

COOS BAY SALE NO. ORC00-TS-2018.0003
Fern Top CT

COOS BAY DISTRICT OFFICE
UMPQUA RESOURCE AREA

SALE DATE: April 27, 2018
SALE TIME: 10:00 a.m.

SALE NO. ORC00-TS-2018.0003, Fern Top CT

SET-ASIDE-SALE

DOUGLAS COUNTY: OREGON: O&C: ORAL AUCTION: Bid deposit required: \$ 101,100.00

All timber designated for cutting on: T. 21 S., R. 9 W., Sec. 21 S ½ SW ¼, S ½ SE ¼, Sec. 29 NE ¼, E ½ NW ¼, SW ¼ N W ¼, N ½ SW ¼, SE ¼ SW ¼, N ½ SE ¼, Sec. 32 NE ¼ NW ¼, Will. Mer.

Approx. No. Merch. Trees	Est. Vol. MBF 32' Log	Species	Est. Vol. MBF 16' Log	Appraised Price Per MBF	Estimated Vol. Times Appraised Price
13,086	2,860	Douglas-fir	3,561	\$161.70	\$575,813.70
13,058	1,954	western hemlock	2,454	\$111.00	\$272,394.00
11,176	1,040	red alder	1,411	\$111.40	\$157,185.40
605	14	big leaf maple	35	\$12.00	\$420.00
155	11	western redcedar	15	\$329.80	\$4,947.00
38,080	5,879	Totals	7,476		\$1,010,760.10

THIS TIMBER SALE HAS BEEN CRUISED, APPRAISED, AND ADVERTISED BASED UPON SCRIBNER BOARD FOOT MEASURE (16 FOOT LOG). THE MINIMUM BID FIGURES SHOWN BY SPECIES ARE DOLLARS PER THOUSAND BOARD FEET (MBF). THE MINIMUM BID INCREMENT WILL BE \$0.50 PER MBF. SCRIBNER BOARD FOOT VOLUMES (32 FOOT LOG) BY SPECIES ARE DISPLAYED FOR INFORMATIONAL PURPOSES.

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 5424 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.

CRUISE INFORMATION: With respect to merchantable trees of all species in all cruise strata: the average DBHOB is 13.8 inches: the average gross merchantable log contains 58 bd. ft.; the total gross volume is approximately 8066 thousand bd. ft.; and 93% recovery is expected. The average DBHOB for Douglas-fir is 15.1 inches; and the average gross merchantable log contains 62 bd. ft. The following cruise methods were used for volume determination:

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VARIABLE PLOT: Timber volumes in Units 1-5 were based on a variable plot cruise. Using a 20 basal area factor (BAF), 275 plots were measured and 255 trees were randomly selected to be sampled. The sample trees have been cruised and their volumes computed using form class tables for estimating board foot volumes of trees in 16-foot logs. A portion of the sample trees have been felled, bucked, and scaled and a portion of the sample trees have been cruised and the volumes computed using form class tables for estimating board foot volumes of trees in 16-foot logs. Volume from both methods is then expanded to a total stratum volume.

3P: The Douglas-fir, Western Hemlock and Red Alder in the right-of-way have been cruised using the 3P system to select 91 sample trees. The sample trees have been cruised and the volumes computed using form class tables for estimating board foot volumes of trees in 16-foot logs. Maps showing the approximate locations of the sample trees are available at the Coos Bay District Office.

100% CRUISE: Timber volumes for tree species Western Red Cedar within the road right-of-way, were based on a 100% cruise using form class tables for estimating board foot volume of trees in 16-foot logs.

CUTTING AREA: Units 1-5 contain 322 acres of partial cut. There are 4 acres of road right-of-way to be cut. Acreage data was collected using a Trimble Geo XT Global Positioning System receiver. Acreage was calculated based on Global Positioning System traverse procedures including differential correction.

ACCESS: Access to the sale area is provided via: Oregon State highways, government controlled roads, and privately controlled roads.

DIRECTIONS TO SALE AREA: From Reedsport Oregon, travel East on Highway 38 towards Elkton and travel 20 miles. Turn left onto Wells Creek Rd approximately 2.0 miles and stay left on Wasson lake Rd for 3 miles and refer to Exhibits A and A-1 for unit locations.

ROAD USE & MAINTENANCE: Purchaser shall pay a maintenance and rockwear obligation totaling \$58,564.18 to the Government. Road use fees totaling \$4,650.00 are payable to Oxbow Timber I LLC. Refer to Exhibit E summary attached.

ROAD CONSTRUCTION: Road construction and improvement estimates include the following

46.00 stations Class SN-12 road

2.75 stations Class SN-14 road

30.57 stations Class SN-16 road

Refer to Exhibit C

Surfacing:

3349 cu. yds. of 1½-inch minus crushed hardrock
1258 cu. yds. of 3-inch minus crushed hardrock
3430 cu. yds. of 6-inch minus crushed hardrock
90 cu. yds. of 34 inch Rip Rap Barrier Rock

Drainage:

120 linear feet of 18-inch CPE culvert
100 linear feet of 24-inch CPE culvert
10 Culvert Markers

DURATION OF CONTRACT: Will be 36 months for cutting and removal of timber. The contract will contain special stipulations regarding logging, road construction, road use and maintenance, fire prevention, hazard reduction and logging residue reduction, log export and substitution, optional scale check of lump sum sales, equal opportunity in employment, cultural resource protection, and sensitive, threatened, or endangered plants or animals.

SPECIAL PROVISIONS:

1. Snags that are felled for safety reasons will be left on site. [41c](#)
2. All Pacific yew are reserved from cutting, except within road right-of-ways. [41d](#)
3. All existing down coarse woody debris is reserved from cutting and removal. [41e](#)
4. Seasonal restrictions will apply in the Seasonally Restricted Area, as shown on Exhibit A. [42b3](#)
5. Directional felling is required away from roads, property lines, posted boundaries, orange-painted reserve trees, stream channels, and snags. [42b4](#)
6. Cutting or yarding during high sap flow, March 31 through July 1, may be restricted by the Authorized Officer. [42b5](#)
7. In the Partial Cut Area, conifer trees will be bucked to a maximum of 41-foot lengths. [42b7](#)
8. All hardwood trees eight (8) inches DBHOB and larger designated for cutting in the Special Treatment Area shall be felled and yarded concurrently with all other trees designated for cutting in the Special Treatment Area. [42b9](#)
9. All trees designated for cutting in the Special Treatment Area shall not be topped or limbed prior to reaching the landing. If the Authorized Officer determines that this stipulation is not being met, the purchaser will be required to gross yard any bucked tops and/or bucked limbs within the Special Treatment Area. The Special Treatment Area is shown on the Exhibit A. [42b10](#)
10. In the Cable Yarding Area, yarding shall be completed with cable-type equipment capable of lateral yarding 75 feet each side of the skyline road. [42b11](#)
11. In the Cable Yarding Area, one-end suspension is required. Lift trees and/or intermediate support trees may be necessary to achieve suspension. [42b13](#)
12. No-harvest zones will be maintained adjacent to stream channels. Corridor trees felled within the no-harvest zone shall be left on site. Unless designated for removal by the Authorized Officer. [42b16](#)

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13. Full-log suspension will be required over stream channels. Where full suspension cannot be achieved, yarding will occur during the dry season. [42b17](#)
14. Within safety standards, harvest trees will be directionally felled away from any stream channels; however, trees that must be felled toward or parallel to the stream channel should be temporarily retained on site to provide bank armament if other trees need to be yarded across the channel. [42b18](#)
15. Ground based equipment use shall be approved by the Authorized Officer prior to operations. The yarding machine shall utilize slash on skid trail as directed. [42b20](#)
16. The location and use of yarding roads and harvester roads in the Cable Yarding Area and Ground Based Yarding Area shall be approved by BLM prior to use by the Purchaser. [42b21](#)
17. Skyline corridors will be no wider than 12 feet as measured between reserve trees and 150 feet apart on one end as measured perpendicular to the proceeding corridor. [42b21a](#), [42b14](#)
18. Road building and logging equipment will be washed prior to moving into the Contract Area to minimize the spread of noxious weeds. [42b25](#) and [Exhibit F](#)
19. Hauling on dirt surfaced roads will be permitted between July 1 and October 15, unless dry conditions extend the hauling season. [42b26](#)
20. Any required construction, improvement, or renovation of structures and roads shall occur during the dry season, June 1 through October 1, unless dry conditions exist that may extend those dates as approved by the authorized officer. [42c2](#)
21. BLM will assume supervisory responsibility for disposal of logging slash. [42e1](#)
22. Hand or machine piling is required in Roadside Hazard Reduction Area. [42e3b](#)
23. Slashing, loping, and scattering is required on approximately 34 acres in the Special Treatment Area. [42e3y](#)
24. Purchaser shall enter into a License Agreement with Oxbow Timber I, LLC. [42d5](#)
25. Purchaser will be required to cut and deck right-of-way timber belonging to Oxbow Timber I LLC. [42c3](#)
26. Flaggers, traffic control measures, and coordination will be required when operations are on or adjacent to Flaggers, traffic control measures, and coordination will be required when operations are on or adjacent to Fern Top Road No. 21-9-32.0. Fern Top Road No. 21-9-32.0 shall be kept clear of trees, rock, dirt, and other debris so far as is practicable and shall not be blocked by operations for more than 20 minutes. Fern Top Road is a well-traveled public road and all efforts must be taken to minimize inconvenience to road users. [42b29](#), [42b30](#)

SCHEDULE I

Sec. 41. TIMBER RESERVED FROM CUTTING. The following timber on the Contract Area, shown on Exhibit A, which is attached hereto and made a part hereof, is hereby reserved from cutting and removal under the terms of this contract and is retained as the property of the Government:

- a. All timber on the Reserve Area, shown on Exhibit A, and all blazed, orange painted and/or posted trees which are on or mark the boundaries of the Reserve Area.
- b. All orange painted reserve trees marked above and or below stump height within the Partial Cut Area, as shown on Exhibit A.
- c. All existing standing dead trees within the Partial Cut Area and Special Treatment Area except those trees which must be felled to permit safe working operations. Snags felled for safety reasons shall be left on site.
- d. All Pacific yew are reserved from cutting, except within road right-of-ways.
- e. All existing coarse woody debris within the Contract Area, unless the Authorized Officer determines the volume to be included in the Exhibit B, which is attached hereto and made a part hereof.
- f. All Bearing Trees with metal tags which mark property corners.

SPECIAL PROVISIONS - Page 1 of 23 pages

Sec. 42. SPECIAL PROVISIONS. Purchaser shall comply with the special provisions which are attached hereto and made a part hereof unless otherwise authorized, in writing, by the Authorized Officer:

a. Periodic Payment and First Installment Adjustment

(1) Notwithstanding the provisions of Sec. 3(b), the amount of the first installment may be reduced by the Government when the Contracting Officer requests the Purchaser to interrupt or delay operations for a period expected to last more than thirty days during the operating season. Such interruption or delay must be beyond the Purchaser's control. Operating Season shall be defined, for this purpose, as the time of year in which operations of the type required are normally conducted and not specifically restricted under the contract. The first installment may be reduced to five percent of the installment amount listed in Sec. 3(b), during the delay period. The Purchaser must request such a reduction in writing. When the Contracting Officer notifies the Purchaser that operations may proceed, the purchaser shall have fifteen days after such notification to return the first installment to the full value specified in Sec. 3(b). Failure to return the first installment to the full value within the allotted time will be considered a material breach of contract. No timber shall be cut or removed from

the contract area until the first installment is restored to the full amount.

(2) Notwithstanding the provisions of Sec. 3(b), adjustments in the due dates for periodic payments may be made by the Government if the Contracting Officer interrupts or delays contract operations for a period expected to last at least thirty days, and the interruption or delay is beyond the Purchasers control. Any adjustment made shall provide the Purchaser with an equal amount of operating time as would have been available without the delay. The Purchaser shall request such adjustment in writing before the due date for a periodic payment contained in Sec. 3(b).

b. Logging

(1) Prior to commencement of operations, the Purchaser shall obtain from the Authorized Officer written 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's representative must be held at a location designated by the Authorized Officer before the logging plan will be approved.

(2) Before beginning operations on the contract area for the first time, or after a shutdown of ten or more days, the Purchaser shall notify the Authorized Officer in writing of the date he plans to begin operations. He shall also notify the Authorized Officer in writing if he intends to cease operations for any period of ten or more days.

(3) In the Seasonal and Timing Restriction, as shown on Exhibit A, falling, bucking and yarding operations shall cease between April 1 and August 5 of the same calendar year, both days inclusive. Daily timing restrictions (work is limited to two hours after sunrise to two hours before sunset) will apply from August 6 through September 15 of the same calendar year, both days inclusive.

(4) Directional felling is required away from roads, property lines, posted boundaries, orange-painted reserve trees, no-harvest areas and snags.

(5) Cutting or yarding during high sap flow, March 31 through July 1, may be restricted by the Authorized Officer.

(6) All trees designated for cutting shall be felled to the lead of the pre-marked yarding corridors or pre-marked skid roads.

(7) All trees designated for cutting in the Partial Cut Area shall be felled, limbed, topped, and cut into log lengths not to exceed 41 feet before yarding.

(8) Rub trees may be cut and yarded after all lateral yarding is complete on each cable setting, as

directed by Authorized Officer.

(9) All hardwood trees eight (8) inches DBHOB and larger designated for cutting in the Special Treatment Area shall be felled and yarded concurrently with all other trees designated for cutting in the Special Treatment Area.

(10) All trees designated for cutting in the Special Treatment Area shall not be topped or limbed prior to reaching the landing. If the Authorized Officer determines that this stipulation is not being met, the purchaser will be required to gross yard any bucked tops and/or bucked limbs within the Special Treatment Area. The Special Treatment Area is shown on Exhibit A.

(11) Yarding shall be completed with cable-type equipment. A carriage capable of yarding in a fixed position 75 feet in either direction from the skyline corridor will be required.

(12) Complete re-spooling of lines is required in making cable yarding road changes.

(13) One-end suspension will be required for in-haul of logs during cable yarding operations. Lift trees and or intermediate supports may be required to obtain the required suspension.

(14) Cable yarding corridors will be 150 feet apart, as measured from the tail hold, or where the skyline reaches the far edge of the unit, perpendicular to the preceding corridor.

(15) Where yarding road locations allow, cable yarding will be done so that corridors are parallel rather than radiating from one central landing, and are placed to avoid a stream channel, shown on Exhibit A. Where yarding is to occur over a stream channel, the yarding roads will be kept as perpendicular to the stream channel as possible.

(16) A minimum 50 foot slope distance no-harvest zone shall be maintained on either side of intermittent stream channel and 120 feet of perennial stream channels. Corridor trees felled within the no-harvest zone will be felled toward the stream channel and left in place. All trees within the no-harvest zone are either painted orange, or posted out of the unit.

(17) Where cable yarding must occur through the no-harvest area adjacent to a stream channel, logs will be fully suspended to protect stream banks. Where full suspension is not feasible, operations over any stream channel with visible surface flow will occur only during the dry season, as designated by the Authorized Officer. Bare mineral soil within 50 feet of a stream channel, which has been exposed by yarding, shall be covered with slash to trap sediment and prevent erosion.

(18) Within safety standards, harvest trees will be directionally felled away from any stream channels; however, trees that must be felled toward or parallel to the stream channel should be temporarily retained on site to provide bank armament if other trees need to be yarded across the channel.

(19) Prior to attaching any logging equipment to a reserve tree, the Purchaser shall obtain written approval from the Authorized Officer and shall take precautions to protect the tree from damage as directed in writing by the Authorized Officer

(20) In the Ground-based Yarding Area, as shown on the Exhibit A:

(a) In the Ground-based Yarding area, all equipment must be approved in writing by the Authorized Officer prior to any operations.

(b) Ground-based operations shall be conducted when soil moisture content is below 25% plastic limit, as determined by the Authorized Officer. Unseasonably dry or wet weather may shorten or extend the operating season. The Purchaser shall be notified in writing when weather conditions extend the operating season. The Purchaser may be required to suspend ground-based operations during periods of rain, as directed by the Authorized Officer.

(c) Trees shall be felled manually or by a mechanized harvester utilizing a “cut-to-length” system capable of directionally felling, cutting to length, and depositing slash along the harvesting path. The yarding machine shall utilize slash on skid trails and continually place slash on trails so as to not expose bare mineral soil.

(d) The yarding machine must be approved by the Authorized Officer. It must be equipped with a grapple or an extendable and retractable arch and fairlead which is an integral part of the machine that is capable of lifting the leading end of the turn clear of the ground. All logs in the Ground-based Yarding Area shall be yarded with their leading end clear of the ground. A forwarder or tracked log loader may also be used to yard logs within the Ground-based Yarding Area.

(f) Primary skid trails shall use existing trails wherever possible, be spaced at least 100 feet apart, and be no wider than 12 feet as measured between reserve trees.

(g) Primary skid trails shall be blocked with slash or cull material after completion of harvest where the Authorized Officer determines vehicle access is possible.

(h) All ground-based equipment shall be restricted to operating on slopes less than 35% and shall not operate within 50 feet of a stream channel.

(i) Upon completion of seasonal forwarding use, any skid trail with more than 100 feet of continuous bare ground shall have water bars installed and or be covered with slash for erosion control prior to October 15th.

(21) Before cutting and removing any trees necessary to facilitate logging in the Partial Cut Area, the Purchaser shall identify the location of the harvester roads, cable yarding roads and tailhold, tieback, guyline, 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's 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:

(a) All 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 removal of timber sold under this contract and shall be limited to the minimum width necessary for yarding of logs with minimum damage to reserve trees, however, unless otherwise approved in writing by the Authorized Officer, the width of each cable yarding corridor shall be limited to 12 feet.

(b) The Purchaser may immediately cut and remove additional timber to clear cable yarding corridors; and provide tailhold, tieback, guyline, lift and intermediate support trees; and clear danger trees when the trees have been marked with blue paint above and below stump height by the Authorized Officer and thereby approved for cutting and removal by the Authorized Officer. 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.

(c) The Purchaser agrees that sale of this additional timber shall be accomplished by a unilateral modification of the contract executed by the Authorized Officer and that such timber shall be sold at the unit prices shown in the 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 any tree that exceeds 24 inches diameter at breast height shall be appraised and sold by bilateral modification of the contract at current fair market value in accordance with Sec. 8 of the contract.

(d) 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.

(e) If authorization is withdrawn, the Authorized 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 three working days 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 the 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 Authorized 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.

(f) The Government may reserve trees previously designated for cutting and removal by applying orange paint as replacements for additional trees cut and removed for skid roads and/or cable yarding road corridors when the Authorized Officer determines such reservation is necessary to maintain stand densities consistent with objectives set forth in the management prescription. This may include the replacement of trees damaged by storm events, insects or disease. The volume of this timber to be reserved will be determined by the Authorized Officer in accordance with Bureau of Land Management prescribed procedures and the value shall be based on the unit prices shown in Exhibit B of the contract. The Purchaser agrees that the Total Purchase Price stated in Sec. 2 of this contract shall be reduced accordingly through a unilateral modification to the contract executed by the Authorized Officer.

(22) In accordance with the requirements of Sec. 8, it has been determined that it is in the best interest of the government and within the provisions of 43 CFR 5402.0-6 to sell additional timber located in the Contract Area that is: obstructing needed cable yarding corridors, hazardous to workers in accordance with applicable State safety laws, codes, or regulations and must be cut or removed so that the Purchaser can continue active falling or yarding operations; needed for guyline trees to meet all applicable State safety laws, codes or regulations and must be cut or removed so the Purchaser can continue active yarding operations; or are severely damaged from the normal conduct of felling or yarding operations. The Purchaser is therefore authorized to cut and remove such additional timber in accordance with the provisions of Sec. 8; provided, however, that:

(a) the Purchaser shall identify each tree sold and cut in accordance with this provision by marking the surface of the stump immediately after cutting with a large "X", cut with a chain saw, and by painting the stump with fluorescent red paint so that the stump can be visually located from a distance of not less than 100 feet;

(b) concurrently with falling, paint the butt of each tree with fluorescent red paint. When butt logs are yarded, deck separately for inspection by Authorized Officer;

(c) The Purchaser conforms to all requirements of Sec. 8 of this contract; provided that (1) the unit prices for additional timber within unit boundaries shall be the unit prices shown in Exhibit B of this contract, or the reappraised unit prices arrived at in accordance with Sec. 9 of this contract, and (2) timber outside of unit boundaries shall be sold at fair market value;

(d) no timber may be cut or removed under the terms of this provision if all contract payments required by Sec. 3. (b) or 3.(d) have not been made; and,

(e) permission to cut and remove additional timber contained in this provision may be withdrawn by the Contracting Officer if the Authorized Officer determines that the Purchaser:

- (1) failed to properly mark any stump with the "X" mark.
- (2) failed to properly mark any butt log with the "X" mark.
- (3) cut any tree that was reserved for tree improvement and/or wildlife habitat.

- (4) cut any tree in or adjacent to cable yarding corridors that was not necessary to facilitate cable yarding.
- (5) cut any reserve tree in or adjacent to tractor skid roads that was not necessary to facilitate ground-based yarding.
- (6) cut any reserve tree that was not severely (as defined during the pre-work conference and documented in the approved logging plan) damaged from felling and yarding operations.
- (7) cut more than the minimum number of trees necessary to properly serve as guyline anchor stumps.
- (8) cut or topped more than the minimum number of trees necessary to properly serve as tailhold trees.
- (9) cut more than the minimum number of trees necessary to properly serve as tie-backs for topped tailhold trees.

Failure to perform any of the conditions listed above may be considered a trespass.

(23) As directed by Authorized Officer, for a distance of 100 feet from the perimeter of each landing, all logs more than eight inches diameter at the large end and longer than eight feet in length shall be decked or windrowed at the location designated by the Authorized Officer except logs removed from the contract area. If a log or a piece of a log meeting or exceeding the above specifications is bucked all portions of that log shall be yarded and decked at the above described location.

(24) In the Partial Cut Area, significant damage to residual trees shall be kept to a minimum. Significant damage is defined as any tree having greater than twelve square inches of the bark removed from the circumference of the tree, any tree with top diameter broken at three inches in diameter or greater, or any tree being visually root-sprung. If the Authorized Officer determines that damage has become commonplace due to a lack of caution or operator negligence, a written warning of non-compliance will immediately be issued to the Purchaser. The Authorized Officer may suspend operations until safeguards are put in place to protect the reserve trees. If the damage continues, it will result in a violation of Sec. 13 of the contract, Timber Trespass, and the Purchaser will be held liable for damages. Any reserved trees significantly damaged or destroyed by the Purchaser shall be valued at current market value of the merchantable volume for purposes of determining damages.

(25) To control the spread of noxious weeds, the Purchaser shall conduct all operations involving the transportation and use of equipment and vehicles in strict accordance with the requirements shown on Exhibit F, which is attached hereto and made part hereof. All road building and logging equipment which will be used off of existing roads will be washed prior to moving into the Contract Area to minimize the spread of noxious weeds.

(26) Hauling on dirt surfaced roads will be permitted between July 1 and October 15 unless dry conditions extend the hauling season, as directed by Authorized Officer.

(27) To minimize the risk of attracting predators to activity areas, **all garbage** (especially food products) would be contained or removed daily from the vicinity of any activity.

(28) The bituminous road surface at roadside landing locations will be protected by applying a layer of wood chips, hog fuel, or other material (excluding rock or soil) to a depth sufficient to prevent damage from yarding and loading activities. If rubber-mounted equipment is used, protection material may not be required.

(29) Fern Top Road No. 21-9-32.0, shall be kept clear of trees, rock, dirt and other debris so far as is practicable and shall not be blocked by operations for more than 20 minutes. Multiple operators may be using these roads simultaneously. Coordinating with other operators when using Fern Top Road No. 21-9-32.0, will be required.

(30) Signs and flaggers are required to control traffic Fern Top Road No. 21-9-32.0, when falling timber within 200 feet of the road, or conducting any operations requiring flagging under Section 29 of this contract.

c. Road Construction

(1) The Purchaser shall construct, improve, or renovate a road in strict accordance with the road plans and specifications shown on Exhibit C, which is attached hereto and made a part hereof.

(2) Any required construction, improvement, or renovation of structures and roads shall occur during the dry season, June 1 through October 1, unless dry conditions exist that may extend those dates as approved by the authorized officer.

(3) Any required construction, improvement, or renovation of structures and roads shall be completed and accepted prior to the haul of any timber, except right-of-way timber, over that road.

(4) In addition to the requirements set forth in Sec. 26 of this contract, the Purchaser shall complete erosion control and soil stabilization measures on all cuts, fills, waste areas, and scarified areas, as designated by the Authorized Officer, along all sections of roadway disturbed during the year prior to October 1 of each year. The Authorized Officer may set time limits for the beginning and completion of erosion control and soil stabilization measures and modify seasonal dates to conform to existing weather conditions and changes in the construction schedule. Such work shall be accomplished in accordance with Erosion Control and Soil Stabilization, 1700 and 1800 Series, contained in Exhibit C.

(5) The Purchaser shall, prior to construction of landings, stake all landing locations in accordance with the requirements set forth in Exhibit C. Concurrently with, or at the termination of logging operations, the Purchaser shall pull back and shape onto the landings all overhanging materials to prevent erosion in accordance with the requirements set forth in Exhibit C.

d. Road Use and Maintenance

(1) The Purchaser shall be required to secure written approval to use or haul equipment over Government owned or controlled structures when that equipment exceeds the maximum allowable weights or dimensions established by the State for vehicles operating without a permit.

Tracked type equipment shall not be allowed to cross over concrete bridge decks, other concrete surfaced structures or asphalt surfaced roads without the proper protection of that surface. Prior approval shall be obtained from the Authorized Officer when crossing with protective devices.

Details of such equipment shall be furnished to the Authorized Officer for evaluation of load characteristics, at least 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; and,
- (h) special features (e.g. running tracks, overhang loads, etc.).

The Purchaser shall be responsible for repair of any damage to structures caused by the use of overweight or over-dimension vehicles: (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.

(2) At all times during the period of his operations on the contract area, and upon completion of said operations, the Purchaser shall be liable for maintenance and repair of such roads shown on Exhibit D, which is attached hereto and made a part hereof, resulting from wear or damage in accordance with the maintenance specifications as shown on Exhibit D

(3) The Purchaser is authorized to use the roads shown on Exhibit E, which is attached hereto and made a part hereof, for the removal of Government timber sold under the terms of this contract and for haul of mineral material required under the terms of this contract; provided, that the Purchaser shall pay a Maintenance Obligation to the Government totaling \$58,564.18 as shown on Exhibit E. Unless the total Maintenance Obligation due to the BLM is paid prior to commencement of operations on the contract area, payments shall be made in installments payable in the same manner as and together with payments required by Sec. 3 of this contract. Timber modification volume will be assessed at a rate of \$7.83/MBF for removal of timber over Government controlled roads.

(4) With the prior written approval of the Authorized Officer, the Purchaser may arrange for

cooperative maintenance with other users of any BLM controlled road included in Secs. 42(c)(1) and 42(d)3 of this contract; 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 on these roads.

USE IF OTHER THAN OXBOW TIMBER I, LLC IS PURCHASER

(5) In the use of required Oxbow Timber I, LLC roads, shown on Exhibit E, the Purchaser shall comply with the conditions of Right-of-Way and Road Use Agreement C-320, between the United States and Oxbow Timber I, LLC, available for inspection at the Bureau of Land Management, North Bend, Oregon. Prior to commencement of operations, the Purchaser shall enter into and furnish to the Authorized Officer a copy of the required executed License Agreement.

Default by the Purchaser of said Right-of-Way and Road Use Agreement, of any License Agreement executed pursuant thereto shall be considered a violation of this contract. Road Use Fees totaling \$4,650.00 is payable to Oxbow Timber I, LLC.

USE ONLY IF OXBOW TIMBER I, LLC IS PURCHASER

(6) In accordance with 43 CFR 2812.6, 2(a)(5) the following allowances have been made for amortization of capital investment of the road covered by Road Agreement C-320, with the Purchaser: Road Use Fees totaling \$4,650.00. It is understood that the Total Purchase Price stated in Sec. 2 of this contract is the net price and that no deduction will be made from the contract price because of such allowance.

e. Fire Prevention, Hazard Reduction and Logging Residue Reduction

(1) BLM will assume supervisory responsibility for disposal of logging slash. The assumption by the Government of all obligations for the disposal or reduction of fire hazard under state law does not relieve the Purchaser of the obligations to perform the fire prevention, hazard reduction and logging residue reduction measures required by this contract.

(2) Fire Prevention and Hazard Reduction. Primarily for purposes of fire prevention and fire hazard reduction, the Purchaser shall comply with the following provisions:

(a) Prior to the operation of power driven equipment in construction or logging operations under this contract during the closed fire season or periods of fire danger, the Purchaser shall, on an annual basis during the term of this contract, prepare fire prevention and control plans to the satisfaction of the Authorized Officer.

(b) Slash shall be disposed of in accordance with the written instructions of the Authorized

Officer.

(3) Logging Residue Reduction. Primarily for hazardous fuel reduction, watershed protection and silvicultural purposes, the Purchaser shall comply with the following provisions:

(a) In addition to the requirements of Section 15 of this contract, the Purchaser shall be responsible for logging residue reduction at all landing sites in the sale area and within the Roadside Hazard Reduction Areas (RHRA) as shown on the Exhibit A.

Specifications for RHRA and Landing Piling

(b) Within the RHRA's, the Purchaser shall (1) remove logging residue for offsite utilization or (2) pile on site for burning. Within the RHRA, all logging residue one-half inch to four inches (small end diameter) which is greater than two feet in length and is within twenty feet slope distance of the outside edge of the road shoulder shall be removed or piled. Logging residue includes slash from the harvest operations and related road construction, renovation or improvement. Removal/piling shall be accomplished by hand or with mechanized equipment capable of reaching the required twenty feet without leaving the road surface.

(c) At all landing sites within the sale area, the Purchaser shall either (1) remove from the site for offsite utilization or (2) pile for burning, all logging residue that is presently on and around the immediate vicinity of the landing site.

(d) If offsite utilization is intended, the Purchaser shall upon request from the Authorized Officer, provide information on the method of removal, the total tonnage, the intended use and destination of logging residue being removed from the sale area.

(e) Any logs or useable residue identified in the contract as reserved shall remain the property of the Government and may not be shipped for offsite utilization.

(f) Prior to commencement of logging residue removal, the Purchaser shall provide advanced notification to the Authorized Officer in order to arrange for on-site inspections of the removal operations. Upon completion of residue removal, the Purchaser shall notify the Authorized Officer to arrange for a final inspection of the RHRA's and landing sites.

