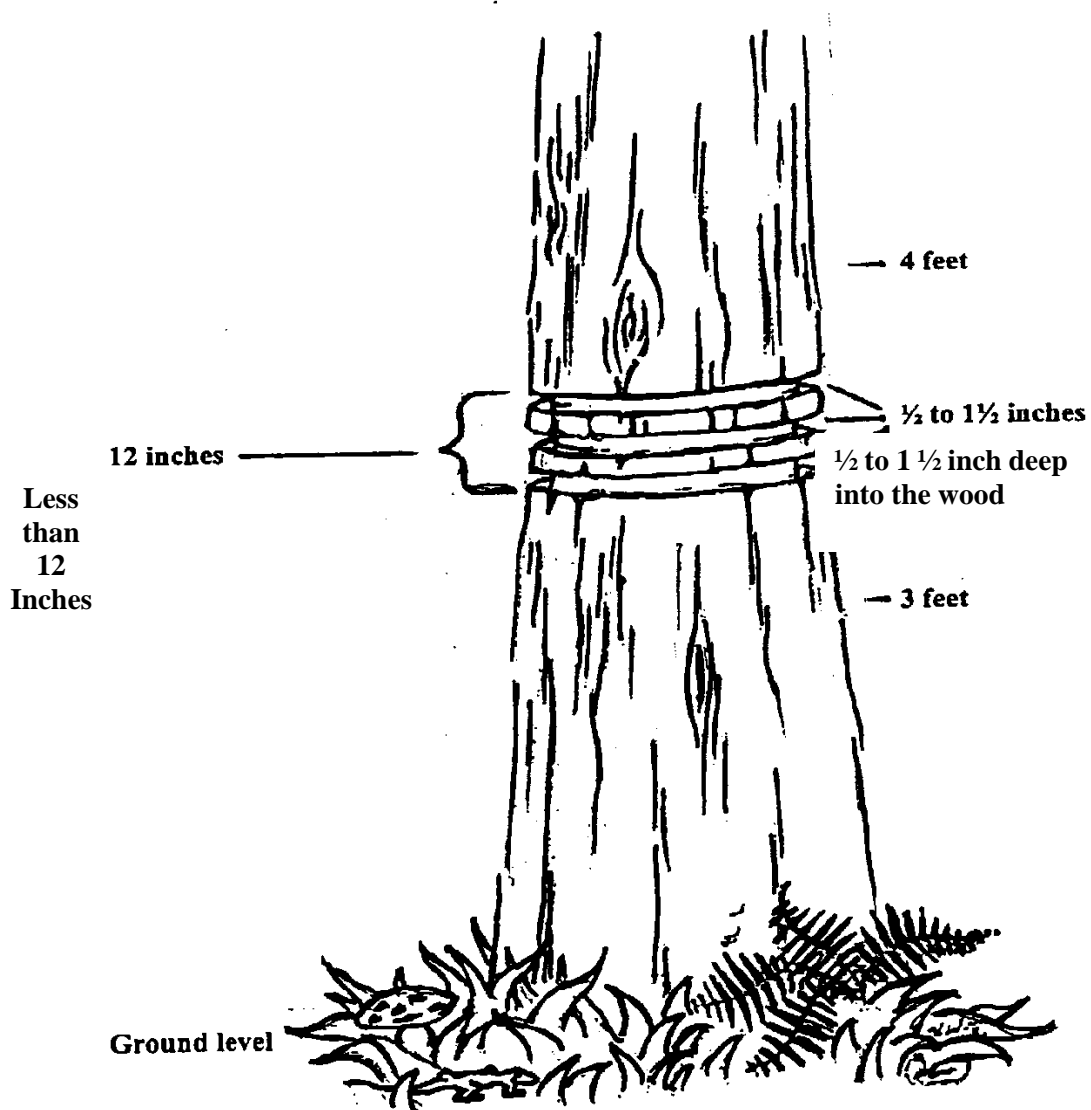
The tree shall be topped at a height of at least 60 feet above the ground at a point where approximately 20% to 50% of the live crown remains. Topping heights shall be varied equally within this placement within the live crown.



Tie two pieces of flagging around the bole of each saw-topped tree, one at a height of approximately 20-30 feet and one 4.5 feet above the ground. A small numbered aluminum tag shall be nailed to the base of the tree (uphill side).