(g) Unless approved in advance by the Authorized Officer, landing piling shall be completed at each yarding location (setting) at the conclusion of yarding operations at that setting while logging equipment is on site. Machine piling of the RHRA concurrently with logging operations is recommended but shall be completed at the conclusion of harvest operations.

(h) Unless directed or approved by the Authorized Officer, no landing and RHRA piles shall be constructed within twenty feet of any reserved green trees, snags, marked wildlife trees, corrugated plastic pipes (CPP's) or other constructed feature or improvement that could be damaged by fire.

(i) Piling of RHRA and/or landing slash on the paved surface of the Fern Top Road (21-9-32.0) is prohibited. The Authorized Officer will identify suitable locations for piling or scattering of slash along the road right-of-way.

(j) Logging residue within the immediate vicinity of the landing and any residue that overhangs the landing sites that can be reached with the logging equipment on site shall be pulled completely back up onto the landing surface and either piled for burning or segregated for other uses.

(k) Logging residue meeting the criteria set forth in [Sec. 42.b.\(23\)](#), shall not be piled for burning but shall be segregated into separate piles that are no closer than twenty feet from residue piles that will be burned.

(l) If during the course of pile construction or during a final acceptance inspection, the Authorized Officer determines that landing and RHRA piles contain excessive amounts of logging residue that meets the specifications as described in [Sec. 42.b.\(23\)](#), the purchaser may be required to remove the specified residue from the burn piles.

(m) Root wads from road and landing construction activities shall not be included in the landing and RHRA piles. Piling of slash on top of root wad piles is not permitted. Any root wad piles found by the Authorized Officer to be capped by slash will require the removal and re-piling of the slash by the Purchaser.

(n) To promote efficient and complete burning, landing and RHRA piles shall be constructed as upright as possible and have a solid base to promote stability and prevent toppling. Construction of low-profile, flat topped piles is generally considered as unacceptable. The Purchaser is responsible for ensuring that properly shaped; contoured and stable landing piles are constructed.

(o) During or after pile construction, landing and RHRA piles shall be shaped and contoured in such a manner that will allow for polyethylene sheeting (PE) to lay in a smooth and uniform manner completely across the top and partially down the sides of the pile to promote shedding of water, prevent pooling of water and to reduce the possibility of PE being ripped or torn by underlying slash or from wind. Landing and RHRA piles found by the Authorized Officer not meeting this shaping requirement shall be reconstructed or reshaped by the Purchaser.

(p) The Purchaser shall request an inspection of landing and RHRA piling before equipment used in piling is moved off site. If piling equipment is moved off site before inspection and the landing piles are subsequently found to be noncompliant with the specifications and require a re-work, the Purchaser shall be responsible for costs associated with move-in of piling equipment to rework piles. Unless approved by the Authorized Officer, all requests for inspection of landing piling shall be made in writing (email is acceptable) at least ten days in advance of planned equipment removal.

Specifications for RHRA and Landing Pile Covering

(q) Only landing and RHRA piles that have been inspected and approved by the Authorized Officer shall be covered. Pile covering shall be completed no later than September 15 of the current year at all RHRA segments and landing sites where yarding activities have been completed. This applies to each year that the timber sale is active.

(r) The Purchaser shall place polyethylene sheeting (PE), four MIL thickness and black in color over the pile so as to provide an adequate level of protection from fall/winter rains. PE sheeting shall lie uniformly and as smoothly as possible across the top of the pile and shall extend partially down the sides. For small properly constructed piles with base dimensions of approximately 10 ft. x 10 ft. or less, the size of the PE sheeting should not need to exceed approximately 100 square feet.

(s) To meet ignition and combustion needs, larger piles will require additional PE sheeting in excess of 100 square feet to adequately cover the pile and protect it from wetting fall/winter rains. The Purchaser shall contact the Authorized Officer before any pile covering begins to receive specific direction on which piles will require additional covering. At that time, the Authorized Officer will identify all piles that shall have additional PE covering. If piles are covered without the advice and consent of the Authorized Officer and are subsequently found to be inadequately covered, the Purchaser may be required to re-cover or add additional covering to the piles before acceptance is made.

(t) At landing sites with excessive logging residue that overhangs the landing which cannot be reached and pulled back up onto the landing with equipment on site, the Purchaser shall place additional PE sheeting over the residue concentrations below the landings.

(u) On roads that have been closed and/or decommissioned, decks of Purchaser owned logs that were not shipped by the Purchaser shall be covered with PE for burning. The Authorized Officer may waive this requirement if future utilization is determined to be feasible. Decks of reserved logs belonging to the Government are exempt from this requirement.

(v) All PE sheeting shall be weighted down with slash or logging debris in order to prevent blowing off or sliding. An adequate amount of anchoring material should be placed on top of the pile but no more than 20 percent of the material to be piled may be placed on top of the PE. For piles described in (s) above, the Authorized Officer may require the removal of PE before burning so the Purchaser should exercise discretion with respect to the method of application, the amount and composition of anchoring material used when securing the PE.

(w) Piles of root wads generated from road and landing construction activities and piles of residue identified by the Authorized Officer for other uses shall not be covered with PE sheeting.

Specifications Applicable to Landing and RHRA Pile Burning

(x) In accordance with verbal or written instructions to be issued by the Authorized Officer at

least ten days in advance of the earliest date of required performance, the Purchaser shall, under supervision of the Authorized Officer or his/her designated representative, assist in burning and fire control, at the Purchaser's expense, provide the services of personnel and equipment as follows:

1. The Purchaser shall begin pile burning within fourteen hours of notification by the Authorized Officer.
2. In accordance with the Authorized Officer's verbal instruction, immediately before ignition on piles with coverings in excess of 100 sq. ft., the Purchaser may be required to remove as much polyethylene sheeting from the pile as feasibly possible.
3. The Purchaser shall dispose of removed polyethylene sheeting in accordance with any applicable Federal, State, and municipal laws. Removed polyethylene sheeting shall not be disposed of in burn piles
4. All personnel directly involved in burning operations must have a current qualification card for FFT2 or higher. All qualifications are defined according to National Wildfire Coordinating Group (NWCG) Wildland Fire Qualifications System guide, PMS 310-1. Qualifications and equipment levels are the minimum and may exceed those stated above. All listed personnel shall be physically fit, experienced and fully capable of functioning as required. All personnel shall arrive at the project area with the following personal safety equipment: lug-soled leather boots with minimum eight (8) inch uppers that provide ankle support; an approved hardhat; leather gloves; long pants and a long sleeve shirt made of approved aramid fabric (Nomex or equivalent); and an approved fire shelter.
5. For each entry, the Purchaser may provide more personnel, equipment and materials than indicated but no less than the minimum requirements below unless approved in advance by the Authorized Officer. Minimum personnel, equipment and materials requirements for burning landing and RHRA piles are:
 - a. One English-speaking foreman for crew supervision.
 - b. Five people to assist the foreman in pile burning.
 - c. Six drip torches and sufficient mixed fuel to complete all pile burning.
6. A minimum of ninety percent consumption of each pile is required. Stoking of piled material around pile edges may be required to meet the 90% consumption requirement. Stoking can be accomplished by hand or the Purchaser will be allowed to use heavy equipment (if onsite) to facilitate stoking or re-piling of residue during pile burn operations. If used, the heavy equipment shall not be allowed to operate off of all-weather road surfaces.

7. No mop-up is required of the Purchaser.
8. Multiple entries over the life of the contract may be required to complete pile burning. Purchaser provided personnel; equipment and materials requirements will remain the same as No. 4 above for each entry. Any change in the requirements must be approved in advance by the Authorized Officer.

Specifications for Slashing, Lopping and Scattering (SLS) in the Special Treatment Areas (STA)

(y) In accordance with oral, email or written instructions to be issued by the Authorized Officer at least ten days in advance of earliest date of required performance, the Purchaser shall, under supervision of the Authorized Officer or their designated representative, assist in site preparation of the Special Treatment Areas (STA). The Purchaser, at their own expense, shall provide the services of personnel and equipment as follows:

(z) The Purchaser shall perform logging residue reduction and site preparation work on approximately thirty four (34) acres of STA as directed by the Authorized Officer.

1. The required work shall consist of the treatment listed in the table below. The locations of STA treatments shall be determined by the Authorized Officer as harvest activity progresses. The final number of treatment acres shall be determined by the Authorized Officer and specified in writing by the Contracting Officer before contract termination. Final treatment acreage shall be determined using the same methods that were used for calculating the sale unit acreage. The following treatment and estimated treatment acres was assumed for appraisal purposes on this contract:

Treatment Type	STA Treatment Acres (estimated)	Cost per Acre	Total Cost
Slash, Lop and Scatter (SLS)	34	\$278.84	\$9480.56
Total Appraised Cost			\$9480.56

2. The total Purchase Price set forth in Section 2 shall be adjusted by the amount that the total cost of the site preparation treatments designated pursuant to Section 42(e.)(3)(z)1. differs from: nine thousand four hundred eighty dollars and fifty six cents (\$9480.56) as calculated by using the final acreage as determined by the Authorized Officer and the per acre cost listed in Section 42(e.)(3)(z)1. An increase of treatment acres would result in a purchase price reduction whereas a decrease of treatment acres would result in a purchase price increase.

(aa) The required work shall consist of post-harvest slashing, lopping and scattering (SLS) of residual vegetation (brush and damaged trees) and logging residue. Multiple entries over the life of the contract

may be required in order to meet critical silvicultural objectives. SLS work shall comply with the following:

1. All brush species one foot or greater in height, damaged conifer reproduction and hardwoods, and hardwoods not marked or otherwise identified for retention, shall be completely severed from the stumps. Brush species consist of shrubs with single or multiple stems originating at or near ground level and not normally reaching twenty feet in height. Examples include (but are not limited to) vine maple, salmonberry, hazel, huckleberry, thimbleberry, manzanita, ocean spray, ceanothus species, broom species, blackberry species and rhododendron.
2. Stump heights shall not exceed four inches measured on the uphill side.
3. No live limbs will be left on stumps.
4. Slashed hardwoods shall be bucked every four feet and the limbs will be completely severed from the bole of the cut hardwood.
5. Except for felled or existing down trees identified by the Authorized Officer as coarse wood, conifers (including blowdown) and hardwoods felled but not yarded during harvest operations shall be bucked sufficiently to bring the bole down to the ground. All limbs will be severed from the bole of the trees.
6. All slashed vegetation and logging debris (brush, limbs and boles) shall be sufficiently cut and/or scattered in such a manner that will reduce the average slash depth in any given location to no more than twelve inches (1 foot).

(bb) Time is of the essence in complying with these provisions. In the event the Purchaser fails to provide the personnel, equipment and materials required herein, the Purchaser shall be responsible for all additional costs 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, materials and appropriate additional overhead expenses. If the Purchaser's failure results in deferral of treatments and conditions necessitate additional site preparation work and/or the use of additional personnel and equipment to accomplish the planned treatments, the Purchaser also shall be responsible for such additional costs.

f. Optional Scale Check of Lump Sum Sales

(1) The Government, at its option, may administratively check scale any portion of the timber removed from the contract area, and if necessary, conduct check scaling of independent scalers contracted to BLM for administrative check scaling purposes. The Purchaser hereby agrees to make such contract timber available for such scaling at a location or locations to be approved in writing by the Authorized Officer. At the approved location or locations, the Purchaser shall provide an area for logs to be safely rolled out for scaling, to unload

logs from trucks, place logs in a manner so that both ends and three faces of each log are visible for scaling, and to reload or remove logs after scaling has been completed.

(2) In the event that BLM elects to administratively check scale and if such check scaling causes a delay in log transportation time, an adjustment will be made to the purchase price as follows. If the entire sale is check scaled by yard scale, the purchase price of this contract shall be reduced by \$5,607.00. In the event only a portion of the contract timber is scaled, the purchase price shall be reduced by that portion of \$5,607.00 which is equal to the percentage of timber sold which was actually scaled by the Government. For purposes of computing this price reduction, the percentage of timber sold which has been scaled shall be determined by the Government. Any reduction in purchase price under the terms of this provision shall be full compensation to the Purchaser for any expense or loss incurred as a result of such scaling. Scaling shall be conducted in accordance with the Eastside Scribner Scaling Rules by BLM scalers, and/or independent scalers contracted to BLM. A copy of the scale report will be made available to the Purchaser upon request.

g. 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 5424 as amended.

(1) 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 inches in thickness; (3) split or round bolts or other roundwood not processed to standards and specifications suitable for end-product uses; or (4) western redcedar 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 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:

- (a) date of last export sale;
- (b) volume of timber contained in last export sale;
- (c) volume of timber exported in the past 12 months from the date of last export sale;
- (d) volume of Federal timber purchased in the past 12 months from the date of last export sale;
- (e) volume of timber exported in succeeding 12 months from date of last export sale; and,

(f) volume of Federal timber purchased in succeeding 12 months from date of last export sale.

(2) 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 the Domestic Processing of Timber" (Form 5460-16). 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.

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

(4) Prior to the termination of this contract, the Purchaser shall submit to the Authorized Officer a "Log Scale and Disposition of Timber Removed Report" (Form 5460-15) 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.

(5) 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 inches, prior to the removal of timber from the contract area. All loads of eleven logs or more will have a minimum of ten logs clearly and legibly branded on one end regardless of the diameter of the logs. All logs will be branded on loads of ten logs or less. One end of all branded logs to be processed domestically will be marked with a three 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.

(6) 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 year.

h. Cultural Resource Protection

(1) If in connection with operations under this contract, the Purchaser, his contractors, sub-contractors,

or the employees of any of them, discovers, encounters or becomes aware of any objects or sites of cultural value on the contract area such as historical or prehistorical ruins, fossils, or artifacts, the Purchaser shall immediately suspend all operations in the vicinity of the cultural value and notify the Authorized Officer of the findings. Operations may resume at the discovery site upon receipt of written instructions and authorization by the Authorized Officer.

(2) Pursuant to 43 CFR 10.4(g) the holder of this authorization must notify the Authorized Officer, by telephone, with written confirmation, immediately upon discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), you must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the Authorized Officer.

i. Sensitive, Threatened, or Endangered Plants or Animals

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

- (a) 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;
- (b) when, in order to comply with the Endangered Species Act or to protect occupied marbled murrelet sites in accordance with the Standards and Guidelines of the Coos Bay District Record of Decision (ROD) and Resource Management Plan (RMP), the Contracting Officer determines it may be necessary to modify or terminate the contract, or;
- (c) 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;
- (d) other active raptor nests have been discovered, and a determination is made that continued operations under this contract would adversely affect the present use of the discovered nesting area by the raptor, or;
- (e) 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;
- (f) when, in order to comply with a court order, the Contracting Officer determines it may be necessary to modify or terminate the contract, or;
- (g) species have been discovered which were identified for protection through survey and manage and/or protection buffer standards and guidelines established in the ROD and RMP, and the Contracting Officer determines that continued operations would affect the species or its habitat, or;
- (h) when, in order to protect species which were identified for protection through survey and manage and/or protection buffer standards and guidelines established in the ROD and RMP,
- (i) 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 percent of the First Installment amount listed in Sec. 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 Sec. 3.b. of the contract within fifteen days after the bill for collection is issued, subject to Sec. 3.h. 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 thirty 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 terminate the cutting and removal rights under the contract in order to comply with the Endangered Species Act, protect occupied marbled murrelet sites in accordance with the ROD and RMP, protect species that have been discovered which were identified for protection through survey and manage and/or protection buffer standards and guidelines 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, marbled murrelet occupied site protection in accordance with the ROD and RMP, survey and manage and/or protection buffer standards and guidelines established in the ROD and RMP, or court order requirements necessitating the modification or termination.

In the event 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.

j. Safety

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 contract purchaser price specified in Section 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.

k. SBA SET-ASIDE

The purchaser agrees not to sell and/or exchange more than 30 percent of the timber or log volume from this preferential sale to concerns that do not meet the Small Business Administration small business size standard (13 CFR 121).

The purchaser understands that in addition to other penalties which may be imposed for violating the foregoing, the purchaser may be declared ineligible to participate in future Federal timber sales that are set-aside for preferential bidding by small business qualified concerns for two semi-annual triggered periods succeeding the violation.

The purchaser shall provide a current, interim Log Scale and Disposition of Timber Removed Report (Form 5460-15) upon request by the Authorized Officer at any time during the contract period for cutting and removal specified in Section 4 of this contract as amended.

Exhibit F

SPECIAL PROVISIONS TO CONTROL THE SPREAD OF NOXIOUS WEEDS

Vehicle and Equipment Cleaning

1. Cleaning shall consist of the removal of soil and debris by washing with a high pressure hose or steam cleaning. Cleaning and inspection sites will be agreed to by Purchaser and BLM. All petroleum product residues shall be contained at wash sites and dealt with in accordance to DEQ standards. Contractor shall provide an approved plan for the cleaning station that demonstrates that the station meets all DEQ and water quality regulations. All necessary permits shall be obtained by the contractor.

2. All equipment parts shall be cleaned as designated by the Authorized Officer, including removal of tractor belly plates, in accordance with Sec. 1 above.

All construction, logging and slash disposal equipment shall be cleaned prior to entering the contract area. The Authorized Officer will determine if log trucks and vehicles used for transportation of personnel shall be cleaned, based upon the location of use immediately prior to current timber sale. If the vehicles have been in a weed-infested area, they shall be washed before entering Contract Area, as shown on Exhibit A.

SALE NAME Fern Top
NET MBF 7476

EXHIBIT E
OR00-TS-2018.0003

A. ROAD USE FEES - Payable to Private Company:

COMPANY NAME:	AGREEMENT NUMBER:	ROAD NUMBER	NET MBF	USE FEE per MBF	TOTAL FEES:
Oxbow Timber	C-320	21-9-29.0	1147	\$0.00	\$0.00
Oxbow Timber	C-320	21-9-21.2	178	\$0.00	\$0.00
Oxbow Timber	C-320	21-9-20.2	530	\$0.00	\$0.00
Oxbow Timber	C-320	21-9-32.0	530	\$0.00	\$0.00
Oxbow Timber	C-320	21-9-30.7	775	\$0.00	\$0.00
Oxbow Timber	C-320	21-9-30.4	775	\$6.00	\$4,650.00
TOTAL USE FEE:					\$4,650.00

B. MAINTENANCE FEES:

1. Maintenance and Rockwear Fees Payable to the U.S. (BLM Maintained Roads):

a. Timber Haul:

Surface Type	ROAD NUMBER:	NET MBF	ROAD MILES:	SURFACE REPLACEMENT /MBF/Mile	REGULAR MAINTENANCE		TOTAL FEE:
					Subtotal	Subtotal	
Pavement	21-9-32.0	530	0.14		\$0.00	\$1.62	\$120.20
Pavement	21-9-32.0	839	0.19		\$0.00	\$1.62	\$258.24
Pavement	21-9-32.0	3782	0.06		\$0.00	\$1.62	\$367.61
Pavement	21-9-32.0	4003	0.12		\$0.00	\$1.62	\$778.18
Pavement	21-9-32.0	4933	0.14		\$0.00	\$1.62	\$1,118.80
Pavement	21-9-32.0	6259	0.8		\$0.00	\$1.62	\$8,213.06
Pavement	21-9-32.0	6701	0.6		\$0.00	\$1.62	\$6,513.37
Pavement	21-9-32.0	7476	1.21		\$0.00	\$1.61	\$14,564.00
Pavement	22-9-7.0	7476	1.85		\$0.00	\$1.62	\$22,405.57
Pavement	22-9-7.0	7476	0.30		\$0.00	\$0.92	\$2,063.38
			5.42		\$0.00		\$56,402.41

EXHIBIT E
OR00-TS- 2018.0003

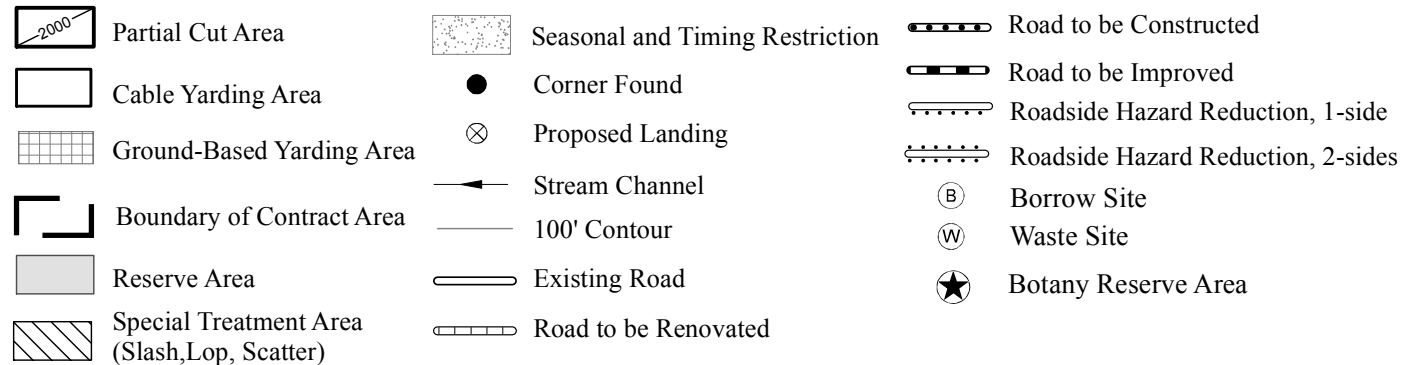
a. Timber Haul:

3. ROAD MAINTENANCE AND/OR ROCKWEAR FEES - Payable to Private Company:

4. OPERATOR MAINTENANCE WILL BE REQUIRED ON APPROX. 5.6 MILES OF ROAD. (SEE EXHIBIT D)

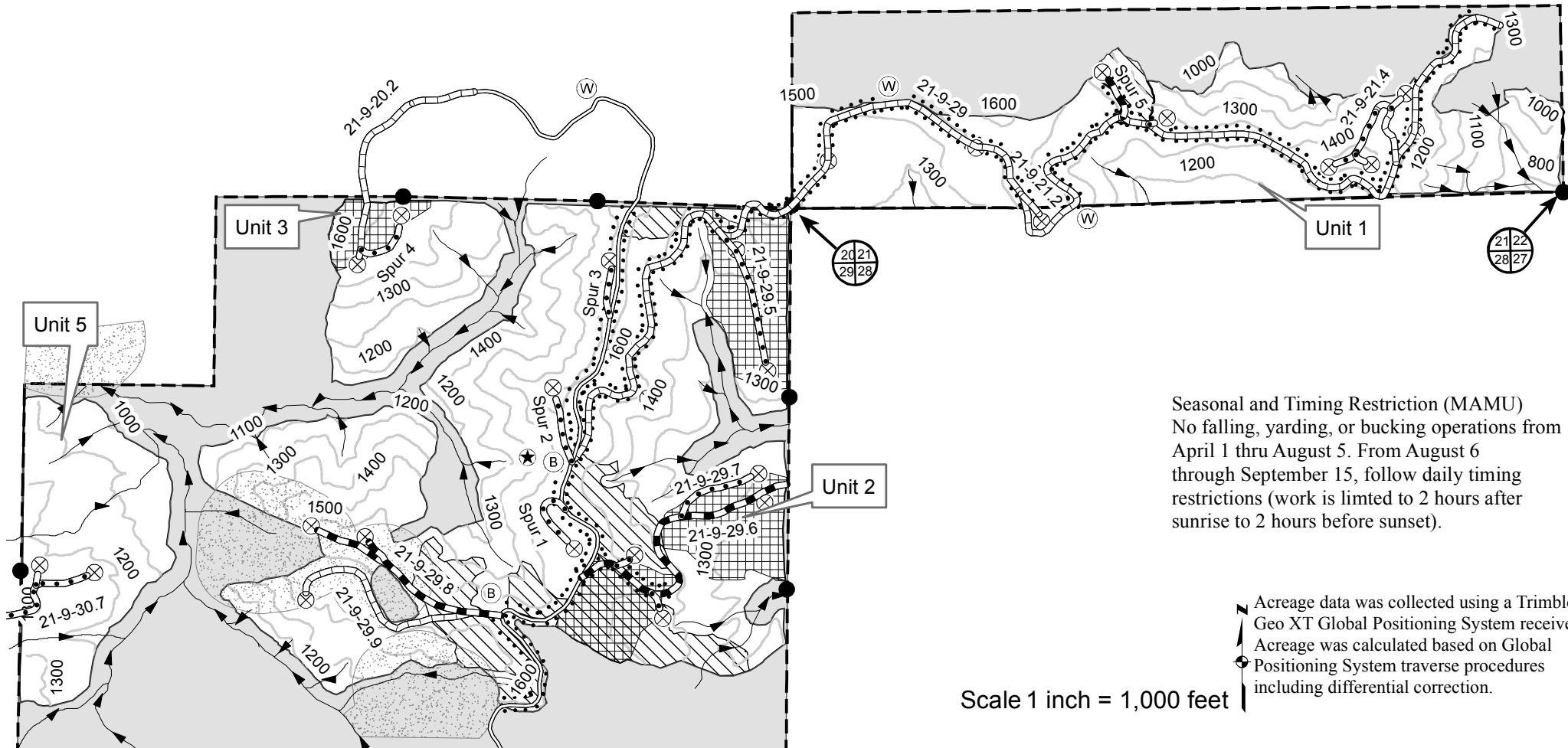
MAINTENANCE OBLIGATION PAYABLE TO BLM	\$58,564.18	7.83
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SALE NO. ORC00-TS-2018.0003
EXHIBIT A
Page 1 of 2
Fern Top CT



UNIT 1 _____	78 ACRES
UNIT 2 _____	169 ACRES
UNIT 3 _____	24 ACRES
UNIT 5 _____	31 ACRES
RW _____	4 ACRES
<hr/>	
Total _____	326 ACRES

Total Reserve Area 293 ACRES
Total Contract Area 619 ACRES



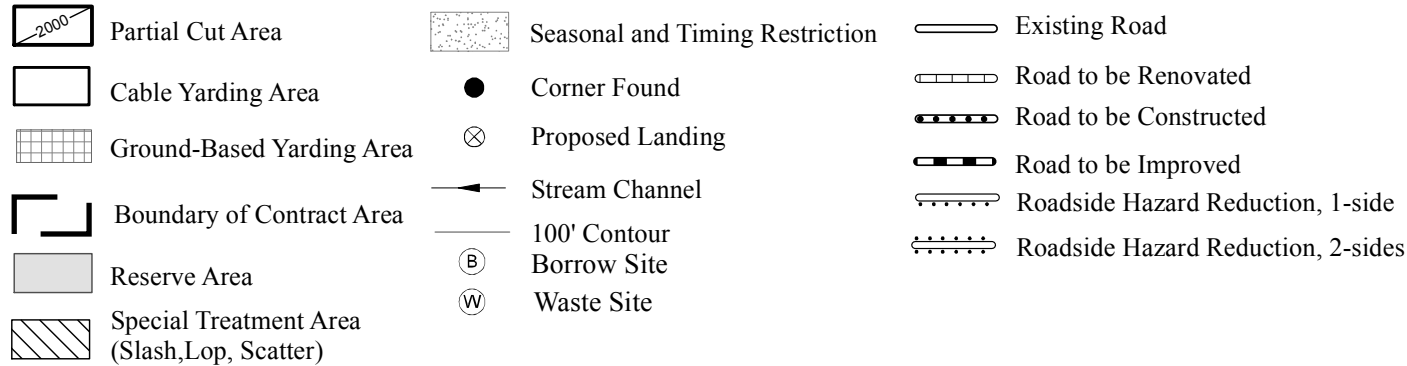
Seasonal and Timing Restriction (MAMU)
No falling, yarding, or bucking operations from April 1 thru August 5. From August 6 through September 15, follow daily timing restrictions (work is limited to 2 hours after sunrise to 2 hours before sunset).

Acreage data was collected using a Trimble Geo XT Global Positioning System receiver. Acreage was calculated based on Global Positioning System traverse procedures including differential correction.

Scale 1 inch = 1,000 feet

TIMBER SALE CONTRACT MAP
USDI-BLM COOS BAY DISTRICT
T. 21 S., R. 9 W., Secs. 29 and 32 , Will. Mer.

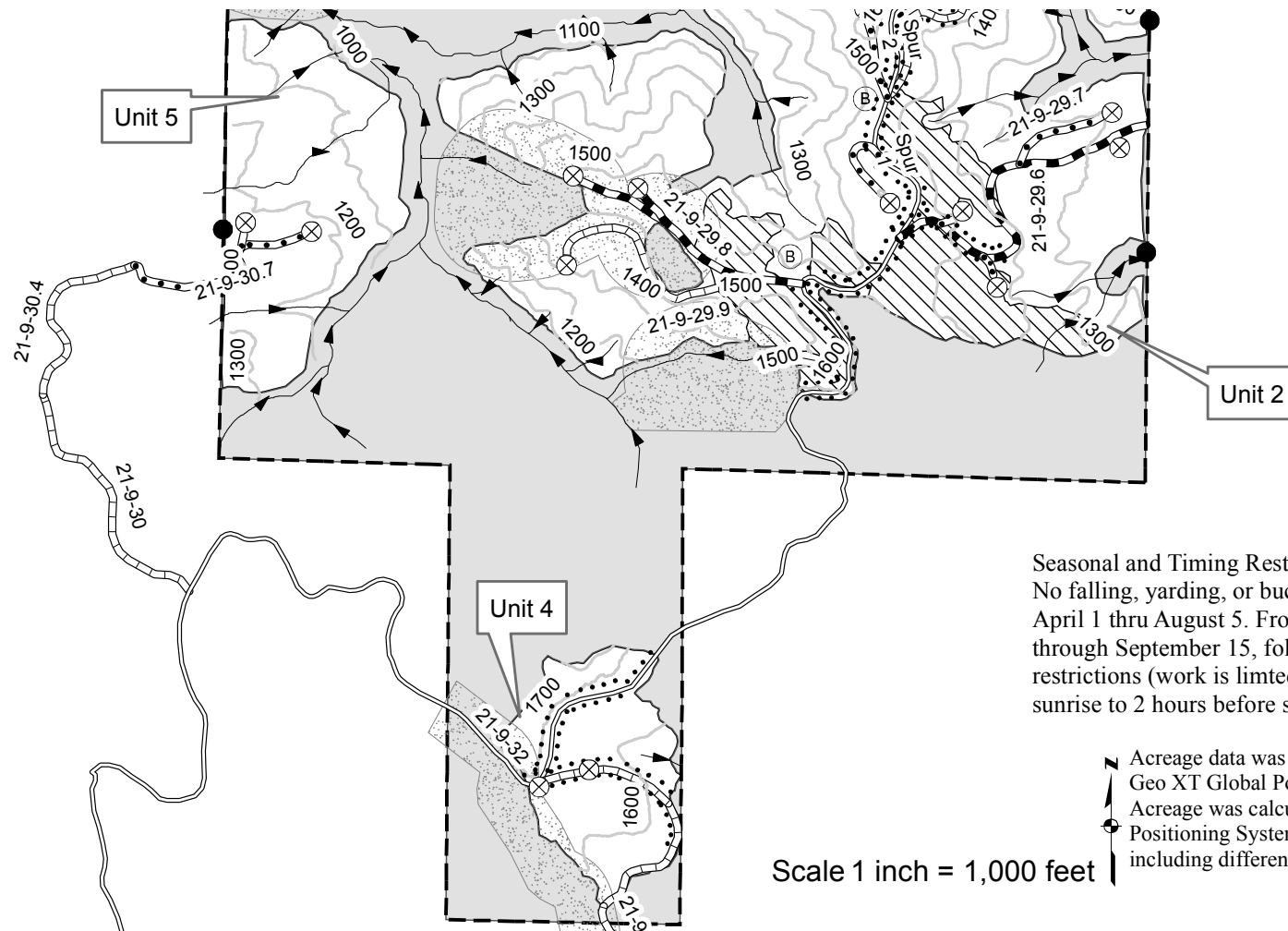
SALE NO. ORC00-TS-2018.0003
EXHIBIT A
Page 2 of 2
Fern Top CT



UNIT 4 ____ 20 ACRES
 UNIT 5 ____ 31 ACRES
 RW ____ 4 ACRES

Total ____ 55 ACRES

Total Reserve Area ____ 293 ACRES
 Total Contract Area ____ 619 ACRES

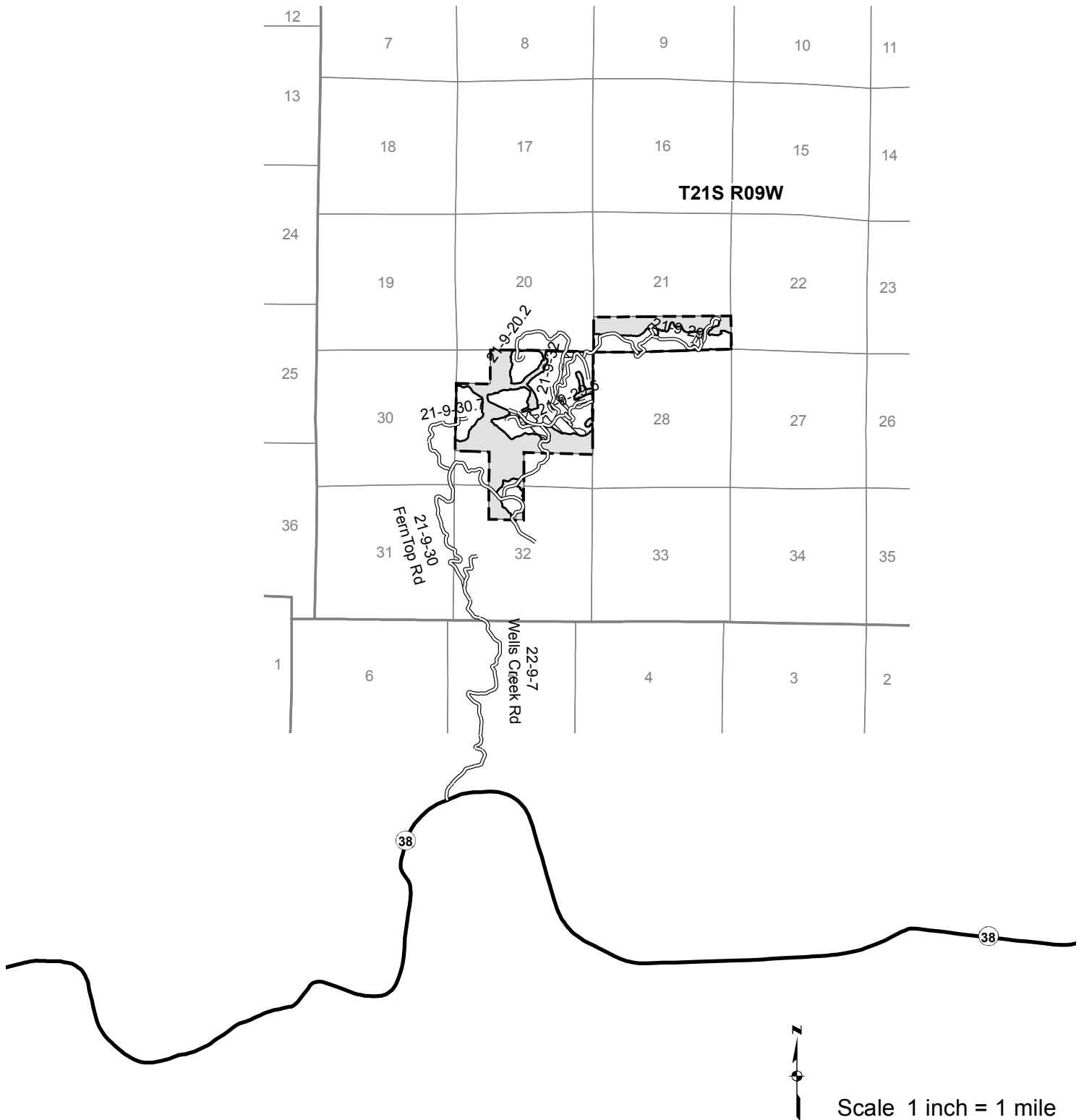


Seasonal and Timing Restriction (MAMU)
 No falling, yarding, or bucking operations from April 1 thru August 5. From August 6 through September 15, follow daily timing restrictions (work is limited to 2 hours after sunrise to 2 hours before sunset).

Acreage data was collected using a Trimble Geo XT Global Positioning System receiver.
 Acreage was calculated based on Global Positioning System traverse procedures including differential correction.

Scale 1 inch = 1,000 feet

- Highway
- County Road
- Partial Cut Area
- Reserve Area
- Boundary of Contract Area



**UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT**

**EXHIBIT B
LUMP SUM SALE**

page 1
Contract No: OR120-TS-2018.0003
Fern Top CT

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. 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 in MBF	PRICE PER UNIT	AMOUNT OF ESTIMATED VOLUME OR QUANTITY x UNIT PRICE
Douglas-fir	3561 MBF	\$161.70	\$575,813.70
grand fir	0 MBF	\$0.00	\$0.00
western hemlock	2454 MBF	\$111.00	\$272,394.00
Port-Orford-cedar	0 MBF	\$0.00	\$0.00
incense cedar	0 MBF	\$0.00	\$0.00
western redcedar	15 MBF	\$329.80	\$4,947.00
red alder	1411 MBF	\$111.40	\$157,185.40
bigleaf maple	35 MBF	\$12.00	\$420.00
Oregon myrtle	0 MBF	\$0.00	\$0.00
tanoak	0 MBF	\$0.00	\$0.00
Totals	7476 MBF		\$1,010,760.10

The apportionment of the total purchase price is as follows:

Approx. No. of Trees	UNIT NO. 1	EST. NET MBF VOL.		
3025	Douglas-fir	811	\$161.70	\$131,138.70
0	grand fir	0	\$0.00	\$0.00
3076	western hemlock	573	\$111.00	\$63,603.00
0	Port-Orford-cedar	0	\$0.00	\$0.00
0	incense cedar	0	\$0.00	\$0.00
36	western redcedar	3	\$329.80	\$989.40
2540	red alder	327	\$111.40	\$36,427.80
146	bigleaf maple	9	\$12.00	\$108.00
0	Oregon myrtle	0	\$0.00	\$0.00
0	tanoak	0	\$0.00	\$0.00
8823	TOTALS	1723		
			<u>78</u> Acres =	<u>\$2,977.78 /Ac.</u>
				Unit Total \$232,266.90

Approx. No. of Trees	UNIT NO. 2	EST. NET MBF VOL.		
6554	Douglas-fir	1758	\$161.70	\$284,268.60
0	grand fir	0	\$0.00	\$0.00
6665	western hemlock	1239	\$111.00	\$137,529.00
0	Port-Orford-cedar	0	\$0.00	\$0.00
0	incense cedar	0	\$0.00	\$0.00
79	western redcedar	8	\$329.80	\$2,638.40
5503	red alder	709	\$111.40	\$78,982.60
318	bigleaf maple	19	\$12.00	\$228.00
0	Oregon myrtle	0	\$0.00	\$0.00
0	tanoak	0	\$0.00	\$0.00
19119	TOTALS	3733		
			<u>169</u> Acres =	<u>\$2,980.16 /Ac.</u>
				Unit Total \$503,646.60

Approx. No. of Trees	UNIT NO. 3	EST. NET MBF VOL.			
931	Douglas-fir	250	\$161.70	\$40,425.00	
0	grand fir	0	\$0.00	\$0.00	
946	western hemlock	176	\$111.00	\$19,536.00	
0	Port-Orford-cedar	0	\$0.00	\$0.00	
0	incense cedar	0	\$0.00	\$0.00	
11	western redcedar	1	\$329.80	\$329.80	
781	red alder	101	\$111.40	\$11,251.40	
45	bigleaf maple	2	\$12.00	\$24.00	
0	Oregon myrtle	0	\$0.00	\$0.00	
0	tanoak	0	\$0.00	\$0.00	
2714	TOTALS	530			
			24 Acres =	\$2,981.93 /Ac. Unit Total	\$71,566.20

Approx. No. of Trees	UNIT NO. 4	EST. NET MBF VOL.			
776	Douglas-fir	208	\$161.70	\$33,633.60	
0	grand fir	0	\$0.00	\$0.00	
789	western hemlock	147	\$111.00	\$16,317.00	
0	Port-Orford-cedar	0	\$0.00	\$0.00	
0	incense cedar	0	\$0.00	\$0.00	
9	western redcedar	1	\$329.80	\$329.80	
651	red alder	84	\$111.40	\$9,357.60	
38	bigleaf maple	2	\$12.00	\$24.00	
0	Oregon myrtle	0	\$0.00	\$0.00	
0	tanoak	0	\$0.00	\$0.00	
2263	TOTALS	442			
			20 Acres =	\$2,983.10 /Ac. Unit Total	\$59,662.00

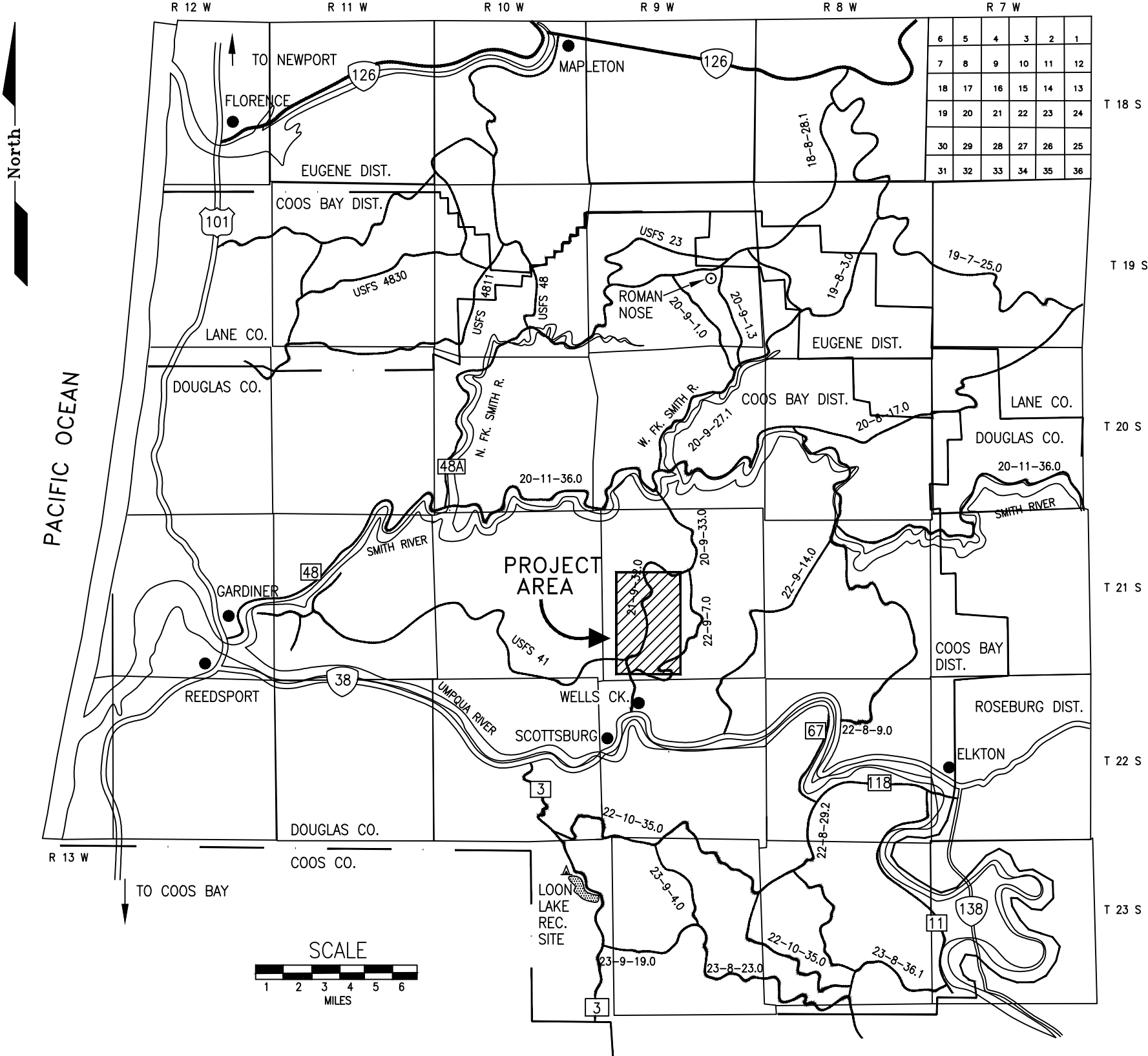
Approx. No. of Trees	UNIT NO. 5	EST. NET MBF VOL.			
1202	Douglas-fir	322	\$161.70	\$52,067.40	
0	grand fir	0	\$0.00	\$0.00	
1222	western hemlock	228	\$111.00	\$25,308.00	
0	Port-Orford-cedar	0	\$0.00	\$0.00	
0	incense cedar	0	\$0.00	\$0.00	
14	western redcedar	1	\$329.80	\$329.80	
1009	red alder	130	\$111.40	\$14,482.00	
58	bigleaf maple	3	\$12.00	\$36.00	
0	Oregon myrtle	0	\$0.00	\$0.00	
0	tanoak	0	\$0.00	\$0.00	
3505	TOTALS	684			
			31 Acres =	\$2,974.94 /Ac. Unit Total	\$92,223.20

Approx. No. of Trees	ROW	EST. NET MBF VOL.			
598	Douglas-fir	212	\$161.70	\$34,280.40	
0	grand fir	0	\$0.00	\$0.00	
360	western hemlock	91	\$111.00	\$10,101.00	
0	Port-Orford-cedar	0	\$0.00	\$0.00	
0	incense cedar	0	\$0.00	\$0.00	
14	western redcedar	1	\$329.80	\$329.80	
692	red alder	60	\$111.40	\$6,684.00	
0	bigleaf maple	0	\$0.00	\$0.00	
0	Oregon myrtle	0	\$0.00	\$0.00	
0	tanoak	0	\$0.00	\$0.00	
1664	TOTALS	364			
			4 Acres =	\$12,848.80 /Ac.	
				Unit Total	\$51,395.20

EXHIBIT C

TIMBER SALE NAME: FERN TOP CT
TIMBER SALE NO. : ORC00-TS-2018.0003

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
COOS BAY DISTRICT OFFICE
UMPQUA RESOURCE AREA



SHEET	CONTENTS
1	TITLE SHEET
2-3	WORK LOCATION MAPS
4-5	TYPICAL CROSS SECTION DETAIL
6	CULVERT INSTALLATION DETAILS
7-8	ESTIMATE OF QUANTITIES
9	ROADSIDE BRUSHING DETAIL
10	SPECIAL PROVISIONS
11-18	SPECIAL DETAILS
19-27	CONSTRUCTION DETAILS
28-54	ROAD CONSTRUCTION SPECIFICATIONS

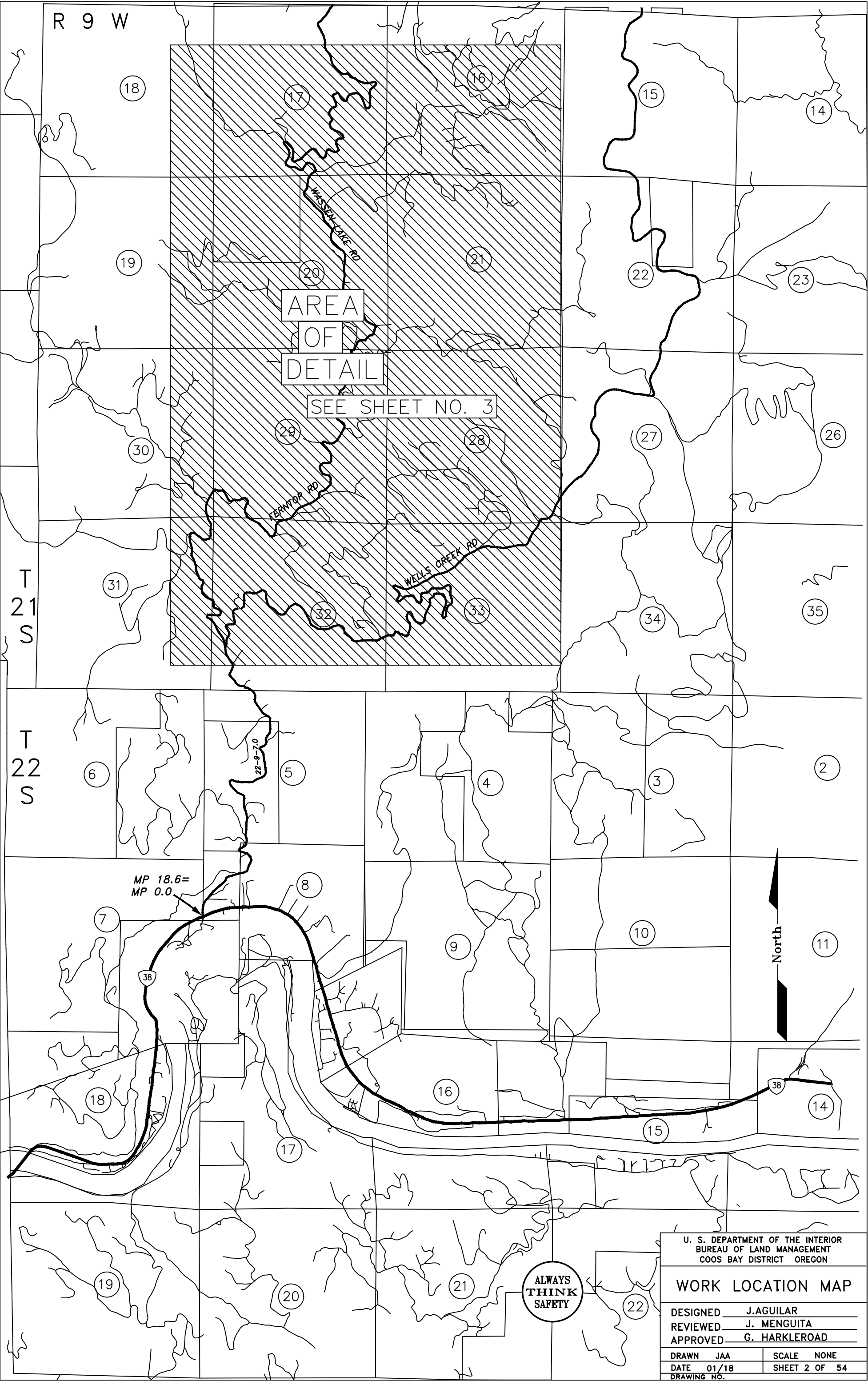
U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
COOS BAY DISTRICT OREGON

TITLE SHEET

DESIGNED J. AGUILAR
REVIEWED J. MENGUITA
APPROVED G. HARKLEROAD

DRAWN JAA
DATE 01/18
DRAWING NO.
SCALE AS SHOWN
SHEET 1 OF 54



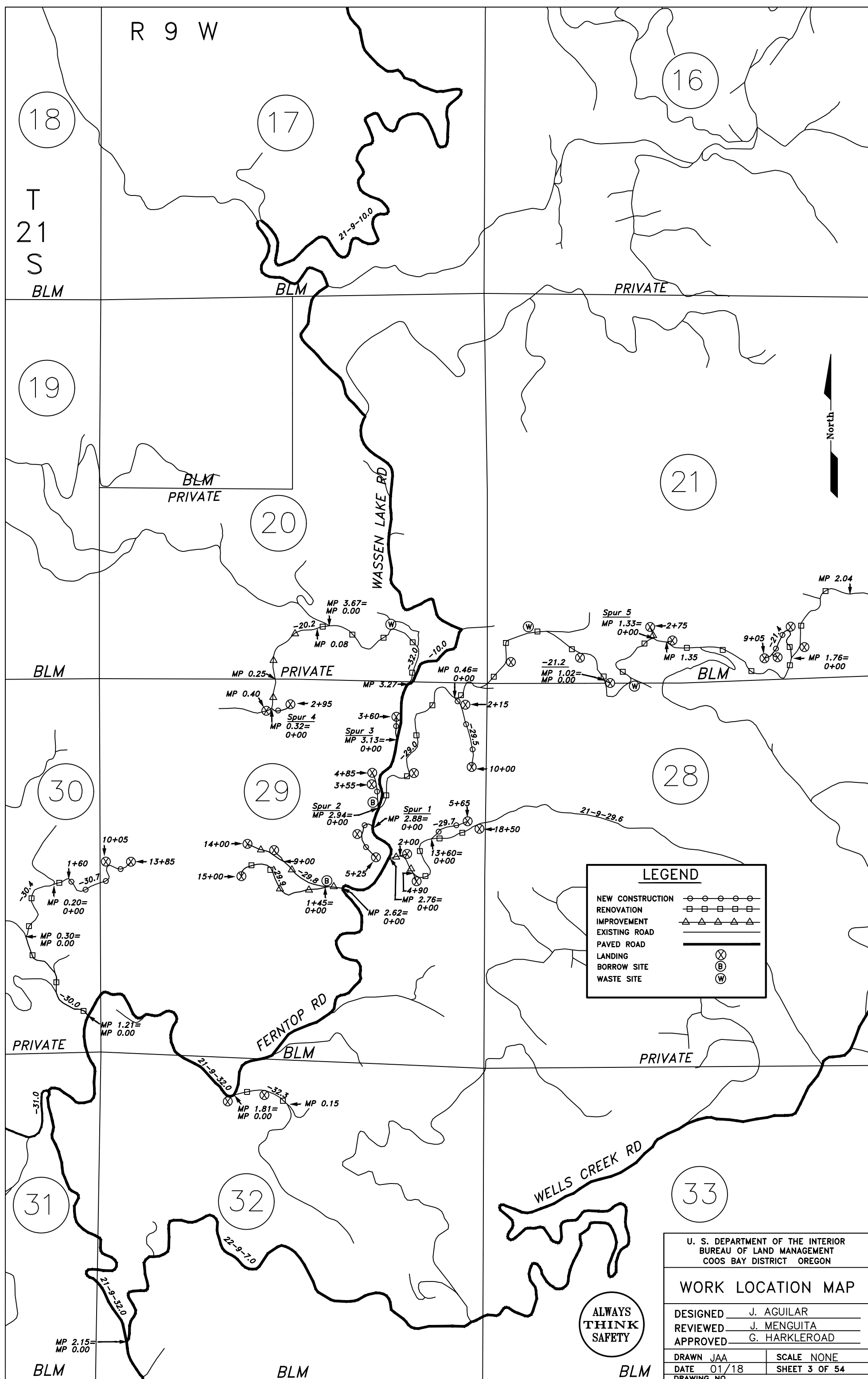


U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
COOS BAY DISTRICT OREGON

WORK LOCATION MAP

DESIGNED J. AGUILAR
REVIEWED J. MENGUITA
APPROVED G. HARKLEROAD

DRAWN JAA	SCALE NONE
DATE 01/18	SHEET 2 OF 54
DRAWING NO.	



ROAD NUMBER **	FROM MILEPOST/ STATION	TO MILEPOST/ STATION	LENGTH MILES/ STATIONS	TYPICAL SECTION TYPE	ROAD WIDTH¹		CLEARING WIDTH		BRUSHING WIDTH		SURFACING										REMARKS			
					Subgrade	Ditch	BEYOND TOP CUT	TOE FILL	EXISTING ROADS		BASE COURSE					SURFACE COURSE								
									L	R	Minimum Top Width	Comp. Depth	Type²	Grading			Minimum Top Width	Comp. Depth	Type²	Grading				
21-9-21.2 R	0.00	0.04	0.04	5	16'	0'				10	10													2% OUTSLOPE W/ NO DITCH
21-9-21.4 R	0+00	4+00	4.00	1	12'	0'				10	10													2% OUTSLOPE W/ NO DITCH
-21.4 C	4+00	9+05	5.05	1	12'	0'	10	5																2% OUTSLOPE W/ NO DITCH
21-9-29.0 R	0.00	0.83	0.83	4	16'	2'				10	10						100 CY of 1.5-0" spot rock allocated							
-29.0 R	0.83	1.60	0.77	4	16'	2'				10	10						12'	8"	D	1.5-0"				
-29.0 R	1.60	2.04	0.44	5	16'	0'				10	10						12'	8"	D	1.5-0"				2% OUTSLOPE W/ NO DITCH
21-9-29.5 C	0+00	10+00	10.00	1	12'	0'	10	5																2% OUTSLOPE W/ NO DITCH
21-9-29.6 I	0+00	4+90	4.90	5	16'	0'				10	10	13' 4"	8"	D	6-0"		12'	4"	D	3-0"				2% OUTSLOPE W/ NO DITCH
-29.6 R	4+90	18+50	13.60	1	12'	0'				10	10													2% OUTSLOPE W/ NO DITCH
21-9-29.7 C	0+00	5+65	5.65	1	12'	0'	10	5																2% OUTSLOPE W/ NO DITCH
21-9-29.8 I	0+00	14+00	14.00	5	16'	0'				10	10	13' 4"	8"	D	6-0"		12'	4"	D	3-0"				2% OUTSLOPE W/ NO DITCH
21-9-29.9 I	0+00	7+75	7.75	5	16'	0'				10	10	13' 4"	8"	D	6-0"		12'	4"	D	3-0"				2% OUTSLOPE W/ NO DITCH
-29.9 R	7+75	15+00	7.25	1	12'	0'				10	10													2% OUTSLOPE W/ NO DITCH
21-9-30.0 R	0.00	0.30	0.30	4	16'	2'				10	10						20 CY of 1.50" spot rock allocated							
21-9-30.4 R	0.00	0.20	0.20	4	16'	2'				10	10													
21-9-30.7 R	0.00	0.03	0.03	5	16'	0'				10	10													2% OUTSLOPE W/ NO DITCH

** RENOVATION = R
IMPROVEMENT = I
CONSTRUCTION = C

NOTES

1. EXTRA SUBGRADE WIDTHS
ADD TO EACH FILL SHOULDER 1 FT. FOR FILLS OF 1-6 FT. AND 2 FT. FOR FILLS OVER 6 FT. WIDEN THE INSIDE SHOULDER OF ALL CURVES AS FOLLOWS:
WHEN THE RADIUS OF CURVE EQUALS
270-800 ADD 1FT.
165-270 ADD 2FT.
120-165 ADD 3FT.
90-120 ADD 4FT.
60-90 ADD 5FT.
OR AS SHOWN ON PLANS.