Basal-Girdling ILLUSTRATION #2

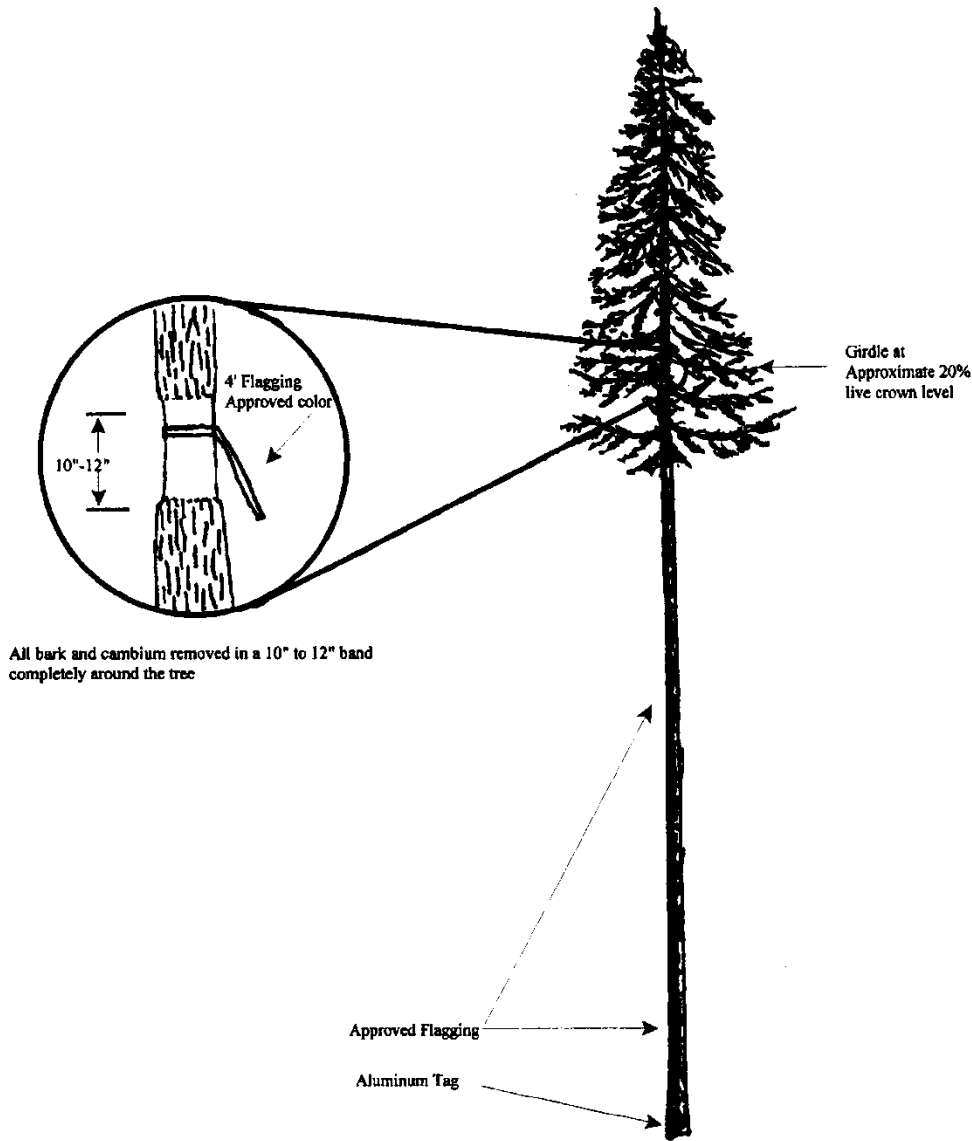
Girdling example: make three (3) parallel unbroken cuts around the tree. The distance between the top and the bottom of the cut shall not exceed twelve inches. Cuts must penetrate at least $\frac{1}{2}$ inch, but not more than $1\frac{1}{2}$ inches into the wood of the tree. Trees shall be girdled between 3 and 4 feet from the ground.



Tie one piece of flagging around the bole of each basal-girdled tree 4.5 feet above the ground. A small numbered aluminum tag shall be nailed to the base of the tree (up-hill side).

Illustration #3 – High-Girdling within the Live Crown

Crown Girdling Specifications:



All bark and cambium removed in a 10" to 12" band completely around the tree

To the extent practicable, retain all green limbs and the largest dead limbs on the treated trees below the point of treatment. Treatment heights shall be greater than or equal to 60 feet above the ground at a point in the live crown where 20% to 50% of live branches remain. Girdling heights shall be varied equally within this placement within the live crown. Tie three pieces of flagging around the bole of each high-girdled tree, one at the point of girdling, one at a height of approximately 20-30 feet and one 4.5 feet above the ground. A small numbered aluminum tag shall be nailed to the base of the tree (uphill side).