MATERIALS	CUT SLOPES	FILL SLOPES
COMMON	1/2:1	1 1/2:1
SOFT ROCK & SHALE	1/2:1	1 1/2:1
SOLID ROCK	1/4:1	REPOSE

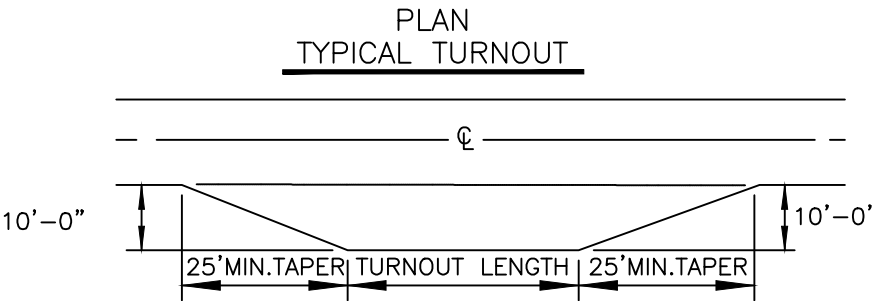
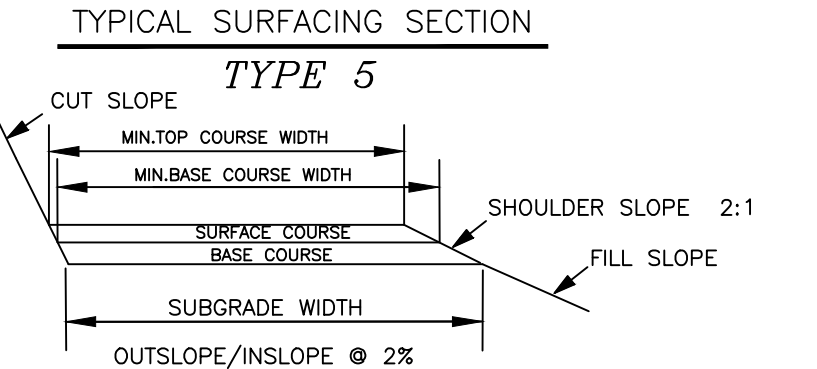
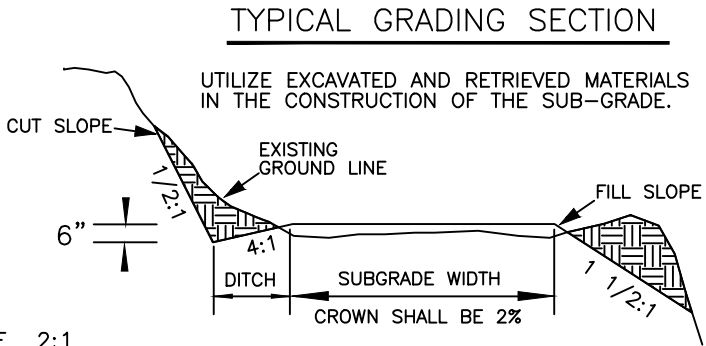
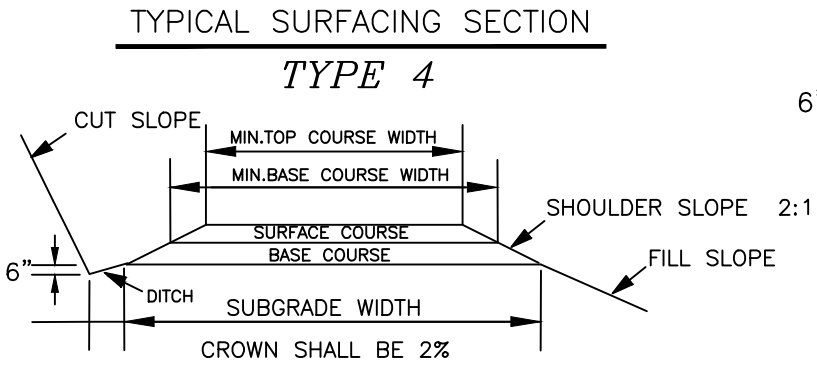
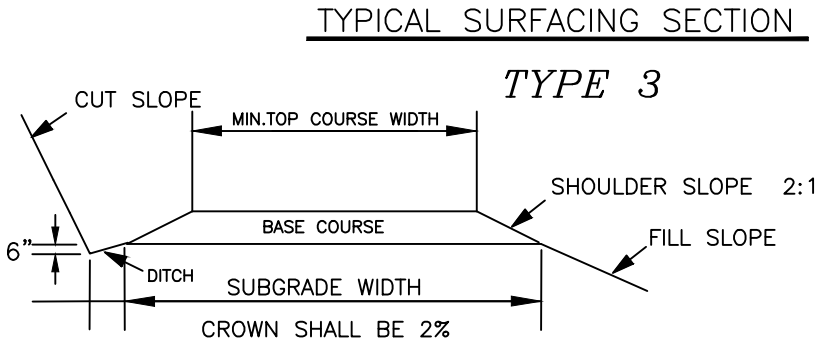
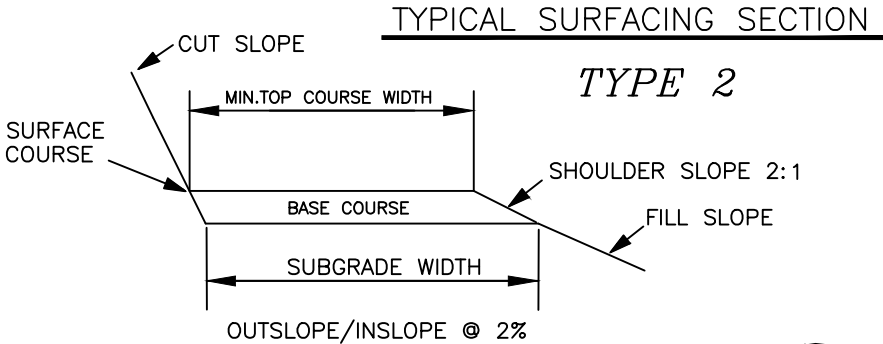
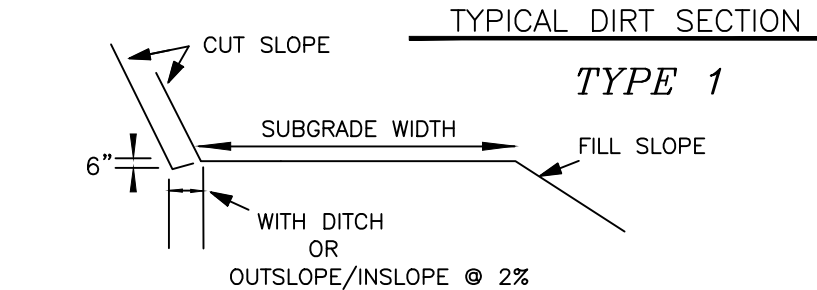
FULL BENCH CONSTRUCTION IS REQUIRED ON SIDE SLOPES EXCEEDING 60%.

2. SURFACING TYPE
A. PIT RUN ROCK MATERIAL.
B. GRID ROLLED ROCK MATERIAL.
C. SCREENED ROCK MATERIAL.
D. CRUSHED ROCK MATERIAL.
E. CLASS 'C' ASPHALT MIX.

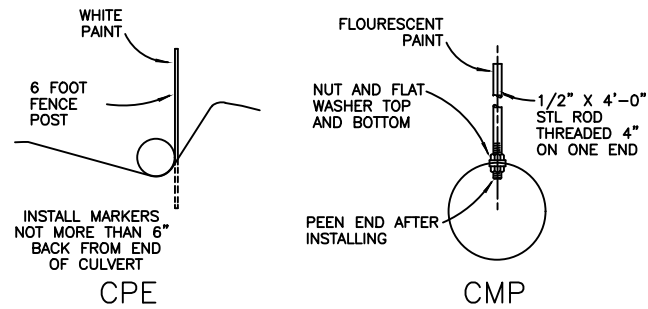
3. SURFACING
A. TURNOUTS, CURVE WIDENING AND ROAD APPROACH APRONS SHALL BE SURFACED.

4. DITCHES
A. 4:1 SLOPE FROM SUBGRADE, OR AS OTHERWISE NOTED. DEPTH MAY BE EXCEEDED TO OBTAIN REQUIRED DRAINAGE.

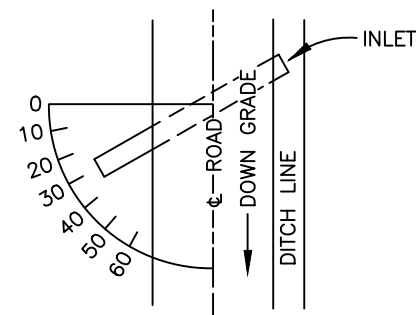
5. TURNOUTS
A. WIDTH 10 FT. IN ADDITION TO SUBGRADE WIDTH, OR AS SHOWN ON THE PLANS.
B. LOCATED APPROXIMATELY AS SHOWN ON THE ROAD PLANS OR NARRATIVE.



U. S. DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT COOS BAY DISTRICT OREGON	
TYPICAL CROSS SECTION DETAIL	
DESIGNED	T. AGUILAR
REVIEWED	J. MENGUITA
APPROVED	G. HARKLEROAD
DRAWN	JRM
SCALE	NONE
DATE	01/18
SHEET	4 OF 54
DRAWING NO.	



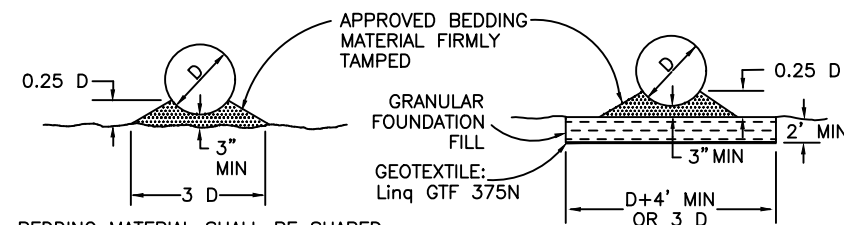
CULVERT MARKERS



SKEW DIAGRAM

HORIZONTAL SKEW SHALL BE AS SHOWN, OR PERPENDICULAR TO DITCH LINE IN GRADE DIPS. THE GRADE OF CROSSDRAINS SHALL BE AT LEAST 2% GREATER THAN THE GRADE OF THE DITCH, WITH A MAXIMUM GRADIENT OF 5%.

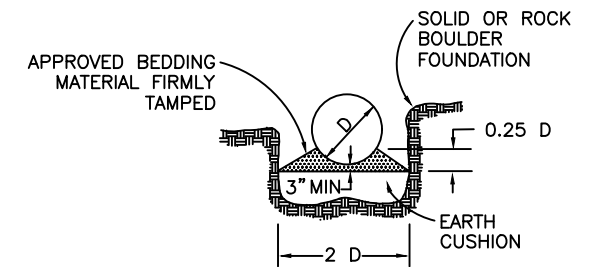
BEDDING OF CULVERTS



BEDDING OF CULVERTS ON STABLE NATURAL GROUND FOUNDATION OR COMPACTED EMBANKMENT

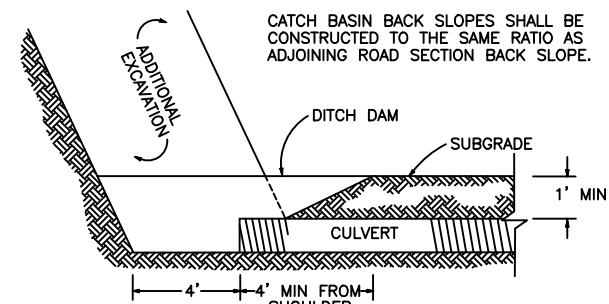
BEDDING MATERIAL SHALL BE SHAPED TO FIT THE BOTTOM OF THE CULVERT.

BEDDING OF CULVERTS ON SOFT SPONGY OR UNSTABLE SOIL FOUNDATION

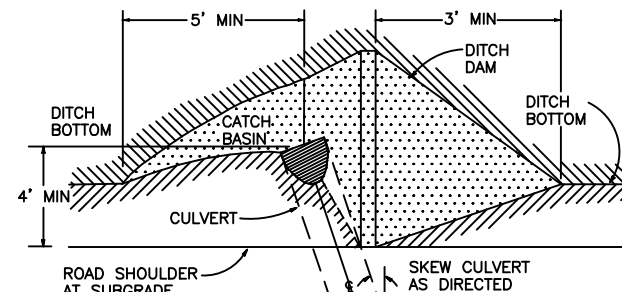


BEDDING MATERIAL SHALL BE SHAPED TO FIT THE BOTTOM OF THE CULVERT. EARTH CUSHIONING OF SILTY CLAY LOAM OR SAND MAY BE USED IF MATERIAL CAN BE PLACED IN THE DRY CONDITION. IF THE EXCAVATION IS WET, USE GRANULAR FOUNDATION FILL MATERIAL. MAINTAIN 8" MIN. DEPTH BETWEEN HIGH POINTS OF ROCKS AND/OR BOULDERS AND THE BOTTOM OF THE CULVERT.

BEDDING OF CULVERT IN SOLID ROCK OR BOULDER FOUNDATION

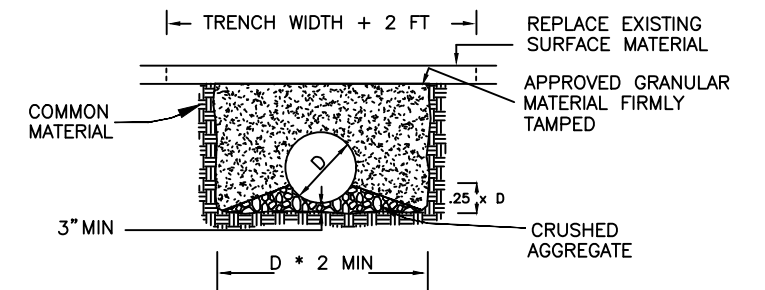
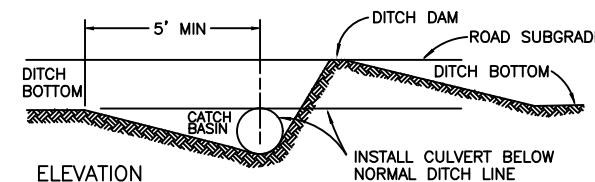


CROSS SECTION AT CATCH BASIN



PLAN VIEW

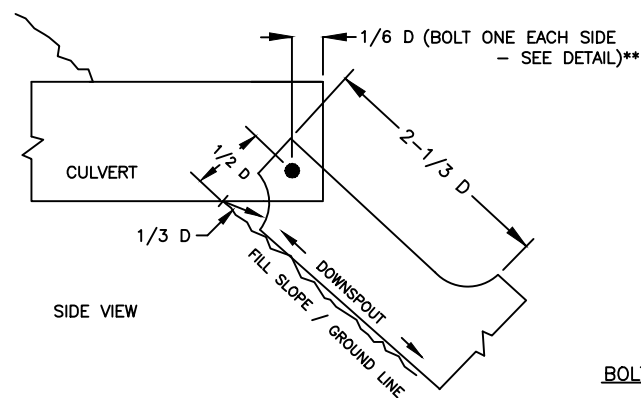
CATCH BASIN



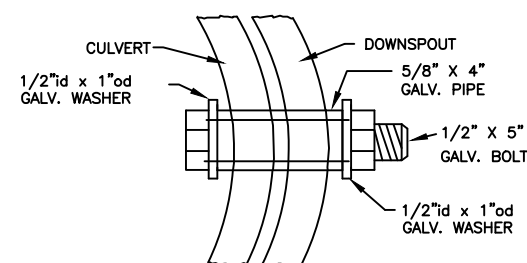
BEDDING MATERIAL SHALL BE SHAPED TO FIT THE BOTTOM OF THE CULVERT. BACKFILL MATERIAL SHALL BE APPROVED GRANULAR MATERIAL.

BEDDING OF CULVERTS ON EXISTING SURFACED ROADS

USE "ADJUSTABLE ELBOW" FOR CPE AND CMP DOWNSPOUTS



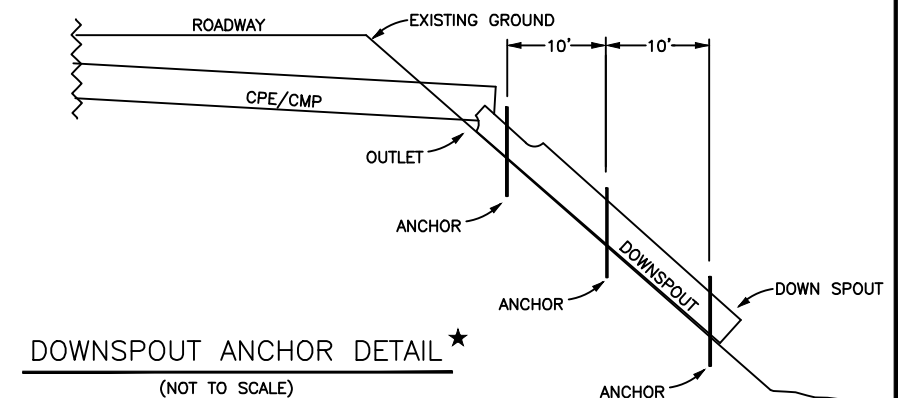
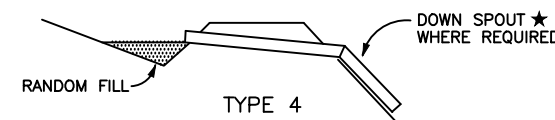
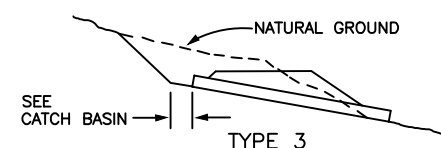
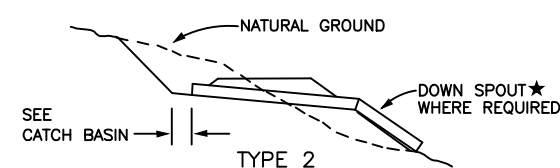
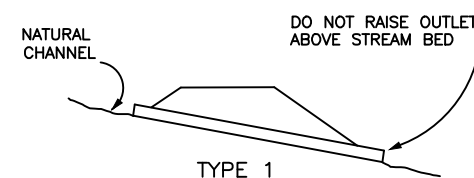
BOLT ASSEMBLY DETAIL**



★ NOTE: ANCHOR DOWNSPOUTS ACCORDING TO SECTION 407b OF THE ROAD CONSTRUCTION SPECIFICATIONS

BANDS SHALL MEET MANUFACTURER'S SPECIFICATIONS

CULVERT INSTALLATION TYPES



DOWNSPOUT ANCHOR DETAIL ★

(NOT TO SCALE)

★ INSTALL DOWNSPOUT ANCHORS IN ACCORDANCE WITH SECTION 407b OF THE SPECIFICATIONS.



U. S. DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT COOS BAY DISTRICT OREGON	
CULVERT INSTALLATION DETAILS	
DESIGNED <u>T. AGUILAR</u>	
REVIEWED <u>J. MENGUITA</u>	
APPROVED <u>G. HARKLEROD</u>	
DRAWN <u>JRM</u>	SCALE <u>NONE</u>
DATE <u>01/18</u>	SHEET <u>6</u> OF <u>54</u>
DRAWING NO.	

ESTIMATE OF QUANTITIES*

ROAD NUMBER	SURFACING					OTHER			SEEDING		OTHER (SEDIMENT CONTROL DEVICES)
	(6-0") ROCK	(3-0") ROCK	(3-0") SPOT ROCK	(1.5-0") SURFACE ROCK	(1.5-0") SPOT ROCK	CULVERT ROCK	RIPRAP (CLASS 4)	GEO- TEXTIILE	SEED, FERTILIZE AND MULCH		
									1800	1800	
SECTION NO.	1000	1000	1000	1200	1200	400	1400		DRY	HYDRO	
UNITS	C.Y.	C.Y.	C.Y.	C.Y.	C.Y.	C.Y.	C.Y.	S.Y.	ACRES	ACRES	EACH
21-9-20.2	871 (D)	355 (A)	(D)	88 (C)	(C)	(C)	(A)				
21-9-21.2	(D)	(A)	(D)	(C)	(C)	(C)	(A)				
21-9-21.4	(D)	(A)	(D)	(C)	(C)	(C)	(A)		0.6		
21-9-29.0	340 (D)	100 (A)	(D)	2941 (C)	100 (C)	(C)	(A)		0.3		
21-9-29.5	(D)	(A)	(D)	(C)	(C)	(C)	(A)		0.6		
21-9-29.6	500 (D)	154 (A)	(D)	(C)	(C)	(C)	(A)		0.3		
21-9-29.7	(D)	(A)	(D)	(C)	(C)	(C)	(A)		0.4		
21-9-29.8	859 (D)	363 (A)	(D)	(C)	(C)	(C)	(A)		0.4		
21-9-29.9	373 (D)	161 (A)	(D)	(C)	(C)	(C)	(A)		0.3		
21-9-30.0	(D)	(A)	(D)	(C)	20 (C)	(C)	(A)		0.2		
21-9-30.4	(D)	(A)	(D)	(C)	(C)	(C)	(A)				
21-9-30.7	(D)	(A)	(D)	(C)	(C)	(C)	(A)		0.8		
21-9-32.0	50 (D)	(A)	(D)	(C)	50 (C)	(C)	(A)				
21-9-32.3	50 (D)	(A)	(D)	(C)	(C)	(C)	(A)		0.1		
Spur 1	(D)	(A)	(D)	(C)	(C)	(C)	(A)		0.3		
Spur 2	(D)	(A)	(D)	(C)	(C)	(C)	(A)		0.3		
Spur 3	223 (D)	75 (A)	(D)	(C)	(C)	(C)	(A)		0.3		
Spur 4	(D)	(A)	(D)	(C)	(C)	(C)	(A)		0.2		
Spur 5	164 (D)	(A)	(D)	(C)	(C)	(C)	(A)				
Swing road1	(D)	(A)	(D)	(C)	(C)	(C)	(A)		0.2		
	(D)	(A)	(D)	(C)	(C)	(C)	(A)				
	(D)	(A)	(D)	(C)	(C)	(C)	(A)				
	(D)	(A)	(D)	(C)	(C)	(C)	(A)				
	(D)	(A)	(D)	(C)	(C)	(C)	(A)				
	(D)	(A)	(D)	(C)	(C)	(C)	(A)				
	(D)	(A)	(D)	(C)	(C)	(C)	(A)				
	(D)	(A)	(D)	(C)	(C)	(C)	(A)				
	(D)	(A)	(D)	(C)	(C)	(C)	(A)				
	(D)	(A)	(D)	(C)	(C)	(C)	(A)				
	(D)	(A)	(D)	(C)	(C)	(C)	(A)				
	(D)	(A)	(D)	(C)	(C)	(C)	(A)				
	(D)	(A)	(D)	(C)	(C)	(C)	(A)				
	(D)	(A)	(D)	(C)	(C)	(C)	(A)				
TOTALS	3430 (D)	1208 (A)	(D)	3029 (C)	170 (C)	(C)	(A)		5.3		

* FOR INFORMATIONAL USE ONLY. QUANTITIES SHOWN ARE NOT PAY ITEMS.
ALL ROCK QUANTITIES ARE TRUCK (LOOSE) MEASUREMENT QUANTITIES.

SECTION	GRADE	SIZE
400	C	1 1/2"
700	B	PITRUN
1000	A	3"
	D	6"
1100	B	4"
1200	C	1 1/2"
1400	A	8"-24"
CHIP SEAL ROCK	S	3/4"

GRADE INDICATED IN CIRCLE ○

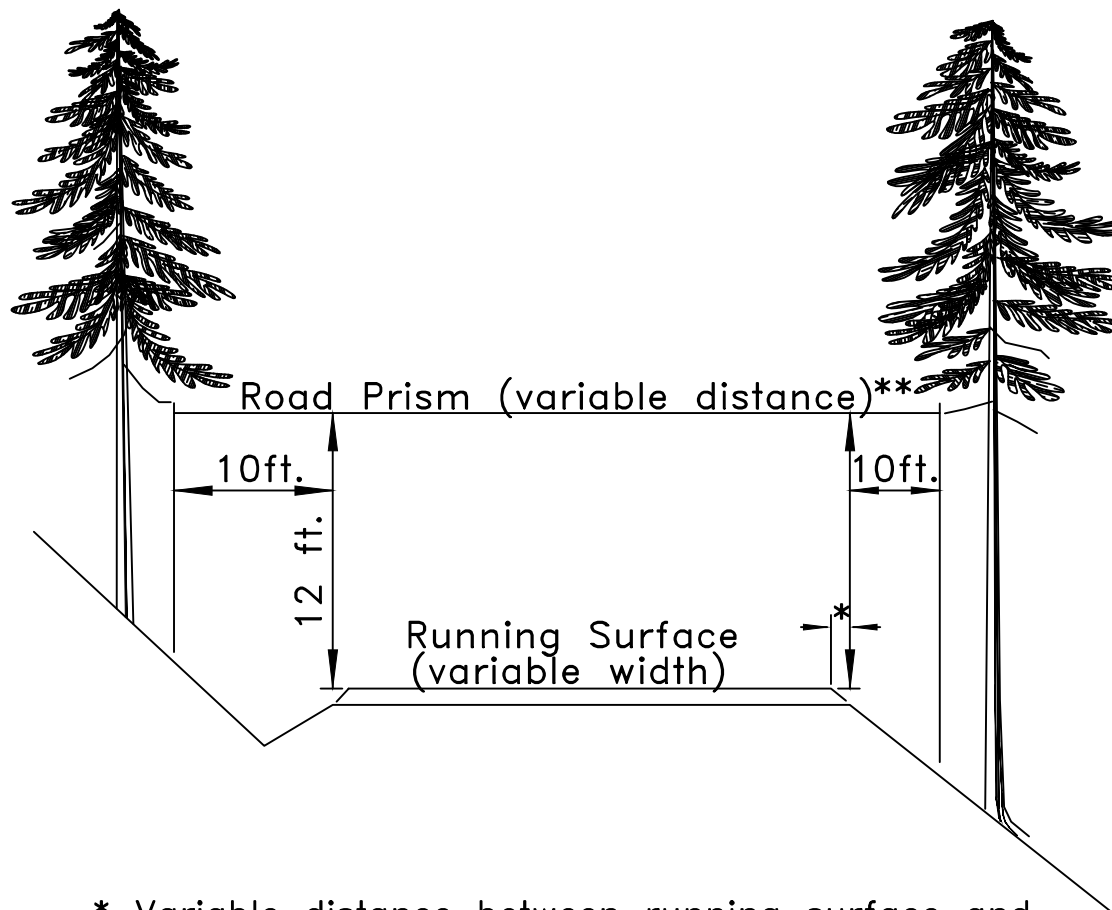


U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
COOS BAY DISTRICT OREGON

ESTIMATE OF QUANTITIES

DESIGNED T. AGUILAR
REVIEWED J. MENGUITA
APPROVED G. HARKLEROD

DRAWN	TA	SCALE	NONE
DATE	01/18	SHEET	8 OF 54
DRAWING NO.			



* 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 free of all over-hanging limbs and branches 12 feet in elevation above the running surface.



U. S. DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT COOS BAY DISTRICT OREGON	
ROADSIDE BRUSHING DETAIL	
DESIGNED	T. AGUILAR
REVIEWED	J. MENGUITA
APPROVED	G. HARKLEROAD
DRAWN TA	SCALE NONE
DATE 01/18	SHEET 9 OF 54
DRAWING NO.	

SPECIAL PROVISIONS

Bituminous surfaced roads

The Purchaser shall avoid damaging any bituminous surfaced roads, and will be responsible for the repair of any road damaged as a result of the activity. Bituminous roads shall be left in the same condition that they were prior to logging operations.

The bituminous road surface at any roadside landing locations will be protected by applying a layer of wood chips, hog fuel, or other material (excluding rock or soil) approved by the Authorized Officer, to a depth sufficient to prevent damage from yarding and loading activities.

Roadwork restrictions

All road construction, renovation, and decommissioning work shall be done during the dry construction season, avoiding precipitation periods, between June 1 and October 15.

Seasonal restrictions apply to summer haul roads.

Native Seed

The Government will furnish native seed mix. The Purchaser shall pick up the native seed mix at the North Bend, BLM warehouse. The Purchaser shall give the Authorized Officer, or Jeanne Standley at (541) 751 4283, a 3 day notice in advance before pick up. The native seed mix shall be applied at the rate of 30 pounds per acre. Sand can be mixed with the native seed to aid broadcast seeding.

Also, a generic fertilizer of 16-20-16 NPK shall be used at a rate of 200 pounds per acre. Approved mulch material shall be applied at the rate of 3000 pounds per acre. Seeding shall be applied according to the dates specified in road specification 1803.

Over-wintering

All natural-surfaced new construction shall not over-winter without being either decommissioned, as specified in the Exhibit D, or winterized, in accordance with the 1700 Erosion Control specifications, prior to the first rains of the wet season, but no later than October 15 in the year of construction.

When haul road grades exceed 20 percent slope

The vehicle or machine must be approved by the manufacturer for operation on the steeper grades. Additional precautions must be taken, such as assisting or snubbing the vehicle or machine down the slope

SPECIAL DETAILS

RENOVATION OF ROAD NO. 21-9-32.0 (Fern Top Road)
Milepost 3.27 to Milepost 3.67

<u>Milepost</u>	<u>Remarks</u>
0.00	Junction w/ Road No. 22-9-7.0 (Wells Creek Road) right.
NOTE:	At milepost 3.27, begin renovation, surfacing, and road brushing in accordance to Sections 500, 1200, and 2100 of the Road Specifications, Typical Cross Section Sheet No. 5, and Roadside Brushing Detail Sheet No.9.
NOTE:	Place 50 CY of 1.5-0" spot rock from MP 3.27 to 3.67 conforming to Section 1200 of the Road Specifications.
1.21	Junction, renovate Road No. 21-9-30.0 left.
1.80	Existing landing right, place 50 CY of 6-0" crushed aggregate in accordance w/ Sec.1000.
1.81	Junction, renovate Road No. 21-9-32.3 right.
2.62	Junction, improve Road No. 21-9-29.8 left.
2.76	Junction, renovate Road No. 21-9-29.6 right.
2.88	Junction, construct Spur 1 left.
2.94	Junction, construct Spur 2 left.
2.94	Junction, renovate Road No. 21-9-29.0 right.
3.13	Junction, construct Spur 3 left.
3.27	Junction w/ Road No. 21-9-10.0 (Wassen Lake Road) right. Begin renovation.
3.47	Remove series of bank sloughs, place spoils in adjacent truck turnout.
3.67	Junction, renovate Road No. 21-9-20.2 left. End renovation.

RENOVATION OF ROAD NO. 21-9-20.2
Milepost 0.00 to Milepost 0.08

<u>Milepost</u>	<u>Remarks</u>
0.00	Junction w/ Road No. 21-9-32.0 @ MP 3.67. Begin renovation, surfacing, and roadside brushing in accordance to Sections 500, 1200 and 2100 of the Road Specifications, Typical Cross Section Sheet No. 4, and Roadside Brushing Detail Sheet No. 9.
NOTE:	Place 4" lift of 1.5-0" crushed aggregate surfacing from MP 0.00 to MP 0.08 conforming to Section 1200 of the Road Specifications.
0.08	End renovation Begin improvement

IMPROVEMENT OF ROAD NO. 21-9-20.2
Milepost 0.08 to Milepost 0.40

<u>Milepost</u>	<u>Remarks</u>
0.08	Begin improvement, surfacing, and roadside brushing in accordance with Sections 500, 1000, and 2100 of the Road Specifications, Typical Cross Section Sheet No. 4, and Roadside Brushing Detail Sheet No. 9.
NOTE:	From MP 0.08 to 0.40; install a 8" lift of compacted 6-0" jaw run, capped with a 4" lift of compacted 3-0" crushed aggregate surfacing (combined equaling 12" lift), conforming to Section 1000 of the Road Specifications.
0.25	Approximate property line, leaving private - entering BLM.
0.32	Construct Spur 4 left.
0.40	Existing landing. End improvement.

RENOVATION OF ROAD NO. 21-9-21.2
Milepost 0.00 to Milepost 0.04

<u>Milepost</u>	<u>Remarks</u>
0.00	Junction w/ Road No. 21-9-29.0 @ MP 1.02. Begin renovation and roadside brushing in accordance to Sections 500 and 2100 of the Road Specifications, Typical Cross Section Sheet No. 4, and Roadside Brushing Detail Sheet No. 9.
0.04	Existing end landing. End renovation.

RENOVATION OF ROAD NO. 21-9-21.4
 Station 0+00 to Station 4+00

<u>Station</u>	<u>Remarks</u>
0+00	Junction w/ Road No. 21-9-29.0 @ MP 1.76. Begin clearing & grubbing, excavation & embankment, renovation, soil stabilization, and roadside brushing in accordance to Sections 200, 300, 500, 1800, and 2100 of the Road Specifications, Typical Cross Section Sheet No. 4, and Roadside Brushing Detail Sheet No. 9.
2+80	Construct landing w/approach right.
4+00	End renovation. Begin new construction.

RENOVATION OF ROAD NO. 21-9-29.0
 Milepost 0.00 to Milepost 2.04

<u>Milepost</u>	<u>Remarks</u>
0.00	Junction W/21-9-32.0 @ MP 2.94 Begin clearing & grubbing, excavation & embankment, culvert installation, renovation, surfacing, soil stabilization, and roadside brushing in accordance to Sections 200, 300, 400, 500, 1000, 1200, 1800, and 2100 of the Road Specifications, Typical Cross Section Sheet No. 4, Culvert Installation Detail Sheet No.6, and Roadside Brushing Detail Sheet No. 9.
NOTE:	Place 100 CY of 1.5-0" spot rock from MP 0.00 to MP 0.83 conforming to Section 1200 of the Road Specifications.
NOTE:	Place 8" lift of 1.5-0" crushed aggregate surfacing from MP 0.83 to MP 2.04 conforming to Section 1200 of the Road Specifications.
NOTE:	From MP 1.33 to MP 1.60 utilize ditchouts to relieve ditches. Beginning at MP 1.60, or as directed by the Authorized Officer, primary road cross drainage will be achieved by outsloping road.
0.06	Existing 18" X 30' CMP, install new culvert marker.
0.13	Existing 18" X 30' CMP, install new culvert marker.
0.15	Existing truck turnout left, 50 CY 6-0" crushed aggregate allocated
0.20	Existing 18" X 30' CMP, install new culvert marker.
0.33	Existing 18" X 30' CMP, install new culvert marker.
0.43	Existing 18" X 30' CMP.
0.46	Construct Road No. 21-9-29.5 right.

<u>Milepost</u>	<u>Remarks</u>
0.49	Existing 18" X 30' CMP.
0.53	Existing 18" X 30' CMP.
0.63	Existing 18" X 30' CMP.
0.66	Low spot in road with poorly defined ditch. Scarify roadway to subgrade, compact, then place 100 CY of 3-0" crushed aggregate to elevate road & attenuate ditch. Ensure gradient of ditch drops toward existing culvert at MP 0.68.
0.67	Construct truck turnout right, 60 CY of 6-0" crushed aggregate allocated.
0.68	Existing 18" X 30' CMP.
0.71	Existing 18" X 30' CMP.
0.81	Existing truck turnout left, potential spoil site for ditch cleanout debris.
0.83	Existing 18" X 30' CMP. Culvert 75% filled with sediment. Clear sediment and other debris lodged in the barrel of the pipe per section 506.
0.92	Construct landing left. 80 CY of 6-0" crushed aggregate allocated. Grade of landing shall not exceed 5%.
0.94	Install new 18" X 30' CPP with culvert marker.
1.02	Junction, renovate SPUR 5 left
1.12	Remove bank slough, placing spoils at landing near MP 1.13. Inslope road and establish ditch above and below this point to prevent further nicking of road fill.
1.19	Install new 18" X 30' CPP with culvert marker.
1.26	Install new 18" X 30' CPP with culvert marker.
1.31	Install new 18" X 30' CPP with culvert marker.
1.33	Junction, improve SPUR 5 left.
1.35	Construct landing w/approach left, 100 CY 6-0" crushed aggregate allocated. Grade of landing shall not exceed 5%.
1.76	Junction, renovate Road No. 21-9-21.4 left
1.81	Construct landing left. 50 CY of 6-0" crushed aggregate allocated. Grade of landing shall not exceed 5%.
2.04	End renovation.

IMPROVEMENT OF ROAD NO. 21-9-29.6
Station 0+00 to Station 4+90

<u>Station</u>	<u>Remarks</u>
0+00	Junction W/21-9-32.0 @ MP 2.76. Reestablish approach from Ferntop Road. Suitable embankment material to be excavated from construction of Spur 2. Begin clearing & grubbing, excavation & embankment, improvement, surfacing, soil stabilization, and roadside brushing in accordance with Sections 200, 300, 500, 1000, 1800, and 2100 of the Road Specifications, Typical Cross Section Sheet No. 4, and Roadside Brushing Detail Sheet No. 9. NOTE: From Station 0+00 to 4+90, install a 8" lift of compacted 6-0" jaw run; capped with a 4" lift of compacted 3-0" crushed aggregate surfacing (combined equaling 12" lift); conforming to Section 1000 of the Road Specifications. 2+00 Construct landing with approach left. Surface approach with 8" lift of compacted 6-0" jaw run; capped with a 4" lift of compacted 3-0" crushed aggregate (combined equaling 12" lift). 50 CY 6-0" crushed aggregate allocated for landing. Grade of landing shall not exceed 5%. 4+90 Construct landing with approach right. Surface approach with 8" lift of compacted 6-0" jaw run; capped with a 4" lift of compacted 3-0" crushed aggregate (combined equaling 12" lift). 50 CY 6-0" crushed aggregate allocated for landing. Grade of landing shall not exceed 5%. End improvement. Begin renovation.

RENOVATION OF ROAD NO. 21-9-29.6
Station 4+90 to Station 18+50

<u>Station</u>	<u>Remarks</u>
4+90	Begin clearing & grubbing, excavation & embankment, renovation, soil stabilization, and roadside brushing in accordance with Sections 200, 300, 500, 1800, and 2100 of the Road Specifications, Typical Cross Section Sheet No. 4, and Roadside Brushing Detail Sheet No. 9.
13+60	Junction, Construct 21-9-29.7 left.
18+50	Construct landing right. Grade of landing shall not exceed 5%. End renovation.

IMPROVEMENT OF ROAD NO. 21-9-29.8
Station 0+00 to Station 14+00

<u>Station</u>	<u>Remarks</u>
0+00	Junction W/21-9-32.0 @ MP 2.62 Begin clearing & grubbing, excavation & embankment, improvement, surfacing, soil stabilization, and roadside brushing in accordance with Sections 200, 300, 500, 1000, 1800, and 2100 of the Road Specifications, Typical Cross Section Sheet No. 4, and Roadside Brushing Detail Sheet No. 9. Reestablish approach from Ferntop Road. Suitable embankment material to be excavated at 1+45. NOTE: From Station 0+00 to 14+00, install a 8" lift of compacted 6-0" jaw run; capped with a 4" lift of compacted 3-0" crushed aggregate surfacing (combined equaling 12" lift); conforming to Section 1000 of the Road Specifications.
1+45	Junction, improve Road No. 21-9-29.9 left. Location of borrow site.
9+00	Construct landing with approach right. Surface approach with 8" lift of compacted 6-0" jaw run; capped with a 4" lift of compacted 3-0" crushed aggregate (combined equaling 12" lift). 50 CY 6-0" crushed aggregate allocated for landing. Grade of landing shall not exceed 5%.
11+50	Existing truck turnout right. Surfacing allocated.
14+00	Existing end landing. 50 CY 6-0" crushed aggregate allocated.

IMPROVEMENT OF ROAD NO. 21-9-29.9
Station 0+00 to Station 7+75

<u>Station</u>	<u>Remarks</u>
0+00	Junction W/21-9-29.8 @ 1+45 Begin improvement, surfacing, soil stabilization, and roadside brushing in accordance with Sections 200, 300, 500, 1000, 1800, and 2100 of the Road Specifications, Typical Cross Section Sheet No. 4, and Roadside Brushing Detail Sheet No. 9. NOTE: From Station 0+00 to 7+75, install a 8" lift of compacted 6-0" jaw run; capped with a 4" lift of compacted 3-0" crushed aggregate surfacing (combined equaling 12" lift); conforming to Section 1000 of the Road Specifications.
7+75	End improvement. Begin renovation.

RENOVATION OF ROAD NO. 21-9-29.9
 Station 7+75 to Station 15+00

<u>Station</u>	<u>Remarks</u>
7+75	Begin clearing & grubbing, excavation & embankment, renovation, soil stabilization, and roadside brushing in accordance with Sections 200, 300, 500, 1800, and 2100 of the Road Specifications, Typical Cross Section Sheet No. 4, and Roadside Brushing Detail Sheet No. 9.
14+00	Begin adjustment to road alignment to elevate location of end landing.
15+00	Construct end landing. Grade of landing shall not exceed 5%. End renovation.

RENOVATION OF ROAD NO. 21-9-30.0
 Milepost 0.00 to Milepost 0.30

<u>Milepost</u>	<u>Remarks</u>
0.00	Junction W/21-9-32.0 @ MP 1.21 Begin culvert installation, renovation, surfacing, soil stabilization, and roadside brushing in accordance with Sections 400, 500, 1000, 1800, and 2100 of the Road Specifications, Typical Cross Section Sheet No. 4, Culvert Installation Detail Sheet No.6, and Roadside Brushing Detail Sheet No. 9.
0.06	Remove existing CMP and dispose of in a legal manner off U.S. Government lands. Install a new 24" x 30' CPP and new 20' full round downspout. Install a new culvert marker. 10 CY of 1.5-0" crushed aggregate allocated for road surfacing.
0.22	Remove existing CMP and dispose of in a legal manner off U.S. Government lands. Install a new 24" x 30' CPP and new 20' full round downspout. Install a new culvert marker. 10 CY of 1.5-0" crushed aggregate allocated for road surfacing.
0.30	Junction, renovate Road No. 21-9-30.4 right. End renovation.

RENOVATION OF ROAD NO. 21-9-30.4
 Milepost 0.00 to Milepost 0.19

<u>Milepost</u>	<u>Remarks</u>
0.00	Junction w/ Road No. 21-9-30.0 @ MP 0.30. Begin renovation and roadside brushing in accordance with Sections 500 and 2100 of the Road Specifications, Typical Cross Section Sheet No. 4, and Roadside Brushing Detail Sheet No. 9.
0.19	Junction, renovate -30.7 right. End renovation.

RENOVATION OF ROAD NO. 21-9-30.7
Milepost 0.00 to Milepost 0.03

<u>Milepost</u>	<u>Remarks</u>
0.00	Junction w/ Road No. 21-9-30.4 @ MP 0.19. Begin renovation and roadside brushing in accordance with Sections 500 and 2100 of the Road Specifications, Typical Cross Section Sheet No. 4, and Roadside Brushing Detail Sheet No. 9.
0.03	Existing landing, construct extension to -30.7 right. End renovation. Begin new construction.

RENOVATION OF ROAD NO. 21-9-32.3
Milepost 0.00 to Milepost 0.15

<u>Milepost</u>	<u>Remarks</u>
0.00	Junction w/ Road No. 21-9-32.0 @ MP 1.81. Begin clearing & grubbing, excavation & embankment, renovation, surfacing, soil stabilization, and roadside brushing in accordance with Sections 200, 300, 500, 1000, 1800, and 2100 of the Road Specifications, Typical Cross Section Sheet No. 5, and Roadside Brushing Detail Sheet No. 9.
0.04	Construct landing right. 50 CY 6-0" crushed aggregate allocated for landing. Grade of landing shall not exceed 5%.
0.15	Construct landing left. Grade of landing shall not exceed 5%. End renovation.

IMPROVEMENT OF SPUR 5
Station 0+00 to Station 2+75

<u>Station</u>	<u>Remarks</u>
0+00	Begin improvement, surfacing, and roadside brushing in accordance with Sections 500, 1000, and 2100 of the Road Specifications, Typical Cross Section Sheet No. 5, and Roadside Brushing Detail Sheet No. 9.
NOTE:	From Station 0+00 to 2+75, install 8" lift of compacted 6-0" jaw run; conforming to Section 1000 of the Road Specifications.
2+75	Existing end landing. 50 CY 6-0" crushed aggregate allocated. End improvement.

EQUIPMENT WASHING

The Purchaser is responsible for conforming to the Exhibit F.

CONSTRUCTION DETAIL SHEET
ROAD NO. 21-9-21.4 (Extension)
CONTROL POINT ROAD

GENERAL

Purchaser shall construct road extension from Sta. 4+00 to Sta. 9+05 as shown on the location map. This work shall be accomplished in accordance with details and road specifications which follow:

SHAPING

The roadway shall be constructed and shaped to conform to standards shown on Sheet No. 4.

TURNOUTS

None

SUBGRADE

The subgrade shall be excavated and compacted in accordance with the Road Specifications, 200 and 300 Sections.

DRAINAGE FEATURES

Outslope &/or inslope at 2% with no ditch to achieve drainage.

SURFACING

None

ALIGNMENT

Roadway shall be constructed within posted or painted right-of-way boundaries. Minimum curve radius shall be sixty (60) feet.

GRADE

Grade shall not exceed 18% favorable.

Cut 3'-4' beginning at 8+45 and drift excavation back toward 6+45 to attain specified grade.

TRUCK TURNAROUND

None

Utilize "Y" junction for truck turnaround.

LANDINGS

Construct landing with approach left at Sta. 7+15
Grade of landings shall not exceed 5%.

Construct end landing at Sta. 9+05.
Grade of landings shall not exceed 5%.

SOIL STABILIZATION

Apply seed, fertilizer, and mulch in accordance with Section 1800 of the Road Construction Specifications.

CONSTRUCTION DETAIL SHEET
ROAD NO. 21-9-29.5
CONTROL POINT ROAD

GENERAL

Purchaser shall construct Road No. 21-9-29.5 from Sta. 0+00 to Sta. 10+00 as shown on the location map. This work shall be accomplished in accordance with details and road specifications which follow:

SHAPING

The roadway shall be constructed and shaped to conform to standards shown on Sheet No. 4.

TURNOUTS

Construct 50' turnout right at 4+75.

SUBGRADE

The subgrade shall be excavated and compacted in accordance with the Road Specifications, 200 and 300 Sections.

DRAINAGE FEATURES

Outslope &/or inslope at 2% with no ditch to achieve drainage.

SURFACING

None

ALIGNMENT

Roadway shall be constructed within posted or painted right-of-way boundaries. Minimum curve radius shall be sixty (60) feet.

GRADE

Grade shall not exceed 14% adverse.

TRUCK TURNAROUND

Construct truck-turnaround left at Sta. 9+00.

LANDINGS

Construct landing right at Sta. 2+15
Grade of landing shall not exceed 5%.

Construct end landing at Sta. 10+00.
Grade of landing shall not exceed 5%.

SOIL STABILIZATION

Apply seed, fertilizer, and mulch in accordance with Section 1800 of the Road Construction Specifications.

CONSTRUCTION DETAIL SHEET
ROAD NO. 21-9-29.7
CONTROL POINT ROAD

GENERAL

Purchaser shall construct Road No. 21-9-29.7 from Sta. 0+00 to Sta. 5+65 as shown on the location map. This work shall be accomplished in accordance with details and road specifications which follow:

SHAPING

The roadway shall be constructed and shaped to conform to standards shown on Sheet No. 4.

TURNOUTS

None

SUBGRADE

The subgrade shall be excavated and compacted in accordance with the Road Specifications, 200 and 300 Sections.

DRAINAGE FEATURES

Outslope &/or inslope at 2% with no ditch to achieve drainage.

SURFACING

None

ALIGNMENT

Roadway shall be constructed within posted or painted right-of-way boundaries. Minimum curve radius shall be sixty (60) feet.

GRADE

Grade shall not exceed 9% adverse.

TRUCK TURNAROUND

Construct truck-turnaround right at Sta. 4+50.

LANDINGS

Construct end landing at Sta. 10+90.
Grade of landing shall not exceed 5%.

SOIL STABILIZATION

Apply seed, fertilizer, and mulch in accordance with Section 1800 of the Road Construction Specifications.

CONSTRUCTION DETAIL SHEET
21-9-30.7 (Extension)
CONTROL POINT ROAD

GENERAL

From Sta 1+60 of the 21-9-30.7, the Purchaser shall construct road extension from Sta. 1+60 to Sta. 13+85 as shown on the location map. This work shall be accomplished in accordance with details and road specifications which follow:

SHAPING

The roadway shall be constructed and shaped to conform to standards shown on Sheet No. 5.

TURNOUTS

Construct 50' turnout right at 8+40.

SUBGRADE

The subgrade shall be excavated and compacted in accordance with the Road Specifications, 200 and 300 Sections.

DRAINAGE FEATURES

Outslope &/or inslope at 2% with no ditch to achieve drainage.

SURFACING

None

ALIGNMENT

Roadway shall be constructed within posted or painted right-of-way boundaries. Minimum curve radius shall be sixty (60) feet.

GRADE

Cut 5' beginning at 6+50 and drift excavation forward to 7+85 to attain specified grade.

Grade shall not exceed 18% adverse or favorable.

TRUCK TURNAROUND

None

Utilize landing at Sta. 10+05 for truck turnaround.

LANDINGS

Construct landing with approach left at Sta. 10+05
Grade of landing shall not exceed 5%.

Construct end landing at Sta. 13+85.
Grade of landing shall not exceed 5%.

SOIL STABILIZATION

Apply seed, fertilizer, and mulch in accordance with Section 1800 of the Road Construction Specifications.

CONSTRUCTION DETAIL SHEET
SPUR 1
CONTROL POINT ROAD

GENERAL

Purchaser shall construct SPUR 1 from Sta. 0+00 to Sta. 5+25 as shown on the location map.
This work shall be accomplished in accordance with details and road specifications which follow:

SHAPING

The roadway shall be constructed and shaped to conform to standards shown on Sheet No. 5.

TURNOUTS

None.

SUBGRADE

The subgrade shall be excavated and compacted in accordance with the Road Specifications, 200 and 300 Sections.

DRAINAGE FEATURES

Outslope &/or inslope at 2% with no ditch to achieve drainage.

SURFACING

None

ALIGNMENT

Roadway shall be constructed within posted or painted right-of-way boundaries. Minimum curve radius shall be sixty (60) feet.

GRADE

Grade shall not exceed 18% favorable.

TRUCK TURNAROUND

None.

Utilize "Y" junction for truck turnaround

LANDINGS

Construct landing right at Sta. 2+30.
Grade of landing shall not exceed 5%.

Construct end landing at Sta. 5+25.
Grade of landing shall not exceed 5%.

SOIL STABILIZATION

Apply seed, fertilizer, and mulch in accordance with Section 1800 of the Road Construction Specifications.

CONSTRUCTION DETAIL SHEET
SPUR 2
CONTROL POINT ROAD

GENERAL

Purchaser shall construct SPUR 2 from Sta. 0+00 to Sta. 3+55 as shown on the location map.
This work shall be accomplished in accordance with details and road specifications which follow:

SHAPING

The roadway shall be constructed and shaped to conform to standards shown on Sheet No. 5.

TURNOUTS

None.

SUBGRADE

The subgrade shall be excavated and compacted in accordance with the Road Specifications, 200 and 300 Sections.

DRAINAGE FEATURES

Outslope &/or inslope at 2% with no ditch to achieve drainage.

SURFACING

None

ALIGNMENT

Roadway shall be constructed within posted or painted right-of-way boundaries. Minimum curve radius shall be sixty (60) feet.

Station 0+00 = borrow site for suitable embankment material to be used for reestablishment of approach on Road No. 21-9-29.6.

GRADE

Grade shall not exceed 18% favorable.

TRUCK TURNAROUND

None.

Utilize "Y" junction for truck turnaround

LANDINGS

Construct end landing at Sta. 3+55.

Grade of landing shall not exceed 5%.

SOIL STABILIZATION

Apply seed, fertilizer, and mulch in accordance with Section 1800 of the Road Construction Specifications.

CONSTRUCTION DETAIL SHEET
SPUR 3
CONTROL POINT ROAD

GENERAL

Purchaser shall construct SPUR 3 from Sta. 0+00 to Sta. 3+60 as shown on the location map.
This work shall be accomplished in accordance with details and road specifications which follow:

SHAPING

The roadway shall be constructed and shaped to conform to standards shown on Sheet No. 5.

TURNOUTS

None.

SUBGRADE

The subgrade shall be excavated and compacted in accordance with the Road Specifications, 200 and 300 Sections.

DRAINAGE FEATURES

Outslope &/or inslope at 2% with no ditch to achieve drainage.

SURFACING

Apply a 8" lift of jaw run and cap with a 4" lift of 3-0" crushed aggregate in accordance with Section 1000 of the Road Specifications and Typical Cross Section Sheet No. 3.

ALIGNMENT

Roadway shall be constructed within posted or painted right-of-way boundaries. Minimum curve radius shall be sixty (60) feet.

GRADE

Grade shall not exceed 16% favorable.

TRUCK TURNAROUND

None.
Utilize "Y" junction for truck turnaround

LANDINGS

Construct end landing at Sta. 3+60.
50 CY landing rock allocated.
Grade of landing shall not exceed 5%.

SOIL STABILIZATION

Apply seed, fertilizer, and mulch in accordance with Section 1800 of the Road Construction Specifications.

CONSTRUCTION DETAIL SHEET
SPUR 4
CONTROL POINT ROAD

GENERAL

Purchaser shall construct SPUR 4 from Sta. 0+00 to Sta. 2+95 as shown on the location map.
This work shall be accomplished in accordance with details and road specifications which follow:

SHAPING

The roadway shall be constructed and shaped to conform to standards shown on Sheet No. 5.

TURNOUTS

None.

SUBGRADE

The subgrade shall be excavated and compacted in accordance with the Road Specifications, 200 and 300 Sections.

DRAINAGE FEATURES

Outslope &/or inslope at 2% with no ditch to achieve drainage.

SURFACING

None

ALIGNMENT

Roadway shall be constructed within posted or painted right-of-way boundaries. Minimum curve radius shall be sixty (60) feet.

GRADE

Grade shall not exceed 12% adverse.

TRUCK TURNAROUND

None.

Utilize "Y" junction for truck turnaround

LANDINGS

Construct end landing at Sta. 2+95.
Grade of landing shall not exceed 5%.

SOIL STABILIZATION

Apply seed, fertilizer, and mulch in accordance with Section 1800 of the Road Construction Specifications.

CONSTRUCTION DETAIL SHEET
SWING ROAD 1

GENERAL

Construction of a swing road may be necessary to facilitate yarding. Use of a swing road is intended for skidding equipment (designed and manufactured for use on steep terrain) to forward logs to lower landing. Purchaser and Operator shall ensure any requirements, whether in construction or use of swing roads, are implemented. From Sta. 3+55 of SPUR 2, the Purchaser may construct SWING ROAD 1 from Sta. 3+55 to Sta. 4+85 as shown on the location map.

SHAPING

The swing road can be constructed and shaped as shown on Sheet No. 5.

DRAINAGE FEATURES

Outslope at 2% with no ditch to achieve drainage.

GRADE

Grade ranges 22%-31%.

LANDINGS

Construct end landing at Sta. 4+85.
Grade of landing shall not exceed 5%.

SOIL STABILIZATION

Apply seed, fertilizer, and mulch in accordance with Section 1800 of the Road Construction Specifications.

ROAD CONSTRUCTION SPECIFICATIONS

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

Section

100	GENERAL
200	CLEARING AND GRUBBING
300	EXCAVATION AND EMBANKMENT
400	PIPE CULVERTS
500	RENOVATION AND IMPROVEMENT OF EXISTING ROADS
600	WATERING
1000	AGGREGATE BASE COURSE (CRUSHED ROCK)
1200	AGGREGATE SURFACE COURSE (CRUSHED ROCK)
1400	SLOPE PROTECTION
1700	EROSION CONTROL
1800	SOIL STABILIZATION
2100	ROADSIDE BRUSHING

GENERAL - 100

101 - Pre-work Conference(s):

A pre-work conference will be held prior to the start of operations. The Purchaser shall request the conference at least 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 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.

Abrasion Resistance - The ability of a fabric surface to resist wear by friction.

ACI - American Concrete Institute

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 5 percent by weight to pass through the geotextile material when shaken in a prescribed manner. 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, pitrun 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 sidcasting 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.

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

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.

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 - Longitudinal center of 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.

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.

Subbase - Reinforcement of the subgrade with large particles of pitrun 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.

Tackifier - A compound which penetrates into the earth and assists in creating a crust through the cohesive bonding of the surface materials to a depth sufficient to stabilize the soil surface and/or a compound used to mat together mulching material.

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, or portions thereof, which are capable of being 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.

Unaged Cloth - Cloth in condition received from the manufacturer or distributor.

Woven Geotextile Material - A textile structure comprising two or more sets of filaments of yarns interlaced in such a way that the elements pass each other at essentially right angles with one set of elements parallel to the geotextile material axis.

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 maximum density of soil. Method A - 4" mold, soil passing a No. 4 Sieve. 25 blows/layer & 3 layers. Method D - 6" mold, soil passing a 19.00 mm (3/4 inches) sieve. 56 blows/layer & 5 layers.
<u>AASHTO T 176</u>	Shows relative portions of fine dust or clay-like 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.
<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 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>	Determination of density of soil and soil-aggregates 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>DES. E-12</u>	Determination of relative density of cohesionless 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:

103e - Grid roller. A grid roller shall consist of two or more cylindrical drums independently mounted on a common shaft in a rigid frame. Each drum shall have a minimum outside diameter of 5 feet and a minimum width of 2 feet 6 inches. The overall width of the roller exclusive of frame shall be not less than 5 feet 6 inches of which not more than 6 inches shall be used for center spacing between two roller drums. The face of the drums shall have the appearance of woven open-mesh made by interlacing bars of not less than 1-1/4 inches nor more than 1-3/4 inches diameter space spaced on 4-1/2 inches to 5-1/2 inches center. Net opening between the bars shall be not less than 3-inches nor more than 4 inches. The roller shall be so constructed that counterweights can be used to adjust the gross weight of the roller to not less than 27,000 pounds. The grid roller shall be drawn by a power unit capable of propelling the fully loaded roller at a speed of at least 4 miles per hour.

- 103f - Vibratory roller. The drum diameter shall be not less than 48 inches, the drum width not less than 58 inches, and have a turning radius of 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 7 tons at 1600 RPM. It shall be activated by a power unit of not less than 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.
- 103i - Other. Compaction equipment approved by the Authorized Officer.

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 as shown on the plans.
- 202 - Where clearing limits have not been staked, established by these specifications or shown on the plans, the limits shall extend 10 feet back of the top of the cut slope and 5 feet out from the toe of the fill slope.
- 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 Subsection 202 and as shown on the plans.
- 203a - Brush under 2 feet in height need not be cut within the limits established for clearing.
- 203b - Standing trees and snags to be cleared shall be felled within the limits established for clearing unless otherwise authorized.
- 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 in accordance with Subsection(s) 204a, 204b, 204c, 204d, 204e between the top of the cut slope and the toe of the fill slope. Undisturbed stumps, roots and other solid objects which will be a minimum of 3 feet below subgrades or slope surfaces or embankments are excepted.
- 204a - Stumps, including those overhanging cut banks, shall be removed within the required excavation limits.
- 204b - Stumps and other protruding objects shall be completely removed within the limits of required embankments having heights of less than 4 feet. When authorized, stumps and other nonperishable objects may be left provided they do not extend more than 6 inches above the existing ground line.
- 204c - On excavated areas, roots and embedded wood shall be removed to a depth not less than 6 inches below the subgrade.
- 204d - On areas to be occupied by embankments having heights greater than 4 feet, no stump or portion thereof shall remain within 3 feet of embankment subgrades or slope surfaces after grubbing is completed.

- 204e - Roots and embedded wood material shall be removed to a depth not less than 1 foot below embankment subgrades or slope surfaces.
- 205 - Clearing and grubbing debris shall not be placed or permitted to remain in or under road embankment sections.
- 206 - Clearing and grubbing debris shall be disposed of by scattering in accordance with Subsection 210.
- 210 - Disposal of clearing and grubbing debris 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.
- 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, insloping, outsloping, crowning and scarification of the subgrade, compaction, disposal of excess and unsuitable 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.
- 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.
- 303a - **Excavated material shall not be wasted as sidecast or perched. All material perched or sidecast as waste shall be retrieved and disposed of at the Purchaser's expense and at the direction of 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.
- 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 8 inches in depth.

- 305c - Embankments formed of material containing less than 25 percent rock not larger than 8 inches in the greatest dimension shall be placed in 12-inch layers. Material containing more than 25 percent of rock not larger than 12 inches, in the greatest dimension, shall be placed in successive layers not exceeding 2 feet in thickness. Individual rocks and boulders greater than 12 inches in diameter may be used to construct 2-foot embankment layers, provided they are carefully distributed, with interstices filled with fine material to form a dense and compact mass.
- 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 final subgrade material as specified under Subsection(s) 305a and 305b 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 Subsection 103f and in accordance with the following table:

Road No.	From Sta./M.P.	To Sta./M.P.
21-9-21.4	4+00	9+05
21-9-29.5	0+00	10+00
21-9-29.6	0+00	2+00
21-9-29.7	0+00	5+65
21-9-29.8	0+00	0+50
21-9-30.7	1+60	13+85
SPUR 1	0+00	5+25
SPUR 2	0+00	3+55
SPUR 3	0+00	3+60
SPUR 4	0+00	2+95
SWING ROAD 1	3+55	4+85

- 306d - Compacted materials within 1 foot of the established subgrade elevation shall have a density in place of not less than 95 percent of maximum density, and below the 1-foot limit, these materials shall have a density in place of not less than 90 percent of maximum density. Maximum density shall be determined by AASHTO T 99, Method A or Method D.
- 306f - Compaction of embankment layers placed as specified under Subsection 305b above shall be accomplished by routing construction equipment over full width of embankment structures except as specified in Subsection 306.
- 306g - **The face of all fill slopes shall be compacted to 85% of maximum density, either by walking with cat/excavator or by pressing with excavator bucket, to prevent surface erosion and raveling.**

- 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 both the pockets and the ditch with rock fragments, gravel, or other suitable porous material.
- 312 - When material, except solid rock, encountered in cuts at subgrade, is suitable for use in forming the finished roadbed, the top 6-inch layer of the subgrade shall be thoroughly scarified for the full width of the roadbed. Roots, sod, and other deleterious material or stones that will not pass a 6-inch square opening shall be removed. The scarified material shall be processed to the optimum moisture content suitable for maximum density and compacted in accordance with Subsection 306.
- 313 - In cut areas where solid rock is encountered at or near subgrade, the rock shall be excavated to a minimum depth of 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 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.
- 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.
- NOTE: Any material being hauled over gravel or bituminous surfaced roads will be done in vehicles which meet legal highway weight requirements while hauling.
- 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. Placement in layers is required. Materials placed shall be sloped, shaped, and otherwise brought to a neat and sightly condition acceptable to the Authorized Officer.
- 324 - Excavated material shall not be allowed to cover boles of standing trees to a depth in excess of 2 feet on the uphill side.
- 327 - The finished grading shall be approved in writing by the Authorized Officer. The Purchaser shall give the Authorized Officer 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.