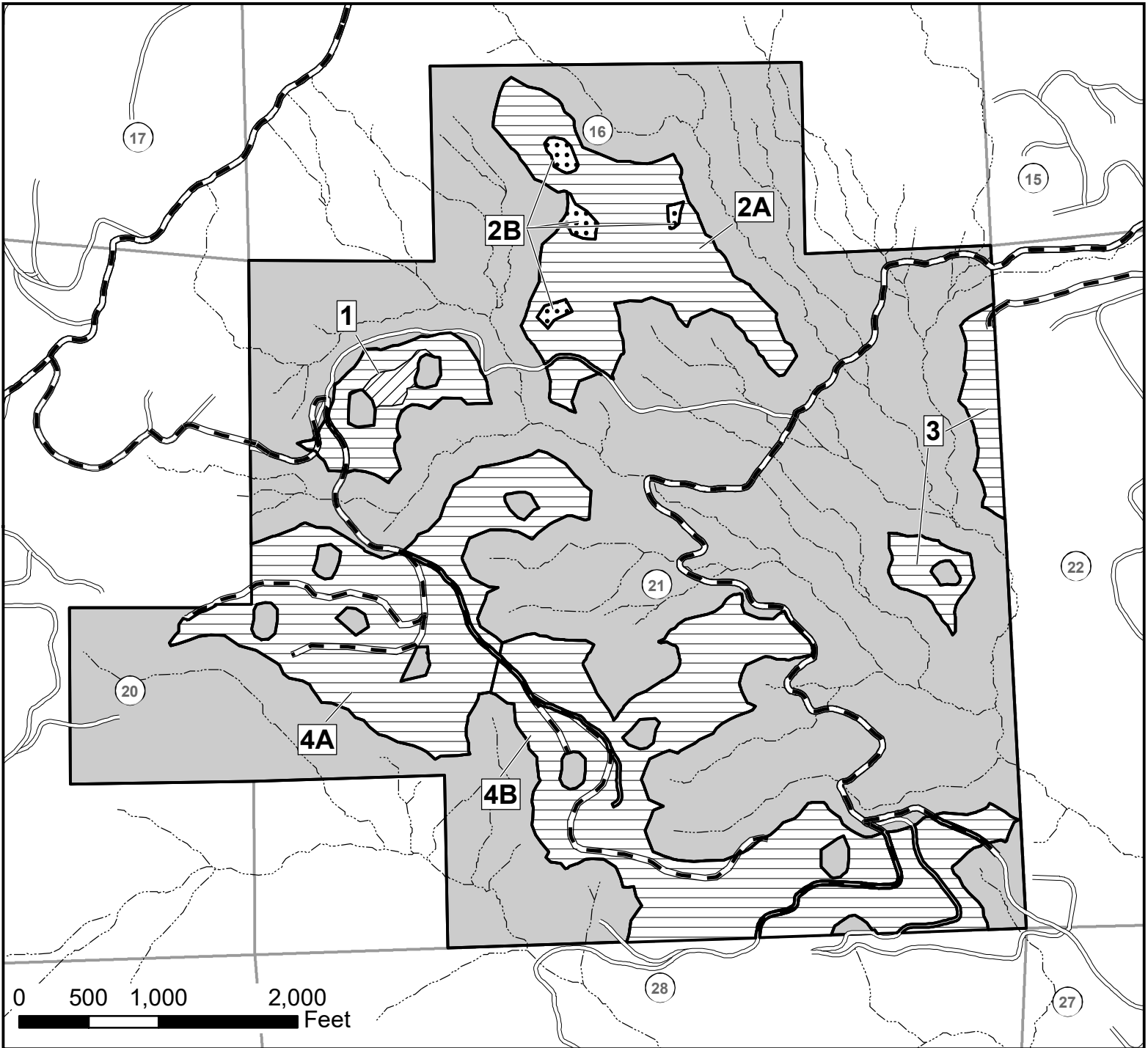


United States Department of the Interior
 BUREAU OF LAND MANAGEMENT
 COARSE WOODY DEBRIS CREATION

Contract No. ORN04-TS-2021.0401
 The Sentinel Timber Sale
 Exhibit F
 Page 10 of 11