PIPE CULVERTS - 400

- 401 - This work shall consist of furnishing and installing pipe culverts, pipe arch culverts, half rounds flume(s), perforated pipe culverts, downspout(s), elbow(s), and other erosion control device(s) 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. 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 of from 2 percent to 4 percent greater than the adjacent road grade and shall be skewed down grade 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 3/8 inch, shall be wire brushed and painted with two coats of zinc-rich paint on zinc-coated, steel pipe and aluminum-rich paint on aluminum or aluminum-coated pipe.
- 405 - Corrugated steel riveted and helical pipe culverts and pipe-arch culverts and special sections shall conform to the requirements of AASHTO M 36 and AASHTO M 218 or AASHTO M 274 as specified on the plans.
- 405a - Corrugated-steel-welded pipe culverts and pipe-arch culverts and special sections shall conform to the requirements of AASHTO M 36 and AASHTO M 218 or AASHTO M 274 as specified on the plans.
- 405e - Corrugated-polyethylene pipe for culverts 12-inch through 24-inch diameter shall meet the requirements of AASHTO M 294 for type S. 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 218 or 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 2 annular corrugations.
- 406b - Coupling bands produced from flat galvanized steel sheets with impressed dimples will be permitted only for connecting annular corrugated steel pipe to helically corrugated steel pipe. Such coupling bands shall conform to the width requirements shown on the plans.
- 406f - Channel-type or flanged-end coupling bands may be used on helical pipe with reformed rolled ends and flanged specifically to receive these bands. Such coupling bands shall conform to the requirements shown on the plans.
- 407 - Special sections, such as elbows, branch connections, and flared-end sections, shall be of the same gauge as the pipe to which they are joined and shall conform to the requirements of AASHTO M 36 and AASHTO M 218 or AASHTO M 274.

- 407b - Full round culvert downspouts conforming to the material and construction requirements as shown on the plans shall be anchored with two six-foot steel fence posts (one on each side of the pipe) wired together with No. 12 galvanized wire in a manner approved by the Authorized Officer. These anchors shall be placed every ten feet along the pipe beginning at the outlet of the culvert pipe.
- 408 - Pipe culverts and pipe-arch 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 furnished the Authorized Officer 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 shown on Exhibit C and the Culvert Installation Detail Sheet.
- 412 - Where ledge rock, boulders, soft, or spongy soils are encountered, they shall be excavated a minimum of 24 inches below the invert grade for a width of at least one pipe diameter or span on each side of the pipe and shall be backfilled with selected granular or fine readily compactable soil material.
- 413 - Pipe culverts and pipe-arch culverts shall be bedded on a selected granular or fine readily compactable soil material. Foundation material shall be of uniform density throughout the length of the structure and shall be shaped to fit the pipe.
- 413a - Bedding material for pipe culverts on existing surfaced roads shall be 1½ inch minus crushed aggregate meeting the requirements of Sections 1204, 1205, 1206, 1207, and 1208 of these specifications.
- 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 square feet 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 1 pipe diameter, or a minimum of 2 feet, of the sides of the pipe barrel and to 1 foot over the pipe with fine, readily compactable soil or granular fill material 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.

- 417 - For pipe culvert(s) side-fill material conforming to the requirements of Subsection 416 shall be placed and compacted under the haunches of the pipe and shall be brought up evenly and simultaneously on both sides of the pipe to 1 foot above the pipe in layers not exceeding 6 inches in depth and 1 pipe diameter/span or a minimum of 2 feet in width each side of, and adjacent to, the full length of the pipe barrel. Each layer shall be moistened or dried to a uniform moisture content suitable for maximum compaction and immediately compacted by approved hand or pneumatic tampers until a uniform density of 95 percent of the maximum density is attained as determined by AASHTO T 99, Method C.
- 418 - Side fills beyond the compaction limits specified under Subsection 417 shall be compacted as specified under Section 300.
- 423 - Construction of catch basins and ditch dams conforming to lines, grades, dimensions and typical diagrams shown on the plans, shall be required for grade culverts.
- 425 - Where pervious materials are used for backfill and bedding, collars consisting of selected impervious material shall be placed at the inlet and at various intervals along the pipe barrel as shown on the plans and as directed by the Authorized Officer.
- 426 - Culvert marker(s) consisting of ½-inch round steel bars 4 feet in length bolted to the culvert at the inlet or 6 foot steel fence posts painted white, shall be furnished, fabricated, and installed by the Purchaser at all grade culverts.

RENOVATION AND IMPROVEMENT OF EXISTING ROADS - 500

- 501 - This work shall consist of reconditioning and preparing the roadbed and shoulders, 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 and as shown on the plans.
- 501a - This work shall include the removal and disposal of slides in accordance with these specifications.
- 502 - The existing road surface shall be scarified to its full width and to a sufficient depth to eliminate surface irregularities and bladed and shaped to the lines, grades, dimensions, and typical cross sections shown on the plans at the following location(s):

Road No.	From Sta./M.P.	To Sta./M.P.
21-9-20.2	0.40	0.40
21-9-21.2	0.00	0.04
21-9-21.4	0+00	4+00
21-9-29.0	0.00	2.04
21-9-29.6	0+00	18+50
21-9-29.8	0+00	14+00
21-9-29.9	0+00	15+00
21-9-30.0	0.00	0.30
21-9-30.4	0.00	0.19
21-9-30.7	0.00	0.03

21-9-32.0	3.27	3.67
21-9-32.3	0.00	0.15
Spur 5	0+00	2+75

- 502a - Rocks larger than 4 inches in maximum dimension shall be removed from the scarified layers of the roadbed. Material so removed will not be permitted to remain on road shoulders or in ditches.
- 502b - Drainage ditches shall be bladed and shaped in accordance with the lines, grades, dimensions, and typical cross sections shown on the plans.
Drainage ditches that are vegetated, capable of adequate water flow, and are in accordance with the lines, grades, dimensions, and typical cross sections shown on the plans shall not be bladed.
- 503 - Debris from slides shall be disposed of as directed by the Authorized Officer.
- 504 - Scarified material and 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 Subsection 103f and in accordance with the following table:

Road No.	From Sta./M.P.	To Sta./M.P.
21-9-20.2	0.40	0.40
21-9-21.2	0.00	0.04
21-9-21.4	0+00	4+00
21-9-29.0	0.00	2.04
21-9-29.6	0+00	18+50
21-9-29.8	0+00	14+00
21-9-29.9	0+00	15+00
21-9-30.0	0.00	0.30
21-9-30.4	0.00	0.19
21-9-30.7	0.00	0.03
21-9-32.0	3.27	3.67
21-9-32.3	0.00	0.15
Spur 5	0+00	2+75

- 504a - Minimum compaction required shall be 1 hour of continuous rolling for each 4 stations of road, or fraction thereof, as measured along the centerline per layer of material.

- 506 - The inlet end of existing drainage structures shall be cleared of vegetative debris and boulders that are of sufficient size to obstruct normal stream flow. Pipe inverts shall be cleared of sediment and other debris lodged in the barrel of the pipe. The outflow area of designated 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.
- 507 - The finished grading shall be approved in writing by the Authorized Officer. The Purchaser shall give the Authorized Officer 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 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.

AGGREGATE BASE COURSE AND LANDING ROCK - 1000
CRUSHED ROCK MATERIAL

- 1001 - This work shall consist of furnishing, hauling, and placing one or more lifts of crushed rock material on roadbeds and landings 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 at the purchaser's expense.
- 1002a - Crushed rock materials may be obtained from commercial sources selected by the Purchaser at his option and expense providing that the rock materials selected comply with the specifications in this section.
- 1003 - Crushed rock material produced from gravel shall have 3 manufactured fractured face(s) on 75 percent, by weight, of the material retained on the No. 4 sieve.

- 1004 - Crushed rock materials 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	A	D
(6) -inch	-	100
3-inch	100	45-65
2-inch	90-95	-
1 1/2-inch	-	-
1-inch	45-75	-
3/4-inch	-	-
1/2-inch	-	-
3/8-inch	-	-
No. 4	15-45	0-10
No. 8	-	-
No. 10	-	-
No. 30	-	-
No. 40	5-25	-
No. 200	2-15	-

- 1005 - Crushed rock material retained on the No. 4 sieve shall have a percentage of loss of not more than 35 at 500 revolutions, as determined by AASHTO T 96.
- 1006 - Crushed rock material shall show durability value of not less than 35 as determined by AASHTO T 210.
- 1007 - That portion of crushed rock material passing the No. 40 sieve, including blending filler, shall have liquid limits of not more than 35 and a plasticity index of not less than 4 and not more than 12, as determined by AASHTO T 89 and AASHTO T 90.

- 1007a - That portion of crushed rock material passing No. 4 sieve, including blending filler, shall have a sand equivalent of not less than 35 as determined by AASHTO T 176, except where that portion exhibits a sand equivalent of less than 35, the aggregate will be accepted if it complies with the additional requirement as follows:

TABLE 1007a

Sand Equivalent	Percent Passing #200 Sieve AASHTO T 27
34	9
33	8
32	7
31	6
30	5
29 or less	4

- 1008 - If additional binder or filler is necessary in order 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 - The roadbed, as shaped and compacted under Sections 300 and 500 of these specifications, shall be approved in writing by the Authorized Officer prior to placement of crushed rock materials. Notification for subgrade approval prior to rocking shall be 3 days prior to that approval and shall be 6 days prior to start of rocking operations.
- 1010 - Crushed rock materials shall be placed and processed on the approved roadbed in accordance with these specifications and conforming to the lines, grades, dimensions, and typical cross sections shown on the plans and compacted in layers not to exceed 4 inches in depth. When more than one layer is required, each shall be shaped, processed, and compacted, 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 adding or removing crushed rock material until the surface is smooth and uniform.
- 1010a - Crushed rock material used to repair or reinforce a soft, muddy, frozen, yielding, or rutted roadbed shall not be construed as surfacing under this specification.
- 1012 - Each layer of crushed rock material shall be placed, processed, shaped, moistened, or dried to a uniform moisture content suitable for maximum compaction, and compacted to full width by compaction equipment conforming to the requirements of Subsection 103f. Minimum compaction shall be one (1) hour of continuous compacting for each 150 cubic yards, or fraction thereof, of crushed rock material placed per layer.

- 1015 - The Purchaser is authorized to remove **N/A** crushed rock material, measured by the truckload, from BLM stockpile for placement on the roads in accordance with the requirements and details shown on the plans from the following locations:

Stockpile No.	Willamette Meridian			Approx. Cu. Yds.	Road No.
	Sec.	T.	R.		

Approximately **N/A** cubic yards of additional crushed rock material required to complete the surfacing shall be furnished by the Purchaser in accordance with these specifications and as shown on the plans. (The Purchaser shall maintain records of material removed from the stockpile site designated above. These records shall be submitted to the Authorized Officer upon completion of the surfacing operation).

AGGREGATE SURFACE COURSE, SPOT, AND MAINTENANCE ROCK - 1200
CRUSHED ROCK MATERIAL

- 1201 - This work shall consist of furnishing, hauling, and placing one or more layers of crushed rock material on roadbeds and base courses 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.
- 1202a - Crushed rock materials used in this work may be obtained from commercial source(s) selected by the Purchaser at his option and expense, providing rock materials furnished comply with the specifications in this section.
- 1203 - When crushed rock material is produced from gravel, not less than 75 percent by weight of the particles retained on the No. 4 sieve will have 3 manufactured fractured face(s).

- 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	50-90	
1/2-inch	-	
No. 4	25-50	
No. 8	-	
No. 30	-	
No. 40	5-25	
No. 200	2-15	

- 1205 - Crushed rock material retained on the No. 4 sieve shall have a percentage of loss of not more than 35 at 500 revolutions, as determined by AASHTO T 96.
- 1206 - Crushed rock material shall show a durability value of not less than 35 as determined by AASHTO T 210.
- 1206a - The crushed rock material shall show a loss of not more than 20 percent by weight, when submerged in DMSO, dimethyl sulfoxide, for five days, according to Federal Highway Administration Region 10 Accelerated Weathering Test Procedure.
- 1207 - That portion of crushed rock material passing the No. 40 sieve, including blending filler, shall have liquid limits of not more than 35 and a plasticity index of not less than 4 and not more than 12 as determined by AASHTO T 89 and AASHTO T 90.

- 1207a - That portion of crushed rock material passing No. 4 sieve, including blending filler, shall have a sand equivalent of not less than 35, as determined by AASHTO T 176, except where that portion exhibits a sand equivalence of less than 35, the aggregate will be accepted if it complies with the additional requirement as follows:

Sand Equivalent AASHTO T 176 Maximum	Liquid Limit AASHTO T 89 Maximum	Plasticity Index AASHTO T 90 Maximum	Percentage Passing No. 200 Sieve AASHTO T 27 Maximum
34	25	9	9
33	25	8	8
32	25	7	7
31	25	6	6
30	25	5	5
29 or less	25	4	4

- 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 shall be completed and approved in writing, prior to placing crushed rock material, in accordance to the requirements of Subsections 500 for placing on the roadbeds. Notification for roadbed inspection, prior to rocking, shall be 3 days prior to that inspection and shall be 6 days prior to start of rocking operations.
- 1210 - Crushed rock material conforming to the requirements of these specifications shall be placed on the approved roadbed in accordance with these specifications and conforming to the lines, grades, dimensions, and typical cross sections shown on the plans. Compacted layers shall not exceed 4 inches in depth. When more than one 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.
- 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 Subsection 103i. Minimum compaction shall be 1 hour of continuous compacting for each 150 cubic yards or fraction thereof, of crushed rock material placed per layer.

SLOPE PROTECTION - 1400

- 1401 - This work shall consist of furnishing, hauling, and placing stone materials (riprap) for slope protection structures (energy dissipaters at culvert outlets) in accordance with these specifications. Material not conforming to these specifications will be rejected, and shall be removed from the slope protection structure as directed by the Authorized Officer.
- 1402 - **Riprap shall be hard, durable, angular in shape, and resistant to weathering and water action.** Thickness of a single stone should be more than one-third its length. Do not use rounded rock or boulders. Stone shall be free from overburden, spoil, shale, and organic material and conforming to the following:
- a. Apparent Specific Gravity (AASHTO T85) 2.50 Min.
- b. Absorption (AASHTO T85) 4.2% Max.
- c. Coarse Durability Index (AASHTO T210) 20 Min.
- 1403 - Loose riprap shall meet the following gradation:

Class 4:

Percent of Rock by Mass	Weight of Rock (Pounds)	Cubic Dia. (inches)	Sphere Dia. (inches)	Number of Stones/100
20	550-770	18-20	24	5
30	220-550	14-18	22	20
40	22-220	6-14	18	15
10	0-22	0-6	8	60*

*Rocks smaller than six inches in diameter are not counted.

- 1404 - The placement of slope protection riprap by the end dumping method is not permitted.
- 1405 - **Riprap shall be placed to produce a well keyed mass of rock with the least practical amount of void spaces.** The foundation course is the course placed in contact with the ground surface, and shall be placed on a stable key bench. Bearing shall not be on smaller rocks that may be used for filling voids.
- 1405a - Riprap shall be placed directly under the culvert outlet and extend to the point where a 45-degree angle from the outlet invert intersects the key bench. Riprap shall extend a minimum distance equal to the culvert diameter on all sides.
- 1406 - Determination of the acceptability of the slope protection structure will be by visual inspection and / or physical measurements by the 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.
- 1702 - The Purchaser shall construct dike(s), dam(s), diversion channel(s), settling basin(s) and other erosion control structure(s) as directed by the Authorized Officer.
- 1704 - The erosion control provisions specified under this subsection shall be coordinated with the soil stabilization requirement(s) of Section 1800.
- 1705 - The surface area of erodible earth material exposed at any one time by clearing and grubbing shall not exceed 25,000 square feet without prior approval by the Authorized Officer.
- 1706 - The surface area of erodible earth material exposed at one time by excavation, borrow, or fill within the right-of-way shall not exceed 25,000 square feet without prior approval by the Authorized Officer.
- 1706a - The Purchaser shall perform, during the same construction season, erosion control measures specified in the plans on all exposed excavation, borrow, and embankment areas.
- 1707 - Completed and partially completed segments of road(s) to be carried over the winter and early spring periods shall be stabilized by mulching exposed areas at the rate of 2,000 pounds per acre.
- 1708a - Road segments not completed during dry weather periods shall be winterized, by providing a well-drained roadway by water barring, 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.

SOIL STABILIZATION - 1800

- 1801 - This work shall consist of seeding, fertilizing and mulching 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.
- 1802a - Soil stabilization work consisting of seeding, fertilizing and mulching shall be performed on new road construction, road renovation, improvements, landings, disturbed areas, and borrow sites in accordance with these specifications and as shown on the plans.

- 1803 - Soil stabilization work as specified under Subsection 1802a shall be performed during the following seasonal periods:

From: March 15 To: April 30
 From: September 1 To: October 15

If soil stabilization of disturbed areas is not completed by the specified fall date, the Purchaser shall treat disturbed areas in accordance with Section 1707 and then complete the requirements of Soil Stabilization 1800 the next construction season.

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

- 1804 - **The BLM will provide native grass/forb seed mix as specified under Special Provisions for this project.**

If BLM is unable to provide native seed, the Purchaser shall furnish the following species of grass/forb seed.

All seed provided must meet corresponding germination, purity, and weed-content requirements:

Species	Germination Min. %	Purity Min. %	Weed Content Max. %
Annual ryegrass <i>Lolium multiflorum</i>	85%	95%	0.5%
Perennial rye grass <i>Lolium perenne</i>	85%	95%	0.5%

The grass seed furnished shall meet the minimum requirement for Blue Tag Seed as set forth in the latest edition of Oregon Certification Standards published by Oregon State University.

The Purchaser shall furnish the Authorized Officer a Certificate of Compliance from Oregon State University, Crop Certification Service, which shall include: date of test; lot number of each kind of seed; and results of tests as to name, percentages of purity and of germination, and percentage of weed content for each kind of seed furnished and, in case of mixture, the proportions of each kind of seed. The seed must have been tested within the last 2 years to be accepted for use on this contract.

- 1805 - The Purchaser shall mix and sack grass seed specified under Subsection 1804 in the following proportions:

Species	% of Total by Weight	Lbs. per Acre
Annual ryegrass <i>Lolium multiflorum</i>	40%	24
Perennial rye grass <i>Lolium perenne</i>	60%	36
Totals	100	60 lbs./ac.

- 1805a - The Purchaser shall certify, in writing, compliance with seed mixture(s) specified under Subsection 1805. Seed weight and seed mixture type shall be shown on the tag attached to each sack.
- 1805b - Seed shall be sacked in quantities proportional to the capacity of the Purchaser's slurry tank and the required rate of application as specified under Subsection 1812.
- 1806 - The Purchaser shall apply the native seed mixture specified under Special Provisions to the corresponding seeding projects as shown on **Sheet No. 8**.

If BLM is unable to provide native seed, the Purchaser shall apply the seed mixtures specified under Subsection 1805 to the corresponding seeding projects as shown on **Sheet No. 8**.

- 1806a - Additional soil stabilization work consisting of seeding, fertilizing and mulching may be required at the option of the Authorized Officer. Providing the additional stabilization is not due to Purchaser negligence as specified in Section 12 of the contract, a reduction in the total purchased price shall be made to offset the cost of furnishing and applying such additional stabilization material. Cost shall be based upon the unit price set forth in the current BLM Timber Appraisal Production Cost Schedule.
- 1808 - Fertilizer shall be a standard commercial grade of fertilizer conforming to all State and Federal regulations and to the standards of the Association of Official Agricultural Chemists. Fertilizer furnished shall provide the minimum percentage of available nutrients as specified below:

Available nitrogen	16%
Available phosphoric acid	20%
Potassium	16%

The Authorized Officer will take what samples he deems necessary for determining compliance with the above requirements.

Fertilizer shall be furnished in new sealed and properly labeled containers with name, weight, and guaranteed analysis of contents clearly marked. Material failing to meet these requirements, or that which has become wet or otherwise damaged in transit or storage, will be subject to rejection by the Authorized Officer.

- 1809 - Mulch materials conforming to the requirements of Subsections 1809b, 1809d or 1809e shall be furnished by the Purchaser in the amounts specified under Subsection 1812.

- 1809b - Natural wood cellulose or grass fiber shall have the property of dispersing readily in water and shall have no toxic effect when combined with seed or other materials. The homogeneous slurry or mixture shall be capable of application with power spray equipment. A green-colored dye which is non-injurious to plant growth shall be used. Processed wood cellulose or grass fiber shall be packaged in new, labeled containers in an air dry condition. Processed wood cellulose or grass fiber furnished by the Purchaser shall be one of the following brand names or approved equal :

Silva Fiber	-	Weyerhaeuser Timber Co.
Conweb Fiber	-	Wood Conversion Co.
Spra-Mulch	-	Spra-Mulch Industries, Inc.
Grass-Mulch	-	Grass Mulch, Inc.

If the Purchaser proposes using a wood or grass fiber other than those listed above, he shall furnish a sample and descriptive literature to the Authorized Officer for approval prior to application. Processed wood cellulose or grass fiber furnished by the Purchaser which has become wet or otherwise damaged in transit or storage will not be accepted.

- 1809d - 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.
- 1809e - 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 noxious weed seed, mold, or other objectionable materials.
- 1810 - Mulch material shall be delivered to the work area in a dry state. Material found to be wet will not be accepted. Material to be used in the mulching operation may be stockpiled along the road designated for treatment provided that it be maintained in a dry state and has the approval of the Authorized Officer.
- 1811 - Bulk mulching material required under these specifications shall be delivered to the work area bound either by twine, string, or hemp rope. Wire binding and plastic twine will not be permitted.
- 1812 - The Purchaser shall furnish and apply to approximately **5.3 acres** designated for treatment as shown on the plans and as specified under Subsection 1806, a mixture of water, fertilizer and mulch material, or a mixture of grass seed and fertilizer material at the following rate of application:

- | | | |
|----|---------------------------|------------------|
| a. | Single Stage (Hydraulic): | |
| | Water | 3,000 gals./acre |
| | Grass Seed | 60 lbs./acre |
| | Fertilizer | 200 lbs./acre |
| | Mulch | 3,000 lbs./acre |
| b. | Dry Application: | |
| | Grass Seed | 60 lbs./acre |
| | Fertilizer | 200 lbs./acre |
| | Mulch/Straw | 3,000 lbs./acre |

The above proportion and application rate are subject to adjustment by the Authorized Officer during the application operation.

- 1815 - The Purchaser may reduce the application rate on partially covered slopes and no application on areas already well stocked with grass or on rock surfaces.
- 1816 - The seed, fertilizer and mulch materials shall be placed by the hydraulic or dry method in accordance with the requirements set forth in Subsection 1816a and 1816b.
- 1816a - Hydraulic Method - The seed, fertilizer and mulch materials shall be mixed with water to form a slurry and then applied under pressure by hydroseeder.
- When processed wood cellulose or grass fiber mulch material is to be incorporated as an integral part of the slurry mix, it shall be added after the seed and fertilizer have been thoroughly mixed.
- 1816b - Dry Method - Blowers, mechanical seeders, seed drills, landscape seeders, cultipacker seeders, fertilizer spreaders, or other approved mechanical seeding equipment may be used when seed and fertilizer are to be applied in dry form.
- 1817 - Hydraulic equipment used for the application of slurry shall meet the following requirements:
- The equipment shall have a built-in agitation system. The slurry distribution lines shall be large enough to prevent stoppage. Discharge line shall be equipped with a set of hydraulic spray nozzles which will provide even distribution of the slurry on the various slopes to be treated. The slurry tank shall have a minimum operation capacity of 1,300 gallons and shall be mounted on a traveling unit which will place the slurry tank and spray nozzles within sufficient proximity to the areas to be treated so as to provide uniform distribution without waste. Lug- or track-type units are not authorized. The hydroseeder must be capable of spraying the slurry a minimum distance of 100 feet. The nozzle, mounted on a stand, must be capable of traversing 360 degrees on a horizontal plane and a minimum of 70 degrees on a vertical plane.
- 1817a - Hydromulch slurry mixing shall be with water and seed first, followed by fertilizer, and finally fiber. The time between mixing and application shall not exceed 1 hour.
- 1819 - The maximum distance to be seeded, fertilized and mulched from the road centerline shall be 100 feet for the cut slopes and 150 feet for the fill slopes.
- 1820 - The Purchaser shall notify the Authorized Officer at least 3 days in advance of date he intends to commence the specified soil stabilization work.
- 1822 - Mulch that collects at the end of culverts or accumulates to excessive depths on the slopes shall be evenly spread by hand methods, as directed by the Authorized Officer.
- 1823 - No materials shall be applied when wind velocities would prevent a uniform application of the mix or slurry or when winds would drift the mix or slurry spray outside of the designated treatment area.
- 1826 - 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 cutting and the removal of vegetation from the road prism - variable distance and inside curves in accordance with these specifications. This work shall conform to the lines, grades, dimensions, and typical cross sections shown on the Roadside Brushing Detail Sheet, at designated locations as shown in the plans.

- 2102 - Roadside brushing may be performed mechanically with self-powered, self-propelled equipment and/or manually with hand tools, including chainsaws.
- 2103 - Vegetation cut manually or mechanically less than 6 inches in diameter at D.B.H. shall be cut to a maximum height of 6 inches above the ground surface or above obstructions such as rocks or stumps on cut and fill sloped and all limbs will be severed from the trunk.
- 2103a - Vegetation shall be cut and removed from the road bed between the outside shoulders and the ditch centerline and such vegetation shall be cut to a maximum height of 1 inch above the ground and running surface. All limbs will be severed from the trunk. Sharp pointed ends will not be permitted. Cuts shall be parallel to the ground line or running surface.
- 2104 - Trees in excess of 6 inches in diameter at D.B.H. shall be limbed, so that no limbs extend into the treated area or over the roadbed to a height of 12 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 1 inch of the trunk to produce a smooth vertical face. Removal of trees larger than 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 12 feet in elevation above the running surface shall be cut, to within 1 inch of the trunk to produce a smooth vertical face.
- 2106 - Vegetative growth capable of growing 1 foot in height or higher shall be cut within the road prism/variable distance or as directed by the Authorized Officer.
- 2108 - Self propelled equipment shall not be permitted on cut and fill slopes or in ditches.
- 2109 - Debris resulting from roadside brushing shall be scattered downslope from the roadway. Debris shall not be allowed to accumulate in concentrations. Debris in excess of 1 foot in length and 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.
- 2113 - Roadside brushing shall be accomplished as specified on the roads listed on **Sheet No. 7**.
- 2116 - Mechanical brush cutters shall not be operated when there are people and occupied vehicles within 400 feet of the immediate operating area.
- 2117 - 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.

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Fern Top CT Sale Date:

Road Number: 21-9-20.2 I Road Name:

Road Improvement: 0.32 mi 16 ft Subgrade 0 ft ditch

200 Clearing and Grubbing: acres	\$0.00
300 Excavation:	\$0.00
400 Drainage:	\$0.00
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$241.40
Blading 0.32 mi	
700-1200 Surfacing:	\$38,701.40
Quarry Name: WWD 3-0" 355 LCY	
Quarry Name: WWD 6-0" 871 LCY	
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.0 acres	\$0.00
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing (Mechanical):0.8 acres	\$193.29
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$785.76 Surf. \$0.00.....	\$785.76
Quarry Development:	\$0.00

Total: \$39,921.85

Notes:

Quantities shown are estimates only and not pay items.
 Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 21-9-20.2 I Road Name:

Section 200 Clearing and Grubbing:

Subtotal: \$0.00

Section 300 Excavation:

Subtotal: \$0.00

Section 400 Drainage:

Subtotal: \$0.00

Section 500 Renovation:

Blading w/o Ditches: \$428.91/mi x 0.32 mi = \$137.25

Compaction: \$325.47/mi x 0.32 mi = \$104.15

Subtotal: \$241.40

Section 700-1200 Surfacing:

Commercial Quarry Name: WWD 3-0"

Length	TopW	BotW	Depth	CWid	#TOs	Width	F.W.L	Taper	Other
0.32mi	12ft	13.3ft	4in	1%					

Rock Volume = 355 LCY

Purchase Price / Royalty: \$10.65/LCY x 355 LCY = \$3,780.75

Processing: \$0.88/LCY x 355 LCY = \$312.40

Compaction: \$1.08/LCY x 355 LCY = \$383.40

Basic Rock Haul cost: \$0.58/LCY x 355 LCY = \$205.90

Rock Haul -15% grades: \$0.88/LCY-mi x 355 LCY x 6.00 mi= \$1,874.40

Rock Haul St& Co Roads: \$0.39/LCY-mi x 355 LCY x 33.10 mi= \$4,582.70

Basic Water Haul cost: \$0.53/LCY x 355 LCY = \$188.15

Water Haul -15% grades: \$0.12/LCY-mi x 355 LCY x 1.00 mi= \$42.60

Commercial Quarry Name: WWD 6-0"

Length	TopW	BotW	Depth	CWid	#TOs	Width	F.W.L	Taper	Other
0.32mi	13.3ft	16ft	8in	1%					

Rock Volume = 821 LCY

Purchase Price / Royalty: \$10.00/LCY x 821 LCY = \$8,210.00

Processing: \$0.88/LCY x 821 LCY = \$722.48

Compaction: \$1.08/LCY x 821 LCY = \$886.68

Basic Rock Haul cost: \$0.58/LCY x 821 LCY = \$476.18

Rock Haul -15% grades: \$0.88/LCY-mi x 821 LCY x 6.00 mi= \$4,334.88

Rock Haul St& Co Roads: \$0.39/LCY-mi x 821 LCY x 33.10 mi= \$10,598.29

Basic Water Haul cost: \$0.53/LCY x 821 LCY = \$435.13

Water Haul -15% grades: \$0.12/LCY-mi x 821 LCY x 1.00 mi= \$98.52

Commercial Quarry Name: WWD 6-0"

Comment: LDNG @ MP 0.40

Length	TopW	BotW	Depth	CWid	#TOs	Width	F.W.L	Taper	Other
									50 LCY

Rock Volume = 50 LCY

Purchase Price / Royalty: \$10.00/LCY x 50 LCY = \$500.00

Processing: \$0.88/LCY x 50 LCY = \$44.00

Compaction: \$1.08/LCY x 50 LCY = \$54.00

Basic Rock Haul cost: \$0.58/LCY x 50 LCY = \$29.00

Rock Haul -15% grades: \$0.88/LCY-mi x 50 LCY x 6.00 mi= \$264.00

Rock Haul St& Co Roads: \$0.39/LCY-mi x 50 LCY x 33.10 mi= \$645.45

Basic Water Haul cost: \$0.53/LCY x 50 LCY = \$26.50

Water Haul -15% grades: \$0.12/LCY-mi x 50 LCY x 1.00 mi= \$6.00

Subtotal: \$38,701.40

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:	Subtotal:	\$0.00
Section 1800 Soil Stabilization:	Subtotal:	\$0.00
Section 1900 Cattleguards:	Subtotal:	\$0.00
Section 2100 Roadside Brushing:		
Mechanical Brushing		
Brushing width Left: 10ft. Right: 10ft.		
RoadSide Brushing Light: \$241.61/acre x 0.80 acres = \$193.29	Subtotal:	\$193.29
Section 2300 Engineering:	Subtotal:	\$0.00
Section 2400 Minor Concrete:	Subtotal:	\$0.00
Section 2500 Gabions:	Subtotal:	\$0.00
Section 8000 Miscellaneous:	Subtotal:	\$0.00
Mobilization:		
Construction - 12.68% of total Costs = \$785.76		
Surfacing - 15.65% by rock volume = \$0.00	Subtotal:	\$785.76
Quarry Development:		
Based on 15.65% of total rock volume	Subtotal:	\$0.00
	Total:	\$39,921.85

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Fern Top CT Sale Date:

Road Number: 21-9-20.2 R Road Name:

Road Renovation: 0.08 mi 16 ft Subgrade 2 ft ditch

200 Clearing and Grubbing: acres	\$0.00
300 Excavation:	\$0.00
400 Drainage:	\$0.00
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$89.62
Blading 0.08 mi	
700-1200 Surfacing:	\$2,848.30
Quarry Name: WWD 1.5-0" 88 LCY	
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.0 acres	\$0.00
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing (Mechanical):0.2 acres	\$48.32
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$59.96 Surf. \$0.00.....	\$59.96
Quarry Development:	\$0.00
Total:	\$3,046.19

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 21-9-20.2 R Road Name:

Section 200 Clearing and Grubbing:

Subtotal: \$0.00

Section 300 Excavation:

Subtotal: \$0.00

Section 400 Drainage:

Subtotal: \$0.00

Section 500 Renovation:

Blading w/o Ditches: \$428.91/mi x 0.08 mi = \$34.31

Compaction: \$325.47/mi x 0.08 mi = \$26.04

Clean Culverts: \$365.82/mi x 0.08 mi = \$29.27

Subtotal: \$89.62

Section 700-1200 Surfacing:

Commercial Quarry Name: WWD 1.5-0"

Length	TopW	BotW	Depth	CWid	#TOs	Width	F.W.L	Taper	Other
0.08mi	12ft	13.3ft	4in						

Rock Volume = 88 LCY

Purchase Price / Royalty: \$10.90/LCY x 88 LCY = \$959.20

Processing: \$0.88/LCY x 88 LCY = \$77.44

Compaction: \$1.08/LCY x 88 LCY = \$95.04

Basic Rock Haul cost: \$0.58/LCY x 88 LCY = \$51.04

Rock Haul -15% grades: \$0.88/LCY-mi x 88 LCY x 6.10 mi= \$472.38

Rock Haul St& Co Roads: \$0.39/LCY-mi x 88 LCY x 33.10 mi= \$1,135.99

Basic Water Haul cost: \$0.53/LCY x 88 LCY = \$46.64

Water Haul -15% grades: \$0.12/LCY-mi x 88 LCY x 1.00 mi= \$10.56

Subtotal: \$2,848.30

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Subtotal: \$0.00

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Mechanical Brushing

Brushing width Left: 10ft. Right: 10ft.