12/4/2020

T. 2S. R. 6W, Section 16, 20, and 21 W. M. - NORTHWEST OREGON DISTRICT - OREGON



-  Sawtop
-  Sawtop, Basal Girdle
-  Sawtop, High Girdle, Basal Girdle
-  Basal Girdle, High Girdle, Fell
-  Reserve Area
-  Open After Use
-  Existing Roads
-  Streams

CWD Unit Number	Acres within CWD Unit ¹	Total Trees	Saw-Top	High Girdle	Basal Girdle	Fell	Tree Size to be Selected ² (inches at DBH)
1 (21)	14	16	12	0	4	0	18 - 24
2A (16 & 21) Dispersed in Regen unit	43	32	32	0	0	0	30 - 36
2B (16 & 21) Within Retention Clumps	3	14	5	5	4	0	18-26
3 (21)	12	15	15	0	0	0	18 - 24
4A (21)	57	62	62	0	0	0	18 - 26
4B (21)	81	88	88	0	0	0	18 - 26

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification. Note: Boundaries of harvest area and rights-of-ways (ROW) are painted orange and posted. Harvest area acres do not include existing roads. Acres shown on Exhibit A for harvest area have been computed using a S1 mobile mapper and Trimble R1 GNSS Receiver. Prepared By: dtyler