RoadSide Brushing Light: \$241.61/acre x 0.20 acres = \$48.32

Subtotal: \$48.32

Section 2300 Engineering:

Subtotal: \$0.00

Section 2400 Minor Concrete:

Subtotal: \$0.00

Section 2500 Gabions:

Subtotal: \$0.00

Section 8000 Miscellaneous:

Subtotal: \$0.00

Mobilization:

Construction - 0.97% of total Costs = \$59.96

Surfacing - 1.12% by rock volume = \$0.00

Subtotal: \$59.96

Quarry Development:

Based on 1.12% of total rock volume

Subtotal: \$0.00

Total: \$3,046.19

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Fern Top CT Sale Date:

Road Number: 21-9-21.2 R Road Name:

Road Renovation: 0.04 mi 16 ft Subgrade 0 ft ditch

200 Clearing and Grubbing: acres	\$0.00
300 Excavation:	\$0.00
400 Drainage:	\$0.00
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$30.18
Blading 0.04 mi	
700-1200 Surfacing:	\$0.00
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.0 acres	\$0.00
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing (Mechanical):0.1 acres	\$24.16
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$1.09 Surf. \$0.00.....	\$1.09
Quarry Development:	\$0.00
Total:	\$55.43

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 21-9-21.2 R Road Name:

Section 200 Clearing and Grubbing:

Subtotal: \$0.00

Section 300 Excavation:

Subtotal: \$0.00

Section 400 Drainage:

Subtotal: \$0.00

Section 500 Renovation:

Blading w/o Ditches: \$428.91/mi x 0.04 mi = \$17.16

Compaction: \$325.47/mi x 0.04 mi = \$13.02

Subtotal: \$30.18

Section 700-1200 Surfacing:

Surfacing:

Subtotal: \$0.00

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Subtotal: \$0.00

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Mechanical Brushing

Brushing width Left: 10ft. Right: 10ft.

RoadSide Brushing Light: \$241.61/acre x 0.10 acres = \$24.16

Subtotal: \$24.16

Section 2300 Engineering:

Subtotal: \$0.00

Section 2400 Minor Concrete:

Subtotal: \$0.00

Section 2500 Gabions:

Subtotal: \$0.00

Section 8000 Miscellaneous:

Subtotal: \$0.00

Mobilization:

Construction - 0.02% of total Costs = \$1.09

Surfacing - 0.00% by rock volume = \$0.00

Subtotal: \$1.09

Quarry Development:

Based on 0.00% of total rock volume

Subtotal: \$0.00

Total: \$55.43

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Fern Top CT Sale Date:

Road Number: 21-9-21.4 C Road Name:

Road Construction: 0.10 mi 12 ft Subgrade 0 ft ditch

200 Clearing and Grubbing: acres	\$0.00
300 Excavation:	\$5,035.50
400 Drainage:	\$0.00
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$0.00
700-1200 Surfacing:	\$0.00
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.4 acres	\$332.95
Includes Small Quantity Factor of 1.29	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing (NONE):0.0 acres	\$0.00
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$107.79 Surf. \$0.00.....	\$107.79
Quarry Development:	\$0.00
Total:	\$5,476.24

Notes:

Quantities shown are estimates only and not pay items.
Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 21-9-21.4 C Road Name:

Section 200 Clearing and Grubbing:

Subtotal: \$0.00

Section 300 Excavation:

Subgrade Compaction: 4 Sta/hr \$27.12/sta. x 7.5 sta = \$203.40

Blading without ditch: \$11.84/station x 7.50 stations = \$88.80

Subgrade construction

Tractor: D7 with rippers 25 hr x \$158.11/hr = \$3,952.75

Const LDNG w/appr @ 7+15

Tractor: D7 with rippers 5 hr x \$158.11/hr = \$790.55

Subtotal: \$5,035.50

Section 400 Drainage:

Subtotal: \$0.00

Section 500 Renovation:

Subtotal: \$0.00

Section 700-1200 Surfacing:
Surfacing:

Subtotal: \$0.00

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Comment: includes landings w/ approaches

Dry Method with Mulch: \$478.38/acre x 0.40 acres = \$191.35

Includes Small Quantity Factor of 1.29

+ Fertilizer Cost: \$34.00/acre x 0.40 acres = \$13.60

+ Mulch Cost: \$320.00/acre x 0.40 acres = \$128.00

Subtotal: \$332.95

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Subtotal: \$0.00

Section 2300 Engineering:

Subtotal: \$0.00

Section 2400 Minor Concrete:

Subtotal: \$0.00

Section 2500 Gabions:

Subtotal: \$0.00

Section 8000 Miscellaneous:

Subtotal: \$0.00

Mobilization:

Construction - 1.74% of total Costs = \$107.79

Surfacing - 0.00% by rock volume = \$0.00

Road Number: 21-9-21.4 C Continued

Subtotal: \$107.79

Quarry Development:

Based on 0.00% of total rock volume

Subtotal: \$0.00

Total: \$5,476.24

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Fern Top CT Sale Date:

Road Number: 21-9-21.4 R Road Name:

Road Renovation: 0.08 mi 12 ft Subgrade 0 ft ditch

200 Clearing and Grubbing: acres	\$0.00
300 Excavation:	\$1,024.31
400 Drainage:	\$0.00
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$60.35
Blading 0.08 mi	
700-1200 Surfacing:	\$0.00
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.2 acres	\$166.48
Includes Small Quantity Factor of 1.29	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing (NONE):0.0 acres	\$0.00
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$25.12 Surf. \$0.00.....	\$25.12
Quarry Development:	\$0.00
Total:	\$1,276.26

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 21-9-21.4 R Road Name:

Section 200 Clearing and Grubbing:

Subtotal: \$0.00

Section 300 Excavation:

Subgrade Compaction: 4 Sta/hr \$27.12/sta. x 6.0 sta = \$162.72

Blading without ditch: \$11.84/station x 6.00 stations = \$71.04

Const LDNG w/appr @ 2+80

Tractor: D7 with rippers 5 hr x \$158.11/hr = \$790.55

Subtotal: \$1,024.31

Section 400 Drainage:

Subtotal: \$0.00

Section 500 Renovation:

Blading w/o Ditches: \$428.91/mi x 0.08 mi = \$34.31

Compaction: \$325.47/mi x 0.08 mi = \$26.04

Subtotal: \$60.35

Section 700-1200 Surfacing:

Surfacing:

Subtotal: \$0.00

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Comment: LDNG w/appr @ 2+80

Dry Method with Mulch: \$478.38/acre x 0.20 acres = \$95.68

Includes Small Quantity Factor of 1.29

+ Fertilizer Cost: \$34.00/acre x 0.20 acres = \$6.80

+ Mulch Cost: \$320.00/acre x 0.20 acres = \$64.00

Subtotal: \$166.48

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Comment: Brushing included w/ 21.4 new road construction (T&E)

Subtotal: \$0.00

Section 2300 Engineering:

Subtotal: \$0.00

Section 2400 Minor Concrete:

Subtotal: \$0.00

Section 2500 Gabions:

Subtotal: \$0.00

Section 8000 Miscellaneous:

Subtotal: \$0.00

Mobilization:

Construction - 0.41% of total Costs = \$25.12

Road Number: 21-9-21.4 R Continued

Surfacing - 0.00% by rock volume = \$0.00

Subtotal: \$25.12

Quarry Development:

Based on 0.00% of total rock volume

Subtotal: \$0.00

Total: \$1,276.26

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Fern Top CT Sale Date:

Road Number: 21-9-29.0 R Road Name: Smoke Ridge Road

Road Renovation: 2.04 mi 16 ft Subgrade 2 ft ditch

200 Clearing and Grubbing: acres	\$0.00
300 Excavation:	\$2,118.93
400 Drainage:	\$5,321.20
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 120 lf	
500 Renovation:	\$3,347.85
Blading 2.04 mi	
Slide Removal 100 cy	
700-1200 Surfacing:	\$113,041.98
Quarry Name: WWD 1.5-0" 2,941 LCY	
Quarry Name: WWD 3-0" 100 LCY	
Quarry Name: WWD 6-0" 340 LCY	
Quarry Name: WWD 1.5-0" SPOT ROCK 100 LCY	
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.3 acres	\$249.71
Includes Small Quantity Factor of 1.29	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing (Mechanical):5.0 acres	\$1,208.05
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$2,515.48 Surf. \$0.00.....	\$2,515.48
Quarry Development:	\$0.00
Total:	\$127,803.20

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 21-9-29.0 R Road Name: Smoke Ridge Road

Section 200 Clearing and Grubbing:

Subtotal: \$0.00

Section 300 Excavation:

Constuct TOR @ MP 0.67

Tractor: D7 with rippers 2 hr x \$158.11/hr = \$316.22

Vibratory roller, Steel Drum .5 hr x \$108.49/hr = \$54.25

Const. LDNG w/appr @ MP 1.35

Tractor: D7 with rippers 5 hr x \$158.11/hr = \$790.55

Vibratory roller, Steel Drum 1 hr x \$108.49/hr = \$108.49

Const. LDNG @ MP 0.92

Tractor: D7 with rippers 2 hr x \$158.11/hr = \$316.22

Vibratory roller, Steel Drum 1 hr x \$108.49/hr = \$108.49

Const LDNG @ MP 1.81

Tractor: D7 with rippers 2 hr x \$158.11/hr = \$316.22

Vibratory roller, Steel Drum 1 hr x \$108.49/hr = \$108.49

Subtotal: \$2,118.93

Section 400 Drainage:

Poly Pipe xdrain @ MP 0.94 18 inch 30 lf x \$43.01/lf = \$1,290.30

Poly Pipe Xdrain @ MP 1.19 18 inch 30 lf x \$43.01/lf = \$1,290.30

Poly Pipe xdrain @ MP 1.26 18 inch 30 lf x \$43.01/lf = \$1,290.30

Poly Pipe xdrain @ MP 1.31 18 inch 30 lf x \$43.01/lf = \$1,290.30

Culvert marker installation

Culvert marker = material + labor 8 ea x \$20.00/ea = \$160.00

Subtotal: \$5,321.20

Section 500 Renovation:

Slide Removal 100 cy

Blading: \$694.50/mi x 2.04 mi = \$1,416.78

Scarification: \$857.82/mi x 0.05 mi = \$42.89

Compaction: \$325.47/mi x 2.04 mi = \$663.96

Clean Culverts: \$365.82/mi x 1.00 mi = \$365.82

Slough removal @ MP 1.12

Backhoe 10 hr x \$85.84/hr = \$858.40

Subtotal: \$3,347.85

Section 700-1200 Surfacing:

Commercial Quarry Name: WWD 1.5-0"

Length	TopW	BotW	Depth	CWid	#TOs	Width	F.W.L	Taper	Other
1.21mi	12ft	14.7ft	8in	5%					

Rock Volume = 2,941 LCY

Purchase Price / Royalty: \$10.90/LCY x 2,941 LCY = \$32,056.90

Processing: \$0.88/LCY x 2,941 LCY = \$2,588.08

Compaction: \$1.08/LCY x 2,941 LCY = \$3,176.28

Basic Rock Haul cost: \$0.58/LCY x 2,941 LCY = \$1,705.78

Rock Haul -15% grades: \$0.88/LCY-mi x 2,941 LCY x 6.44 mi= \$16,667.24

Rock Haul St& Co Roads: \$0.39/LCY-mi x 2,941 LCY x 33.10 mi= \$37,965.37

Basic Water Haul cost: \$0.53/LCY x 2,941 LCY = \$1,558.73

Water Haul -15% grades: \$0.12/LCY-mi x 2,941 LCY x 1.00 mi= \$352.92

Commercial Quarry Name: WWD 3-0"

Comment: Road cross drainage repair @ MP 0.66

Length	TopW	BotW	Depth	CWid	#TOs	Width	F.W.L	Taper	Other
									100 LCY

Rock Volume = 100 LCY

Purchase Price / Royalty: \$10.65/LCY x 100 LCY = \$1,065.00

Processing: \$0.88/LCY x 100 LCY = \$88.00

Compaction: \$1.08/LCY x 100 LCY = \$108.00
 Basic Rock Haul cost: \$0.58/LCY x 100 LCY = \$58.00
 Rock Haul -15% grades: \$0.88/LCY-mi x 100 LCY x 5.66 mi= \$498.08
 Rock Haul St& Co Roads: \$0.39/LCY-mi x 100 LCY x 33.10 mi= \$1,290.90
 Basic Water Haul cost: \$0.53/LCY x 100 LCY = \$53.00
 Water Haul -15% grades: \$0.12/LCY-mi x 100 LCY x 1.00 mi= \$12.00

Commercial Quarry Name: WWD 6-0"

Comment: Exist. TOR @ MP 0.15

<u>Length</u>	<u>TopW</u>	<u>BotW</u>	<u>Depth</u>	<u>CWid</u>	<u>#TOs</u>	<u>Width</u>	<u>F.W.L</u>	<u>Taper</u>	<u>Other</u>
									50 LCY

Rock Volume = 50 LCY
 Purchase Price / Royalty: \$10.00/LCY x 50 LCY = \$500.00
 Processing: \$0.88/LCY x 50 LCY = \$44.00
 Compaction: \$1.08/LCY x 50 LCY = \$54.00
 Basic Rock Haul cost: \$0.58/LCY x 50 LCY = \$29.00
 Rock Haul -15% grades: \$0.88/LCY-mi x 50 LCY x 5.15 mi= \$226.60
 Rock Haul St& Co Roads: \$0.39/LCY-mi x 50 LCY x 33.10 mi= \$645.45
 Basic Water Haul cost: \$0.53/LCY x 50 LCY = \$26.50
 Water Haul -15% grades: \$0.12/LCY-mi x 50 LCY x 1.00 mi= \$6.00

Commercial Quarry Name: WWD 6-0"

Comment: Const. TOR @ MP 0.67

<u>Length</u>	<u>TopW</u>	<u>BotW</u>	<u>Depth</u>	<u>CWid</u>	<u>#TOs</u>	<u>Width</u>	<u>F.W.L</u>	<u>Taper</u>	<u>Other</u>
									60 LCY

Rock Volume = 60 LCY
 Purchase Price / Royalty: \$10.00/LCY x 60 LCY = \$600.00
 Processing: \$0.88/LCY x 60 LCY = \$52.80
 Compaction: \$1.08/LCY x 60 LCY = \$64.80
 Basic Rock Haul cost: \$0.58/LCY x 60 LCY = \$34.80
 Rock Haul -15% grades: \$0.88/LCY-mi x 60 LCY x 5.67 mi= \$299.38
 Rock Haul St& Co Roads: \$0.39/LCY-mi x 60 LCY x 33.10 mi= \$774.54
 Basic Water Haul cost: \$0.53/LCY x 60 LCY = \$31.80
 Water Haul -15% grades: \$0.12/LCY-mi x 60 LCY x 1.00 mi= \$7.20

Commercial Quarry Name: WWD 6-0"

Comment: Const. LDNG w/approach @ MP 1.35

<u>Length</u>	<u>TopW</u>	<u>BotW</u>	<u>Depth</u>	<u>CWid</u>	<u>#TOs</u>	<u>Width</u>	<u>F.W.L</u>	<u>Taper</u>	<u>Other</u>
									100 LCY

Rock Volume = 100 LCY
 Purchase Price / Royalty: \$10.00/LCY x 100 LCY = \$1,000.00
 Processing: \$0.88/LCY x 100 LCY = \$88.00
 Compaction: \$1.08/LCY x 100 LCY = \$108.00
 Basic Rock Haul cost: \$0.58/LCY x 100 LCY = \$58.00
 Rock Haul -15% grades: \$0.88/LCY-mi x 100 LCY x 6.35 mi= \$558.80
 Rock Haul St& Co Roads: \$0.39/LCY-mi x 100 LCY x 33.10 mi= \$1,290.90

Commercial Quarry Name: WWD 6-0"

Comment: Const LDNG @ MP 0.92

<u>Length</u>	<u>TopW</u>	<u>BotW</u>	<u>Depth</u>	<u>CWid</u>	<u>#TOs</u>	<u>Width</u>	<u>F.W.L</u>	<u>Taper</u>	<u>Other</u>
									80 LCY

Rock Volume = 80 LCY
 Purchase Price / Royalty: \$10.00/LCY x 80 LCY = \$800.00
 Processing: \$0.88/LCY x 80 LCY = \$70.40
 Compaction: \$1.08/LCY x 80 LCY = \$86.40
 Basic Rock Haul cost: \$0.58/LCY x 80 LCY = \$46.40
 Rock Haul -15% grades: \$0.88/LCY-mi x 80 LCY x 5.92 mi= \$416.77
 Rock Haul St& Co Roads: \$0.39/LCY-mi x 80 LCY x 33.10 mi= \$1,032.72
 Basic Water Haul cost: \$0.53/LCY x 80 LCY = \$42.40
 Water Haul -15% grades: \$0.12/LCY-mi x 80 LCY x 1.00 mi= \$9.60

Commercial Quarry Name: WWD 6-0"

Comment: Const LDNG @ MP 1.81

<u>Length</u>	<u>TopW</u>	<u>BotW</u>	<u>Depth</u>	<u>CWid</u>	<u>#TOs</u>	<u>Width</u>	<u>F.W.L</u>	<u>Taper</u>	<u>Other</u>
									50 LCY

Rock Volume = 50 LCY

Purchase Price / Royalty: \$10.00/LCY x 50 LCY = \$500.00

Processing: \$0.88/LCY x 50 LCY = \$44.00

Compaction: \$1.08/LCY x 50 LCY = \$54.00

Basic Rock Haul cost: \$0.58/LCY x 50 LCY = \$29.00

Rock Haul -15% grades: \$0.88/LCY-mi x 50 LCY x 6.90 mi= \$303.60

Rock Haul St& Co Roads: \$0.39/LCY-mi x 50 LCY x 33.10 mi= \$645.45

Basic Water Haul cost: \$0.53/LCY x 50 LCY = \$26.50

Water Haul -15% grades: \$0.12/LCY-mi x 50 LCY x 1.00 mi= \$6.00

Commercial Quarry Name: WWD 1.5-0" SPOT ROCK

Comment: Allocated for road segment between MP 0.00 to MP 0.83

<u>Length</u>	<u>TopW</u>	<u>BotW</u>	<u>Depth</u>	<u>CWid</u>	<u>#TOs</u>	<u>Width</u>	<u>F.W.L</u>	<u>Taper</u>	<u>Other</u>
									100 LCY

Rock Volume = 100 LCY

Purchase Price / Royalty: \$10.90/LCY x 100 LCY = \$1,090.00

Processing: \$0.88/LCY x 100 LCY = \$88.00

Compaction: \$1.08/LCY x 100 LCY = \$108.00

Basic Rock Haul cost: \$0.58/LCY x 100 LCY = \$58.00

Rock Haul -15% grades: \$0.88/LCY-mi x 100 LCY x 5.50 mi= \$484.00

Rock Haul St& Co Roads: \$0.39/LCY-mi x 100 LCY x 33.10 mi= \$1,290.90

Basic Water Haul cost: \$0.53/LCY x 100 LCY = \$53.00

Water Haul -15% grades: \$0.12/LCY-mi x 100 LCY x 1.00 mi= \$12.00

Subtotal: \$113,041.98

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Comment: For constructed TO, LDNG, & LDNG w/approach, new CPPs

Dry Method with Mulch: \$478.38/acre x 0.30 acres = \$143.51

Includes Small Quantity Factor of 1.29

+ Fertilizer Cost: \$34.00/acre x 0.30 acres = \$10.20

+ Mulch Cost: \$320.00/acre x 0.30 acres = \$96.00

Subtotal: \$249.71

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Mechanical Brushing

Brushing width Left: 10ft. Right: 10ft.

RoadSide Brushing Light: \$241.61/acre x 5.00 acres = \$1,208.05

Subtotal: \$1,208.05

Section 2300 Engineering:

Subtotal: \$0.00

Section 2400 Minor Concrete:

Subtotal: \$0.00

Section 2500 Gabions:

Subtotal: \$0.00

Section 8000 Miscellaneous:

Subtotal: \$0.00

Mobilization:

Construction - 40.58% of total Costs = \$2,515.48

Surfacing - 44.42% by rock volume = \$0.00

Subtotal: \$2,515.48

Quarry Development:

Based on 44.42% of total rock volume

Subtotal: \$0.00

Total: \$127,803.20

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Fern Top CT Sale Date:

Road Number: 21-9-29.5 C Road Name:

Road Construction: 0.19 mi 12 ft Subgrade 0 ft ditch

200 Clearing and Grubbing: acres	\$0.00
300 Excavation:	\$2,839.17
400 Drainage:	\$0.00
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$0.00
700-1200 Surfacing:	\$0.00
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.6 acres	\$499.43
Includes Small Quantity Factor of 1.29	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing (NONE):0.0 acres	\$0.00
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$67.03 Surf. \$0.00.....	\$67.03
Quarry Development:	\$0.00
Total:	\$3,405.63

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 21-9-29.5 C Road Name:

Section 200 Clearing and Grubbing:

Subtotal: \$0.00

Section 300 Excavation:

Subgrade Compaction: 4 Sta/hr \$27.12/sta. x 12.0 sta = \$325.44

Blading without ditch: \$11.84/station x 12.00 stations = \$142.08

Subgrade + LDNG construction

Tractor: D7 with rippers 15 hr x \$158.11/hr = \$2,371.65

Subtotal: \$2,839.17

Section 400 Drainage:

Subtotal: \$0.00

Section 500 Renovation:

Subtotal: \$0.00

Section 700-1200 Surfacing:

Surfacing:

Subtotal: \$0.00

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Dry Method with Mulch: \$478.38/acre x 0.60 acres = \$287.03

Includes Small Quantity Factor of 1.29

+ Fertilizer Cost: \$34.00/acre x 0.60 acres = \$20.40

+ Mulch Cost: \$320.00/acre x 0.60 acres = \$192.00

Subtotal: \$499.43

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Subtotal: \$0.00

Section 2300 Engineering:

Subtotal: \$0.00

Section 2400 Minor Concrete:

Subtotal: \$0.00

Section 2500 Gabions:

Subtotal: \$0.00

Section 8000 Miscellaneous:

Subtotal: \$0.00

Mobilization:

Construction - 1.08% of total Costs = \$67.03

Surfacing - 0.00% by rock volume = \$0.00

Subtotal: \$67.03

Road Number: 21-9-29.5 C Continued

Quarry Development:

Based on 0.00% of total rock volume

Subtotal: \$0.00

Total: \$3,405.63

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Fern Top CT Sale Date:

Road Number: 21-9-29.6 I Road Name:

Road Improvement: 0.09 mi 16 ft Subgrade 0 ft ditch

200 Clearing and Grubbing: acres	\$0.00
300 Excavation:	\$1,992.88
400 Drainage:	\$0.00
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$4,099.39
Blading 0.09 mi	
700-1200 Surfacing:	\$20,055.60
Quarry Name: WWD 3-0" 154 LCY	
Quarry Name: WWD 6-0" 500 LCY	
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.3 acres	\$249.71
Includes Small Quantity Factor of 1.29	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing (Mechanical):0.2 acres	\$48.32
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$530.97 Surf. \$0.00.....	\$530.97
Quarry Development:	\$0.00

Total: \$26,976.88

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 21-9-29.6 I Road Name:

Section 200 Clearing and Grubbing:

Subtotal: \$0.00

Section 300 Excavation:

Subgrade Compaction: 4 Sta/hr \$27.12/sta. x 5.0 sta = \$135.60

Blading without ditch: \$11.84/station x 5.00 stations = \$59.20

Const. LDNG w/approach @ 2+00

Tractor: D7 with rippers 5 hr x \$158.11/hr = \$790.55

Vibratory roller, Steel Drum 1 hr x \$108.49/hr = \$108.49

Const. LDNG w/approach @ 4+90

Tractor: D7 with rippers 5 hr x \$158.11/hr = \$790.55

Vibratory roller, Steel Drum 1 hr x \$108.49/hr = \$108.49

Subtotal: \$1,992.88

Section 400 Drainage:

Subtotal: \$0.00

Section 500 Renovation:

Blading w/o Ditches: \$428.91/mi x 0.09 mi = \$38.60

Compaction: \$325.47/mi x 0.09 mi = \$29.29

Reestablish approach @ 0+00

Tractor: D7 with rippers 11 hr x \$158.11/hr = \$1,739.21

Excavator - Large (3 CY) 11 hr x \$133.94/hr = \$1,473.34

Dump Truck 10 cy 11 hr x \$74.45/hr = \$818.95

Subtotal: \$4,099.39

Section 700-1200 Surfacing:

Commercial Quarry Name: WWD 3-0"

Length	TopW	BotW	Depth	CWid	#TOs	Width	F.W.L	Taper	Other
0.09mi	12ft	13.3ft	4in	2%					

Rock Volume = 104 LCY

Purchase Price / Royalty: \$10.65/LCY x 104 LCY = \$1,107.60

Processing: \$0.88/LCY x 104 LCY = \$91.52

Compaction: \$1.08/LCY x 104 LCY = \$112.32

Basic Rock Haul cost: \$0.58/LCY x 104 LCY = \$60.32

Rock Haul -15% grades: \$0.88/LCY-mi x 104 LCY x 5.10 mi= \$466.75

Rock Haul St& Co Roads: \$0.39/LCY-mi x 104 LCY x 33.10 mi= \$1,342.54

Basic Water Haul cost: \$0.53/LCY x 104 LCY = \$55.12

Water Haul -15% grades: \$0.12/LCY-mi x 104 LCY x 1.00 mi= \$12.48

Commercial Quarry Name: WWD 3-0"

Comment: LDNG w/approach @ 2+00

Length	TopW	BotW	Depth	CWid	#TOs	Width	F.W.L	Taper	Other
									25 LCY

Rock Volume = 25 LCY

Purchase Price / Royalty: \$10.65/LCY x 25 LCY = \$266.25

Processing: \$0.88/LCY x 25 LCY = \$22.00

Compaction: \$1.08/LCY x 25 LCY = \$27.00

Basic Rock Haul cost: \$0.58/LCY x 25 LCY = \$14.50

Rock Haul -15% grades: \$0.88/LCY-mi x 25 LCY x 5.00 mi= \$110.00

Rock Haul St& Co Roads: \$0.39/LCY-mi x 25 LCY x 33.10 mi= \$322.73

Basic Water Haul cost: \$0.53/LCY x 25 LCY = \$13.25

Water Haul -15% grades: \$0.12/LCY-mi x 25 LCY x 1.00 mi= \$3.00

Commercial Quarry Name: WWD 3-0"

Comment: LDNG w/approach @ 4+90

Length	TopW	BotW	Depth	CWid	#TOs	Width	F.W.L	Taper	Other
									25 LCY

Rock Volume = 25 LCY

Purchase Price / Royalty: \$10.65/LCY x 25 LCY = \$266.25
 Processing: \$0.88/LCY x 25 LCY = \$22.00
 Compaction: \$1.08/LCY x 25 LCY = \$27.00
 Basic Rock Haul cost: \$0.58/LCY x 25 LCY = \$14.50
 Rock Haul -15% grades: \$0.88/LCY-mi x 25 LCY x 5.00 mi= \$110.00
 Rock Haul St& Co Roads: \$0.39/LCY-mi x 25 LCY x 33.10 mi= \$322.73
 Basic Water Haul cost: \$0.53/LCY x 25 LCY = \$13.25
 Water Haul -15% grades: \$0.12/LCY-mi x 25 LCY x 1.00 mi= \$3.00

Commercial Quarry Name: WWD 6-0"

<u>Length</u>	<u>TopW</u>	<u>BotW</u>	<u>Depth</u>	<u>CWid</u>	<u>#TOs</u>	<u>Width</u>	<u>F.W.L</u>	<u>Taper</u>	<u>Other</u>
0.09mi	13.3ft	16ft	8in	2%					

Rock Volume = 240 LCY

Purchase Price / Royalty: \$10.00/LCY x 240 LCY = \$2,400.00
 Processing: \$0.88/LCY x 240 LCY = \$211.20
 Compaction: \$1.08/LCY x 240 LCY = \$259.20
 Basic Rock Haul cost: \$0.58/LCY x 240 LCY = \$139.20
 Rock Haul -15% grades: \$0.88/LCY-mi x 240 LCY x 5.00 mi= \$1,056.00
 Rock Haul St& Co Roads: \$0.39/LCY-mi x 240 LCY x 33.10 mi= \$3,098.16
 Basic Water Haul cost: \$0.53/LCY x 240 LCY = \$127.20
 Water Haul -15% grades: \$0.12/LCY-mi x 240 LCY x 1.00 mi= \$28.80

Commercial Quarry Name: WWD 6-0"

Comment: LDNG w/approach @ 2+00

<u>Length</u>	<u>TopW</u>	<u>BotW</u>	<u>Depth</u>	<u>CWid</u>	<u>#TOs</u>	<u>Width</u>	<u>F.W.L</u>	<u>Taper</u>	<u>Other</u>
									150 LCY

Rock Volume = 150 LCY

Purchase Price / Royalty: \$10.00/LCY x 150 LCY = \$1,500.00
 Processing: \$0.88/LCY x 150 LCY = \$132.00
 Compaction: \$1.08/LCY x 150 LCY = \$162.00
 Basic Rock Haul cost: \$0.58/LCY x 150 LCY = \$87.00
 Rock Haul -15% grades: \$0.88/LCY-mi x 150 LCY x 5.00 mi= \$660.00
 Rock Haul St& Co Roads: \$0.39/LCY-mi x 150 LCY x 33.10 mi= \$1,936.35
 Basic Water Haul cost: \$0.53/LCY x 150 LCY = \$79.50
 Water Haul -15% grades: \$0.12/LCY-mi x 150 LCY x 1.00 mi= \$18.00

Commercial Quarry Name: WWD 6-0"

Comment: LDNG w/approach @ 4+90

<u>Length</u>	<u>TopW</u>	<u>BotW</u>	<u>Depth</u>	<u>CWid</u>	<u>#TOs</u>	<u>Width</u>	<u>F.W.L</u>	<u>Taper</u>	<u>Other</u>
									110 LCY

Rock Volume = 110 LCY

Purchase Price / Royalty: \$10.00/LCY x 110 LCY = \$1,100.00
 Processing: \$0.88/LCY x 110 LCY = \$96.80
 Compaction: \$1.08/LCY x 110 LCY = \$118.80
 Basic Rock Haul cost: \$0.58/LCY x 110 LCY = \$63.80
 Rock Haul -15% grades: \$0.88/LCY-mi x 110 LCY x 5.00 mi= \$484.00
 Rock Haul St& Co Roads: \$0.39/LCY-mi x 110 LCY x 33.10 mi= \$1,419.99
 Basic Water Haul cost: \$0.53/LCY x 110 LCY = \$58.30
 Water Haul -15% grades: \$0.12/LCY-mi x 110 LCY x 1.00 mi= \$13.20

Subtotal: \$20,055.60

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Dry Method with Mulch: $\$478.38/\text{acre} \times 0.30 \text{ acres} = \143.51
Includes Small Quantity Factor of 1.29
+ Fertilizer Cost: $\$34.00/\text{acre} \times 0.30 \text{ acres} = \10.20
+ Mulch Cost: $\$320.00/\text{acre} \times 0.30 \text{ acres} = \96.00

Subtotal: \$249.71

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Mechanical Brushing

Brushing width Left: 10ft. Right: 10ft.