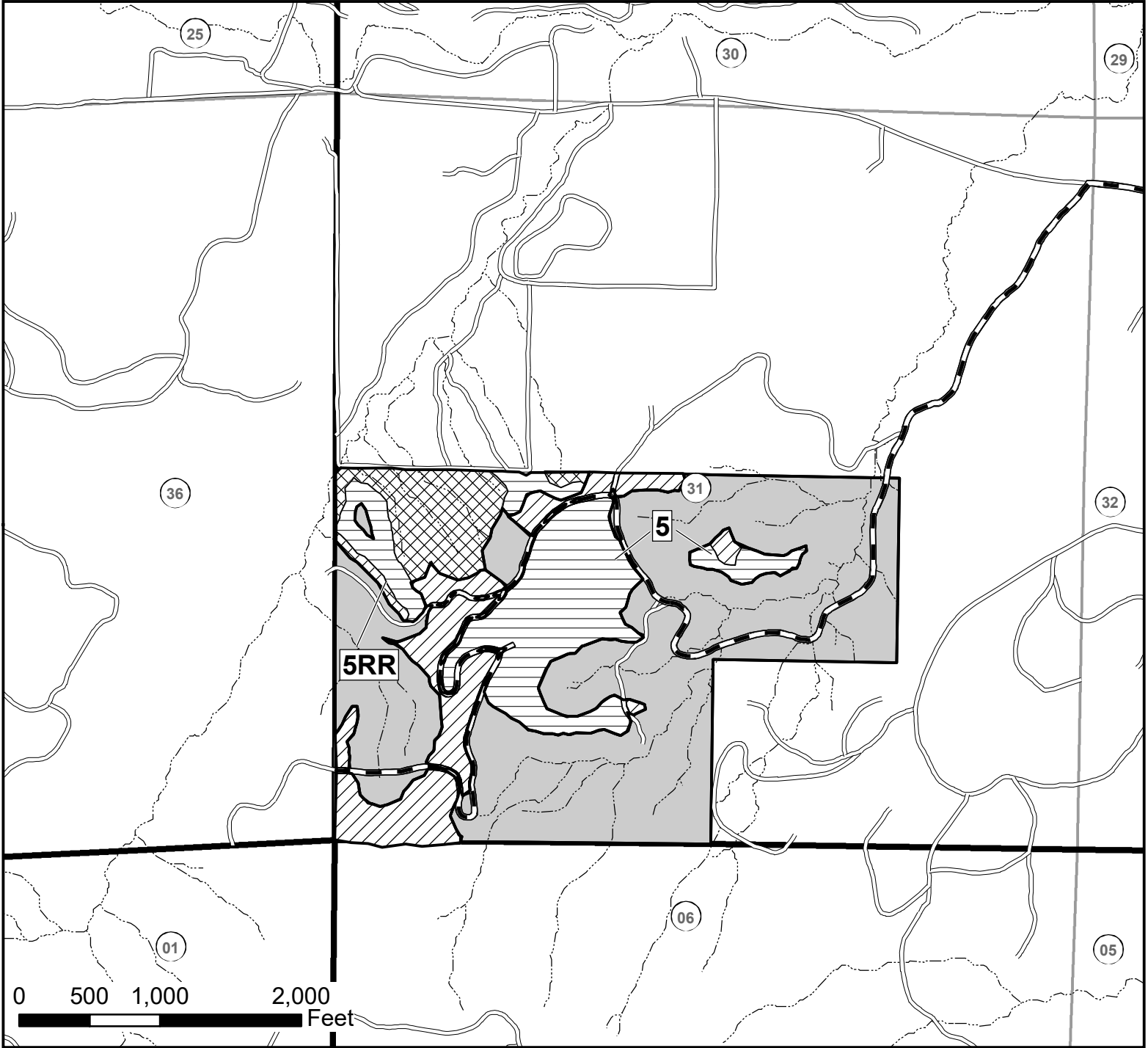







United States Department of the Interior
 BUREAU OF LAND MANAGEMENT
 COARSE WOODY DEBRIS CREATION




Contract No. ORN04-TS-2021.0401
 The Sentinel Timber Sale
 Exhibit F
 Page 11 of 11

12/4/2020

T. 2S. R. 5W, Section 31 W. M. - NORTHWEST OREGON DISTRICT - OREGON



-  Sawtop
-  Sawtop, Basal Girdle
-  Sawtop, High Girdle, Basal Girdle
-  Basal Girdle, High Girdle, Fell
-  Reserve Area

-  Open After Use
-  Existing Roads
-  Streams

CWD Unit Number	Acres within CWD Unit ¹	Total Trees	Saw-Top	High Girdle	Basal Girdle	Fell	Tree Size to be Selected ² (inches at DBH)
5	54	59	55	0	4	0	18 - 26
5RR	23	237	50	50	50	87	Snags = 16 - 24 Fells = 50% 12-16" and 50% 16-32".

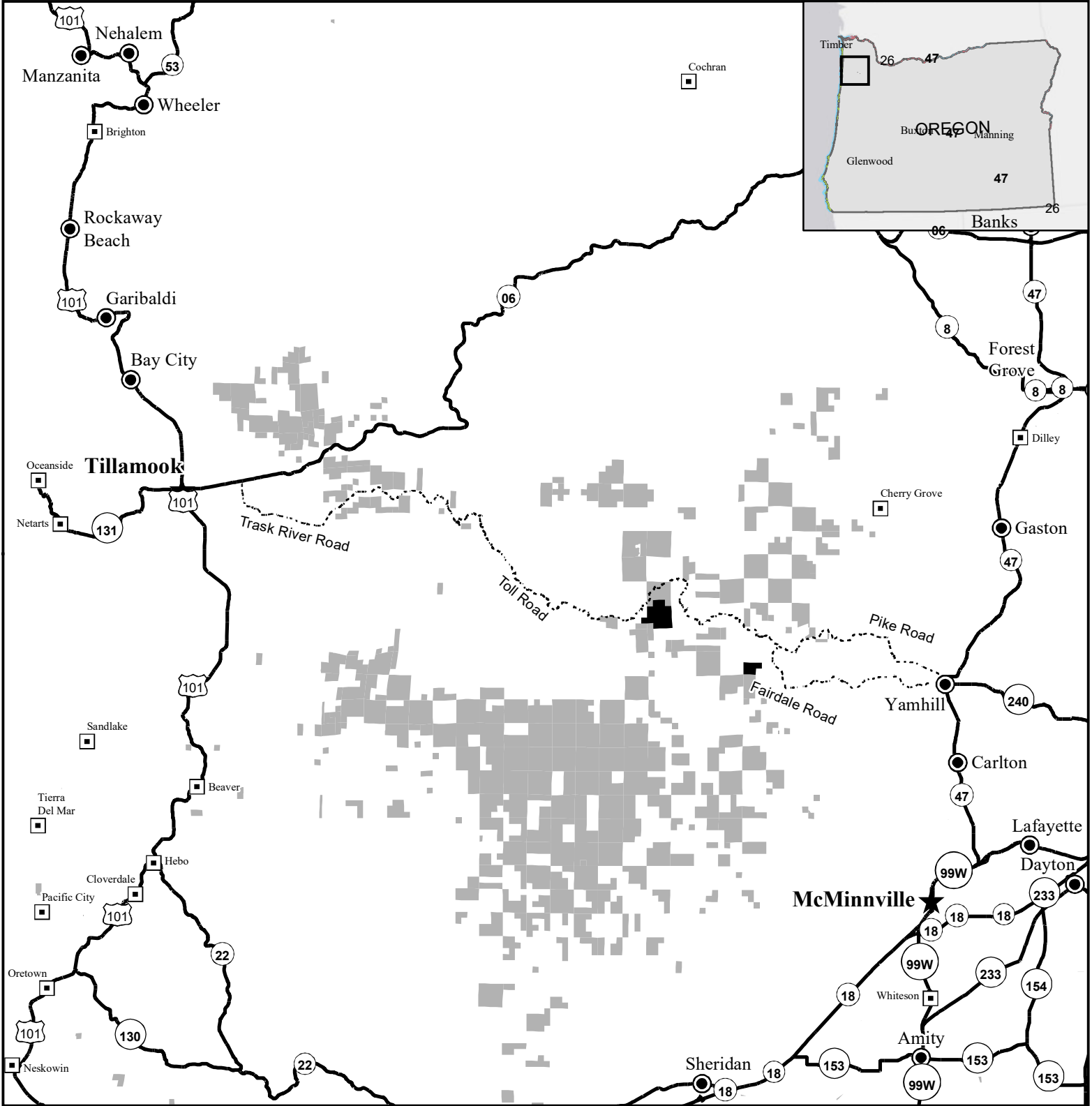
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification. Note: Boundaries of harvest area and rights-of-ways (ROW) are painted orange and posted. Harvest area acres do not include existing roads. Acres shown on Exhibit A for harvest area have been computed using a S1 mobile mapper and Trimble R1 GNSS Receiver. Prepared By: dtyler



United States Department of the Interior
 BUREAU OF LAND MANAGEMENT
 CONTRACT AREA VICINITY MAP
 Northwest Oregon District - Tillamook Field Office

Contract No. ORN04-TS-2021.0401
 The Sentinel Timber Sale
 Vicinity Map
 Page 1 of 1

1/6/2021



	BLM Land		County Seat
	Sentinel Contract Area		City, Town, or Village
	Highway		Community or Locale
	Vicinity Roads		

0 2.5 5 10 Miles

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification. Note: Boundaries of harvest areas are painted/flagged in orange and posted. Right-of-ways (ROW) are posted. Harvest area acres do not include existing roads. Acres shown on Exhibit A for harvest area have been computed using a S1 mobile mapper and Trimble R1 GNSS Receiver. Prepared By: dtyler

Legal Description of Contract Area

Land Status	County	Township	Range	Section	Subdivision	Meridian
O&C	Yamhill	2 S	5 W	31	SW¼, NW¼SE¼,	Willamette
O&C	Yamhill	2 S	6 W	16	SE¼SW¼, SW¼SE¼,	Willamette
O&C	Yamhill	2 S	6 W	20	NE¼SE¼,	Willamette
O&C	Yamhill	2 S	6 W	21	Lot 2, Lot 10, Lot 11, Lots 13 thru 24,	Willamette

Species Totals

Species	Net	Gross Merch	Gross	# of Merch Logs	# of Cull Logs	# of Trees
Douglas Fir	7,795.0	8,060.0	8,068.0	100,495	481	21,436
Grandfir	272.0	281.0	281.0	2,975	0	604
Red Alder	270.0	351.0	399.0	4,942	2,447	2,295
Bigleaf Maple	55.0	95.0	103.0	906	1,436	996
Western Redcedar	26.0	29.0	33.0	310	17	82
Totals	8,418.0	8,816.0	8,884.0	109,628	4,381	25,413

Cutting Area Acres

Regeneration Harvest Acres	Partial Cut Acres	Right of Way Acres	Total Acres	Net Volume per Acre
45.0	250.0	8.0	303.0	27.8

Logging Costs

Stump to Truck	\$811,967.32
Transportation	\$466,460.76
Road Construction	\$899,813.80
Maintenance/Rockwear	\$296,361.47
Road Use	\$27,008.00
Other Allowances	\$55,245.50
Total:	\$2,556,856.85
Total Logging Cost per MBF:	\$303.74

Utilization Centers

<u>Location</u>	<u>Distance</u>	<u>% of Net Volume</u>
Garibaldi	47.0 miles	5 %
Willamina	46.0 miles	95 %

Profit & Risk

Profit	8 %
Risk	5 %
Total Profit & Risk	13 %

Tract Features

Quadratic Mean DBH	17.2 in
Average GM Log	79 bf
Average Volume per Acre	27.8 mbf
Recovery	95 %
<u>Net MBF volume:</u>	
Green	8,418.0 mbf
Salvage	0 mbf
Export	0 mbf
<u>Ground Base Logging:</u>	
Percent of Sale Volume	85 %
Average Yarding Slope	30 %
Average Yarding Distance	425 ft
<u>Cable Logging:</u>	
Percent of Sale Volume	15 %
Average Yarding Slope	50 %
Average Yarding Distance	500 ft
<u>Aerial Logging:</u>	
Percent of Sale Volume	0 %
Average Yarding Slope	0 %
Average Yarding Distance	0 ft

Cruise

Cruise Completed	October 2020
Cruised By	Bill Bryant, Mario Salmon
Cruise Method	Variable Plot

Stumpage Computation

Species	# of Trees	Net Volume	Pond Value	(-) Profit & Risk	(-) Logging Costs	(+) Marginal Log Value	Appraised Price/MBF	Appraised Value
Douglas Fir	21,436	7,795.0	\$631.63	\$82.11	\$303.74	\$0.00	\$245.80	\$1,916,011.00
Grandfir	604	272.0	\$454.86	\$59.13	\$303.74	\$0.00	\$92.00	\$25,024.00
Red Alder	2,295	270.0	\$326.66	\$42.47	\$303.74	\$0.00	\$32.70 *	\$8,829.00
Bigleaf Maple	996	55.0	\$212.71	\$27.65	\$303.74	\$0.00	\$21.30 *	\$1,171.50
Western Redcedar	82	26.0	\$859.14	\$111.69	\$303.74	\$0.00	\$443.70	\$11,536.20
Totals	25,413	8,418.0						\$1,962,571.70

* Minimum Stumpage values were used to compute the Appraised Price/MBF (10% of Pond Value)

Percent of Volume By Log Grade

Species	No. 1 & 2 Peeler	No. 3 Peeler	Special Mill	No. 2 Sawmill	No. 3 Sawmill	No. 4 Sawmill	Camp Run
Douglas Fir				57.0 %	40.0 %	3.0 %	

Species	Peeler	No. 1 Sawmill	Special Mill	No. 2 Sawmill	No. 3 Sawmill	No. 4 Sawmill	Camp Run
Grandfir				69.0 %	28.0 %	3.0 %	

Species	No. 1 Sawmill	No. 2 Sawmill	No. 3 Sawmill	No. 4 Sawmill	No. 5 Sawmill	Camp Run
Red Alder						100.0 %

Species	No. 1 Sawmill	No. 2 Sawmill	No. 3 Sawmill	No. 4 Sawmill	No. 5 Sawmill	Camp Run
Bigleaf Maple						100.0 %

Species	No. 1 Sawmill	No. 2 Sawmill	No. 3 Sawmill	No. 4 Sawmill	Camp Run
Western Redcedar					100.0 %

Unit: 1

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	362.0	375.0	374.0	1,076
Grandfir	16.0	17.0	17.0	38
Bigleaf Maple	2.0	4.0	4.0	52
Red Alder	2.0	3.0	3.0	29
Western Redcedar	2.0	2.0	2.0	5
Totals:	384.0	401.0	400.0	1,200

Net Volume/Acre: 24.0 MBF

Regeneration Harvest	0.0
Partial Cut	16.0
Right of Way	0.0
Total Acres:	16.0

Unit: 2

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	1,849.0	1,924.0	1,931.0	4,077
Red Alder	200.0	250.0	291.0	1,560
Grandfir	22.0	23.0	23.0	17
Bigleaf Maple	18.0	25.0	32.0	160
Totals:	2,089.0	2,222.0	2,277.0	5,814

Net Volume/Acre: 46.4 MBF

Regeneration Harvest	45.0
Partial Cut	0.0
Right of Way	0.0
Total Acres:	45.0

Unit: 3

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	314.0	324.0	324.0	932
Grandfir	14.0	14.0	14.0	33
Red Alder	2.0	3.0	3.0	24
Bigleaf Maple	2.0	4.0	4.0	45
Western Redcedar	1.0	2.0	2.0	5
Totals:	333.0	347.0	347.0	1,039

Net Volume/Acre: 23.8 MBF

Regeneration Harvest	0.0
Partial Cut	14.0
Right of Way	0.0
Total Acres:	14.0

Unit: 4

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	3,337.0	3,441.0	3,441.0	9,895
Grandfir	147.0	151.0	151.0	349
Bigleaf Maple	20.0	39.0	39.0	480
Red Alder	18.0	31.0	31.0	257
Western Redcedar	15.0	17.0	20.0	49
Totals:	3,537.0	3,679.0	3,682.0	11,030

Net Volume/Acre: 24.2 MBF

Regeneration Harvest	0.0
Partial Cut	146.0
Right of Way	0.0
Total Acres:	146.0

Unit: 5

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	1,572.0	1,621.0	1,621.0	4,660
Grandfir	69.0	71.0	71.0	164
Bigleaf Maple	9.0	18.0	18.0	228
Red Alder	9.0	15.0	15.0	121
Western Redcedar	8.0	8.0	9.0	23
Totals:	1,667.0	1,733.0	1,734.0	5,196

Net Volume/Acre: 22.5 MBF

Regeneration Harvest	0.0
Partial Cut	74.0
Right of Way	0.0
Total Acres:	74.0

Unit: RW

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	361.0	375.0	377.0	796
Red Alder	39.0	49.0	56.0	304
Grandfir	4.0	5.0	5.0	3
Bigleaf Maple	4.0	5.0	6.0	31
Totals:	408.0	434.0	444.0	1,134

Net Volume/Acre: 51.0 MBF

Regeneration Harvest	0.0
Partial Cut	0.0
Right of Way	8.0
Total Acres:	8.0

Comments:

Sale acres and cruised acres differ because reserve clump acres were removed from the cruise.

Plots were measured using a 40 basal area factor (BAF) for unit 2, and a 20 (BAF) in all other harvest units.

Total Stump To Truck	Net Volume	\$/MBF
\$811,967.32	8,418.0	\$96.46

Stump to Truck: Falling, Bucking, Yarding, & Loading

Yarding System	Unit of Measure	# of Units of Measure	\$/Unit of Measure	Total Cost	Remarks
Cable: Medium Yarder	GM MBF	1,367.0	\$137.82	\$188,399.94	Thin Cable
Track Skidder	GM MBF	4,793.0	\$90.26	\$432,616.18	Thin Ground
Track Skidder	GM MBF	2,656.0	\$70.20	\$186,451.20	regen unit and RW ground
Subtotal				\$807,467.32	

Additional Costs

Item	Unit of Measure	# of Units of Measure	\$/Unit of Measure	Total Cost	Remarks
Intermediate Support	Each	15.0	\$300.00	\$4,500.00	See logging plan
Subtotal				\$4,500.00	

Additional Moves

Equipment	Unit of Measure	# of Units of Measure	\$/Unit of Measure	Total Cost	Remarks
Subtotal				\$0.00	

Comments:

Regen 9 loads/day 5MBF/Load

Thin ground 7 loads/day 5MBF/Load

Thin Cable 5 Loads/day 5MBF/Load

Total	Net Volume	\$/MBF
\$466,460.76	8,418.0	\$55.41

Utilization Center	One Way Mileage	Description	Unit of Measure	# of Units	\$/Unit of Measure	Total Cost	% of Sale Volume
Garibaldi	47.0	Hardwoods	GM MBF	446.0	\$65.31	\$29,128.26	5 %
Willamina	46.0	Conifers	GM MBF	8,370.0	\$52.25	\$437,332.50	95 %

Comments:

Conifer \$3.00/gal. 5MBF/Load 2.75hour round trip

Hardwoods \$3.00/gal. 4MBF/Load 2.75 hour round trip

Engineering Allowances

Total	Net Volume	\$/MBF
\$1,223,183.27	8,418.0	\$145.31

Cost Item	Total Cost
Road Construction:	\$899,813.80
Road Maintenance/Rockwear:	\$296,361.47
Road Use Fees:	\$27,008.00

Total	Net Volume	\$/MBF
\$55,245.50	8,418.0	\$6.56

Environmental Protection

Cost item	Total Cost
Equipment Washing	\$400.00
Subtotal	\$400.00

Miscellaneous

Cost item	Total Cost
Basal Girdle	\$1,736.00
Fell	\$2,784.00
High Girdle	\$3,960.00
Saw-Top	\$23,925.00
Admin cost	\$3,240.50
Subtotal	\$35,645.50

Slash Disposal & Site Prep

Cost item	Total Cost
Landing Pile Cover Burn	\$1,950.00
Slashing	\$4,650.00
Machine Pile Construct, Cover, Burn	\$12,600.00
Subtotal	\$19,200.00

Comments:

See wildlife and fuels exhibits for more details.