RoadSide Brushing Light: $\$241.61/\text{acre} \times 0.20 \text{ acres} = \48.32

Subtotal: \$48.32

Section 2300 Engineering:

Subtotal: \$0.00

Section 2400 Minor Concrete:

Subtotal: \$0.00

Section 2500 Gabions:

Subtotal: \$0.00

Section 8000 Miscellaneous:

Subtotal: \$0.00

Mobilization:

Construction - 8.57% of total Costs = \$530.97

Surfacing - 8.35% by rock volume = \$0.00

Subtotal: \$530.97

Quarry Development:

Based on 8.35% of total rock volume

Subtotal: \$0.00

Total: \$26,976.88

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Fern Top CT Sale Date:

Road Number: 21-9-29.6 R Road Name:

Road Renovation: 0.26 mi 12 ft Subgrade 0 ft ditch

200 Clearing and Grubbing: acres	\$0.00
300 Excavation:	\$266.60
400 Drainage:	\$0.00
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$196.14
Blading 0.26 mi	
700-1200 Surfacing:	\$0.00
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.0 acres	\$0.00
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing (Mechanical):0.6 acres	\$144.97
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$12.20 Surf. \$0.00.....	\$12.20
Quarry Development:	\$0.00
Total:	\$619.91

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 21-9-29.6 R Road Name:

Section 200 Clearing and Grubbing:

Subtotal: \$0.00

Section 300 Excavation:

Subgrade Compaction: 4 Sta/hr \$27.12/sta. x 0.0 sta = \$0.00

Blading without ditch: \$11.84/station x 0.00 stations = \$0.00

Const LDNG @ 18+50

Tractor: D7 with rippers 1 hr x \$158.11/hr = \$158.11

Vibratory roller, Steel Drum 1 hr x \$108.49/hr = \$108.49

Subtotal: \$266.60

Section 400 Drainage:

Subtotal: \$0.00

Section 500 Renovation:

Blading w/o Ditches: \$428.91/mi x 0.26 mi = \$111.52

Compaction: \$325.47/mi x 0.26 mi = \$84.62

Subtotal: \$196.14

Section 700-1200 Surfacing:

Surfacing:

Subtotal: \$0.00

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Subtotal: \$0.00

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Mechanical Brushing

Brushing width Left: 10ft. Right: 10ft.

RoadSide Brushing Light: \$241.61/acre x 0.60 acres = \$144.97

Subtotal: \$144.97

Section 2300 Engineering:

Subtotal: \$0.00

Section 2400 Minor Concrete:

Subtotal: \$0.00

Section 2500 Gabions:

Subtotal: \$0.00

Section 8000 Miscellaneous:

Subtotal: \$0.00

Mobilization:

Construction - 0.20% of total Costs = \$12.20

Surfacing - 0.00% by rock volume = \$0.00

Subtotal: \$12.20

Quarry Development:

Based on 0.00% of total rock volume

Subtotal: \$0.00

Total: \$619.91

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Fern Top CT Sale Date:

Road Number: 21-9-29.7 C Road Name:

Road Construction: 0.11 mi 12 ft Subgrade 0 ft ditch

200 Clearing and Grubbing: acres	\$0.00
300 Excavation:	\$1,801.22
400 Drainage:	\$0.00
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$0.00
700-1200 Surfacing:	\$0.00
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.4 acres	\$332.95
Includes Small Quantity Factor of 1.29	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing (NONE):0.0 acres	\$0.00
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$42.85 Surf. \$0.00.....	\$42.85
Quarry Development:	\$0.00
Total:	\$2,177.03

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 21-9-29.7 C Road Name:

Section 200 Clearing and Grubbing:

Subtotal: \$0.00

Section 300 Excavation:

Subgrade Compaction: 4 Sta/hr \$27.12/sta. x 5.7 sta = \$153.23

Blading without ditch: \$11.84/station x 5.65 stations = \$66.90

Subgrade construction

Tractor: D7 with rippers 10 hr x \$158.11/hr = \$1,581.10

Subtotal: \$1,801.22

Section 400 Drainage:

Subtotal: \$0.00

Section 500 Renovation:

Subtotal: \$0.00

Section 700-1200 Surfacing:

Surfacing:

Subtotal: \$0.00

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Dry Method with Mulch: \$478.38/acre x 0.40 acres = \$191.35

Includes Small Quantity Factor of 1.29

+ Fertilizer Cost: \$34.00/acre x 0.40 acres = \$13.60

+ Mulch Cost: \$320.00/acre x 0.40 acres = \$128.00

Subtotal: \$332.95

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Subtotal: \$0.00

Section 2300 Engineering:

Subtotal: \$0.00

Section 2400 Minor Concrete:

Subtotal: \$0.00

Section 2500 Gabions:

Subtotal: \$0.00

Section 8000 Miscellaneous:

Subtotal: \$0.00

Mobilization:

Construction - 0.69% of total Costs = \$42.85

Surfacing - 0.00% by rock volume = \$0.00

Subtotal: \$42.85

Quarry Development:

Road Number: 21-9-29.7 C Continued

Based on 0.00% of total rock volume

Subtotal: \$0.00

Total: \$2,177.03

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Fern Top CT Sale Date:

Road Number: 21-9-29.8 I Road Name:

Road Improvement: 0.27 mi 16 ft Subgrade 0 ft ditch

200 Clearing and Grubbing: acres	\$0.00
300 Excavation:	\$660.74
400 Drainage:	\$0.00
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$873.38
Blading 0.27 mi	
700-1200 Surfacing:	\$37,367.78
Quarry Name: WWD 3-0" 363 LCY	
Quarry Name: WWD 6-0" 859 LCY	
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.4 acres	\$332.95
Includes Small Quantity Factor of 1.29	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing (NONE):0.0 acres	\$0.00
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$787.74 Surf. \$0.00.....	\$787.74
Quarry Development:	\$0.00

Total: \$40,022.60

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 21-9-29.8 I Road Name:

Section 200 Clearing and Grubbing:

Subtotal: \$0.00

Section 300 Excavation:

Subgrade Compaction: 4 Sta/hr \$27.12/sta. x 2.0 sta = \$54.24

Blading without ditch: \$11.84/station x 2.00 stations = \$23.68

Const. LDNG w/approach @ 9+00

Tractor: D7 with rippers 3 hr x \$158.11/hr = \$474.33

Vibratory roller, Steel Drum 1 hr x \$108.49/hr = \$108.49

Subtotal: \$660.74

Section 400 Drainage:

Subtotal: \$0.00

Section 500 Renovation:

Blading w/o Ditches: \$428.91/mi x 0.27 mi = \$115.81

Compaction: \$325.47/mi x 0.27 mi = \$87.88

Roadway tree remove+road brush

Excavator - Large (3 CY) 5 hr x \$133.94/hr = \$669.70

Subtotal: \$873.38

Section 700-1200 Surfacing:

Commercial Quarry Name: WWD 3-0"

Length	TopW	BotW	Depth	CWid	#TOs	Width	F.W.L	Taper	Other
0.27mi	12ft	13.3ft	4in		1	10ft	50ft	25ft	

Rock Volume = 303 LCY

Purchase Price / Royalty: \$10.65/LCY x 303 LCY = \$3,226.95

Processing: \$0.88/LCY x 303 LCY = \$266.64

Compaction: \$1.08/LCY x 303 LCY = \$327.24

Basic Rock Haul cost: \$0.58/LCY x 303 LCY = \$175.74

Rock Haul -15% grades: \$0.88/LCY-mi x 303 LCY x 4.90 mi= \$1,306.54

Rock Haul St& Co Roads: \$0.39/LCY-mi x 303 LCY x 33.10 mi= \$3,911.43

Basic Water Haul cost: \$0.53/LCY x 303 LCY = \$160.59

Water Haul -15% grades: \$0.12/LCY-mi x 303 LCY x 1.00 mi= \$36.36

Commercial Quarry Name: WWD 3-0"

Comment: LDNG w/approach @ 9+00

Length	TopW	BotW	Depth	CWid	#TOs	Width	F.W.L	Taper	Other
									60 LCY

Rock Volume = 60 LCY

Purchase Price / Royalty: \$10.65/LCY x 60 LCY = \$639.00

Processing: \$0.88/LCY x 60 LCY = \$52.80

Compaction: \$1.08/LCY x 60 LCY = \$64.80

Basic Rock Haul cost: \$0.58/LCY x 60 LCY = \$34.80

Rock Haul -15% grades: \$0.88/LCY-mi x 60 LCY x 4.90 mi= \$258.72

Rock Haul St& Co Roads: \$0.39/LCY-mi x 60 LCY x 33.10 mi= \$774.54

Basic Water Haul cost: \$0.53/LCY x 60 LCY = \$31.80

Water Haul -15% grades: \$0.12/LCY-mi x 60 LCY x 1.00 mi= \$7.20

Commercial Quarry Name: WWD 6-0"

<u>Length</u>	<u>TopW</u>	<u>BotW</u>	<u>Depth</u>	<u>CWid</u>	<u>#TOs</u>	<u>Width</u>	<u>F.W.L</u>	<u>Taper</u>	<u>Other</u>
0.27mi	13.3ft	16ft	8in	0%	1	10ft	50ft	25ft	

Rock Volume = 698 LCY

Purchase Price / Royalty: \$10.00/LCY x 698 LCY = \$6,980.00

Processing: \$0.88/LCY x 698 LCY = \$614.24

Compaction: \$1.08/LCY x 698 LCY = \$753.84

Basic Rock Haul cost: \$0.58/LCY x 698 LCY = \$404.84

Rock Haul -15% grades: \$0.88/LCY-mi x 698 LCY x 4.90 mi= \$3,009.78

Rock Haul St& Co Roads: \$0.39/LCY-mi x 698 LCY x 33.10 mi= \$9,010.48

Basic Water Haul cost: \$0.53/LCY x 698 LCY = \$369.94

Water Haul -15% grades: \$0.12/LCY-mi x 698 LCY x 1.00 mi= \$83.76

Commercial Quarry Name: WWD 6-0"

Comment: End LDNG

<u>Length</u>	<u>TopW</u>	<u>BotW</u>	<u>Depth</u>	<u>CWid</u>	<u>#TOs</u>	<u>Width</u>	<u>F.W.L</u>	<u>Taper</u>	<u>Other</u>
									50 LCY

Rock Volume = 50 LCY

Purchase Price / Royalty: \$10.00/LCY x 50 LCY = \$500.00

Processing: \$0.88/LCY x 50 LCY = \$44.00

Compaction: \$1.08/LCY x 50 LCY = \$54.00

Basic Rock Haul cost: \$0.58/LCY x 50 LCY = \$29.00

Rock Haul -15% grades: \$0.88/LCY-mi x 50 LCY x 4.90 mi= \$215.60

Rock Haul St& Co Roads: \$0.39/LCY-mi x 50 LCY x 33.10 mi= \$645.45

Basic Water Haul cost: \$0.53/LCY x 50 LCY = \$26.50

Water Haul -15% grades: \$0.12/LCY-mi x 50 LCY x 1.00 mi= \$6.00

Commercial Quarry Name: WWD 6-0"

Comment: LDNG w/approach @ 9+00

<u>Length</u>	<u>TopW</u>	<u>BotW</u>	<u>Depth</u>	<u>CWid</u>	<u>#TOs</u>	<u>Width</u>	<u>F.W.L</u>	<u>Taper</u>	<u>Other</u>
									110 LCY

Rock Volume = 110 LCY

Purchase Price / Royalty: \$10.00/LCY x 110 LCY = \$1,100.00

Processing: \$0.88/LCY x 110 LCY = \$96.80

Compaction: \$1.08/LCY x 110 LCY = \$118.80

Basic Rock Haul cost: \$0.58/LCY x 110 LCY = \$63.80

Rock Haul -15% grades: \$0.88/LCY-mi x 110 LCY x 4.90 mi= \$474.32

Rock Haul St& Co Roads: \$0.39/LCY-mi x 110 LCY x 33.10 mi= \$1,419.99

Basic Water Haul cost: \$0.53/LCY x 110 LCY = \$58.30

Water Haul -15% grades: \$0.12/LCY-mi x 110 LCY x 1.00 mi= \$13.20

Subtotal: \$37,367.78

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Comment: LDNG w/approach @ 9+00

Dry Method with Mulch: \$478.38/acre x 0.40 acres = \$191.35

Includes Small Quantity Factor of 1.29

+ Fertilizer Cost: \$34.00/acre x 0.40 acres = \$13.60

+ Mulch Cost: \$320.00/acre x 0.40 acres = \$128.00

Subtotal: \$332.95

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Subtotal: \$0.00

Section 2300 Engineering:	Subtotal:	\$0.00
Section 2400 Minor Concrete:	Subtotal:	\$0.00
Section 2500 Gabions:	Subtotal:	\$0.00
Section 8000 Miscellaneous:	Subtotal:	\$0.00
Mobilization:		
Construction - 12.71% of total Costs = \$787.74		
Surfacing - 15.58% by rock volume = \$0.00	Subtotal:	\$787.74
Quarry Development:		
Based on 15.58% of total rock volume	Subtotal:	\$0.00
	Total:	\$40,022.60

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Fern Top CT Sale Date:

Road Number: 21-9-29.9 I Road Name:

Road Improvement: 0.15 mi 16 ft Subgrade 0 ft ditch

200 Clearing and Grubbing: acres	\$0.00
300 Excavation:	\$0.00
400 Drainage:	\$0.00
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$381.04
Blading 0.15 mi	
700-1200 Surfacing:	\$16,344.12
Quarry Name: WWD 3-0" 161 LCY	
Quarry Name: WWD 6-0" 373 LCY	
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.0 acres	\$0.00
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing (NONE):0.0 acres	\$0.00
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$335.80 Surf. \$0.00.....	\$335.80
Quarry Development:	\$0.00

Total: \$17,060.96

Notes:

Quantities shown are estimates only and not pay items.
 Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 21-9-29.9 I Road Name:

Section 200 Clearing and Grubbing:

Subtotal: \$0.00

Section 300 Excavation:

Subtotal: \$0.00

Section 400 Drainage:

Subtotal: \$0.00

Section 500 Renovation:

Blading w/o Ditches: \$428.91/mi x 0.15 mi = \$64.34

Compaction: \$325.47/mi x 0.15 mi = \$48.82

Roadway tree remove+road brush

Excavator - Large (3 CY) 2 hr x \$133.94/hr = \$267.88

Subtotal: \$381.04

Section 700-1200 Surfacing:

Commercial Quarry Name: WWD 3-0"

Length	TopW	BotW	Depth	CWid	#TOs	Width	F.W.L	Taper	Other
0.15mi	12ft	13.3ft	4in						

Rock Volume = 161 LCY

Purchase Price / Royalty: \$10.65/LCY x 161 LCY = \$1,714.65

Processing: \$0.88/LCY x 161 LCY = \$141.68

Compaction: \$1.08/LCY x 161 LCY = \$173.88

Basic Rock Haul cost: \$0.58/LCY x 161 LCY = \$93.38

Rock Haul -15% grades: \$0.88/LCY-mi x 161 LCY x 4.90 mi= \$694.23

Rock Haul St& Co Roads: \$0.39/LCY-mi x 161 LCY x 33.10 mi= \$2,078.35

Basic Water Haul cost: \$0.53/LCY x 161 LCY = \$85.33

Water Haul -15% grades: \$0.12/LCY-mi x 161 LCY x 1.00 mi= \$19.32

Commercial Quarry Name: WWD 6-0"

Length	TopW	BotW	Depth	CWid	#TOs	Width	F.W.L	Taper	Other
0.15mi	13.3ft	16ft	8in	0%					

Rock Volume = 373 LCY

Purchase Price / Royalty: \$10.00/LCY x 373 LCY = \$3,730.00

Processing: \$0.88/LCY x 373 LCY = \$328.24

Compaction: \$1.08/LCY x 373 LCY = \$402.84

Basic Rock Haul cost: \$0.58/LCY x 373 LCY = \$216.34

Rock Haul -15% grades: \$0.88/LCY-mi x 373 LCY x 4.90 mi= \$1,608.38

Rock Haul St& Co Roads: \$0.39/LCY-mi x 373 LCY x 33.10 mi= \$4,815.06

Basic Water Haul cost: \$0.53/LCY x 373 LCY = \$197.69

Water Haul -15% grades: \$0.12/LCY-mi x 373 LCY x 1.00 mi= \$44.76

Subtotal: \$16,344.12

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Subtotal: \$0.00

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Subtotal: \$0.00

Section 2300 Engineering:	Subtotal:	\$0.00
Section 2400 Minor Concrete:	Subtotal:	\$0.00
Section 2500 Gabions:	Subtotal:	\$0.00
Section 8000 Miscellaneous:	Subtotal:	\$0.00
Mobilization:		
Construction - 5.42% of total Costs = \$335.80		
Surfacing - 6.81% by rock volume = \$0.00	Subtotal:	\$335.80
Quarry Development:		
Based on 6.81% of total rock volume	Subtotal:	\$0.00
	Total:	\$17,060.96

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Fern Top CT Sale Date:

Road Number: 21-9-29.9 R Road Name:

Road Renovation: 0.14 mi 12 ft Subgrade 0 ft ditch

200 Clearing and Grubbing: acres	\$0.00
300 Excavation:	\$467.90
400 Drainage:	\$0.00
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$507.43
Blading 0.14 mi	
700-1200 Surfacing:	\$0.00
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.3 acres	\$249.71
Includes Small Quantity Factor of 1.29	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing (NONE):0.0 acres	\$0.00
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$24.60 Surf. \$0.00.....	\$24.60
Quarry Development:	\$0.00
Total:	\$1,249.64

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 21-9-29.9 R Road Name:

Section 200 Clearing and Grubbing:

Subtotal: \$0.00

Section 300 Excavation:

Subgrade Compaction: 4 Sta/hr \$27.12/sta. x 2.0 sta = \$54.24

Blading without ditch: \$11.84/station x 1.00 stations = \$11.84

Const. end LDNG + adj approach

Excavator - Large (3 CY) 3 hr x \$133.94/hr = \$401.82

Subtotal: \$467.90

Section 400 Drainage:

Subtotal: \$0.00

Section 500 Renovation:

Blading w/o Ditches: \$428.91/mi x 0.14 mi = \$60.05

Compaction: \$325.47/mi x 0.14 mi = \$45.57

Roadway tree removal+RD brush.

Excavator - Large (3 CY) 3 hr x \$133.94/hr = \$401.82

Subtotal: \$507.43

Section 700-1200 Surfacing:

Surfacing:

Subtotal: \$0.00

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Comment: End LDNG + approach adjustment

Dry Method with Mulch: \$478.38/acre x 0.30 acres = \$143.51

Includes Small Quantity Factor of 1.29

+ Fertilizer Cost: \$34.00/acre x 0.30 acres = \$10.20

+ Mulch Cost: \$320.00/acre x 0.30 acres = \$96.00

Subtotal: \$249.71

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Subtotal: \$0.00

Section 2300 Engineering:

Subtotal: \$0.00

Section 2400 Minor Concrete:

Subtotal: \$0.00

Section 2500 Gabions:

Subtotal: \$0.00

Section 8000 Miscellaneous:

Subtotal: \$0.00

Mobilization:

Construction - 0.40% of total Costs = \$24.60

Surfacing - 0.00% by rock volume = \$0.00

Subtotal: \$24.60

Quarry Development:

Based on 0.00% of total rock volume

Subtotal: \$0.00

Total: \$1,249.64

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Fern Top CT Sale Date:

Road Number: 21-9-30.0 R Road Name:

Road Renovation: 0.30 mi 16 ft Subgrade 2 ft ditch

200 Clearing and Grubbing: acres	\$0.00
300 Excavation:	\$0.00
400 Drainage:	\$5,022.00
Culvert: 0 lf	
DownSpout: 40 lf	
PolyPipe: 60 lf	
500 Renovation:	\$415.74
Blading 0.30 mi	
700-1200 Surfacing:	\$615.66
Quarry Name: WWD 1.5-0" SPOT ROCK 20 LCY	
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.2 acres	\$166.48
Includes Small Quantity Factor of 1.29	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing (Mechanical):0.7 acres	\$169.13
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$128.28 Surf. \$0.00.....	\$128.28
Quarry Development:	\$0.00

Total: \$6,517.28

Notes:

Quantities shown are estimates only and not pay items.
 Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 21-9-30.0 R Road Name:

Section 200 Clearing and Grubbing:

Subtotal: \$0.00

Section 300 Excavation:

Subtotal: \$0.00

Section 400 Drainage:

Full Round	Install @ MP 0.06	24 inch 20 lf x \$30.53/lf = \$610.60
Full Round	Install @ MP 0.22	24 inch 20 lf x \$30.53/lf = \$610.60
Poly Pipe	Replace CMP@ MP 0.06	24 inch 30 lf x \$62.68/lf = \$1,880.40
Poly Pipe	Replace CMP@MP 0.22	24 inch 30 lf x \$62.68/lf = \$1,880.40
Culvert marker installation		
Culvert marker = material + labor 2 ea x \$20.00/ea = \$40.00		
		Subtotal: \$5,022.00

Section 500 Renovation:

Blading: \$694.50/mi x 0.30 mi = \$208.35
Compaction: \$325.47/mi x 0.30 mi = \$97.64
Clean Culverts: \$365.82/mi x 0.30 mi = \$109.75
Subtotal: \$415.74

Section 700-1200 Surfacing:

Commercial Quarry Name: WWD 1.5-0" SPOT ROCK

Comment: Road surfacing over replaced pipes

Length	TopW	BotW	Depth	CWid	#TOs	Width	F.W.L	Taper	Other
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20 LCY

Rock Volume = 20 LCY
Purchase Price / Royalty: \$10.90/LCY x 20 LCY = \$218.00
Processing: \$0.88/LCY x 20 LCY = \$17.60
Compaction: \$1.08/LCY x 20 LCY = \$21.60
Basic Rock Haul cost: \$0.58/LCY x 20 LCY = \$11.60
Rock Haul -15% grades: \$0.88/LCY-mi x 20 LCY x 4.30 mi= \$75.68
Rock Haul St& Co Roads: \$0.39/LCY-mi x 20 LCY x 33.10 mi= \$258.18
Basic Water Haul cost: \$0.53/LCY x 20 LCY = \$10.60
Water Haul -15% grades: \$0.12/LCY-mi x 20 LCY x 1.00 mi= \$2.40

Subtotal: \$615.66

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Comment: Culvert replacement

Dry Method with Mulch: \$478.38/acre x 0.20 acres = \$95.68
Includes Small Quantity Factor of 1.29
+ Fertilizer Cost: \$34.00/acre x 0.20 acres = \$6.80
+ Mulch Cost: \$320.00/acre x 0.20 acres = \$64.00

Subtotal: \$166.48

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Mechanical Brushing

Brushing width Left: 10ft. Right: 10ft.

RoadSide Brushing Light: \$241.61/acre x 0.70 acres = \$169.13	Subtotal:	\$169.13
Section 2300 Engineering:	Subtotal:	\$0.00
Section 2400 Minor Concrete:	Subtotal:	\$0.00
Section 2500 Gabions:	Subtotal:	\$0.00
Section 8000 Miscellaneous:	Subtotal:	\$0.00
Mobilization:		
Construction - 2.07% of total Costs = \$128.28		
Surfacing - 0.26% by rock volume = \$0.00	Subtotal:	\$128.28
Quarry Development:		
Based on 0.26% of total rock volume	Subtotal:	\$0.00
	Total:	\$6,517.28

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Fern Top CT Sale Date:

Road Number: 21-9-30.4 R Road Name:

Road Renovation: 0.20 mi 16 ft Subgrade 2 ft ditch

200 Clearing and Grubbing: acres	\$0.00
300 Excavation:	\$0.00
400 Drainage:	\$0.00
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$277.16
Blading 0.20 mi	
700-1200 Surfacing:	\$0.00
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.0 acres	\$0.00
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing (Mechanical):0.5 acres	\$120.81
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$7.99 Surf. \$0.00.....	\$7.99
Quarry Development:	\$0.00
Total:	\$405.95

Notes:

Quantities shown are estimates only and not pay items.
Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 21-9-30.4 R Road Name:

Section 200 Clearing and Grubbing:

Subtotal: \$0.00

Section 300 Excavation:

Subtotal: \$0.00

Section 400 Drainage:

Subtotal: \$0.00

Section 500 Renovation:

Blading: \$694.50/mi x 0.20 mi = \$138.90

Compaction: \$325.47/mi x 0.20 mi = \$65.09

Clean Culverts: \$365.82/mi x 0.20 mi = \$73.16

Subtotal: \$277.16

Section 700-1200 Surfacing:

Surfacing:

Subtotal: \$0.00

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Subtotal: \$0.00

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Mechanical Brushing

Brushing width Left: 10ft. Right: 10ft.

RoadSide Brushing Light: \$241.61/acre x 0.50 acres = \$120.81

Subtotal: \$120.81

Section 2300 Engineering:

Subtotal: \$0.00

Section 2400 Minor Concrete:

Subtotal: \$0.00

Section 2500 Gabions:

Subtotal: \$0.00

Section 8000 Miscellaneous:

Subtotal: \$0.00

Mobilization:

Construction - 0.13% of total Costs = \$7.99

Surfacing - 0.00% by rock volume = \$0.00

Subtotal: \$7.99

Quarry Development:

Based on 0.00% of total rock volume

Subtotal: \$0.00

Total: \$405.95

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Fern Top CT Sale Date:

Road Number: 21-9-30.7 C Road Name:

Road Construction: 0.23 mi 12 ft Subgrade 0 ft ditch

200 Clearing and Grubbing: acres	\$0.00
300 Excavation:	\$5,170.94
400 Drainage:	\$0.00
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$0.00
700-1200 Surfacing:	\$0.00
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.8 acres	\$665.90
Includes Small Quantity Factor of 1.29	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing (NONE):0.0 acres	\$0.00
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$117.19 Surf. \$0.00.....	\$117.19
Quarry Development:	\$0.00
Total:	\$5,954.03

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 21-9-30.7 C Road Name:

Section 200 Clearing and Grubbing:

Subtotal: \$0.00

Section 300 Excavation:

Subgrade Compaction: 4 Sta/hr \$27.12/sta. x 12.3 sta = \$332.22

Blading without ditch: \$11.84/station x 12.25 stations = \$145.04

Subgrade construction

Tractor: D7 with rippers 25 hr x \$158.11/hr = \$3,952.75

LDNG w/appr @ 10+05

Tractor: D7 with rippers 4 hr x \$158.11/hr = \$632.44

Vibratory roller, Steel Drum 1 hr x \$108.49/hr = \$108.49

Subtotal: \$5,170.94

Section 400 Drainage:

Subtotal: \$0.00

Section 500 Renovation:

Subtotal: \$0.00

Section 700-1200 Surfacing:

Surfacing:

Subtotal: \$0.00

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Dry Method with Mulch: \$478.38/acre x 0.80 acres = \$382.70

Includes Small Quantity Factor of 1.29

+ Fertilizer Cost: \$34.00/acre x 0.80 acres = \$27.20

+ Mulch Cost: \$320.00/acre x 0.80 acres = \$256.00

Subtotal: \$665.90

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Subtotal: \$0.00

Section 2300 Engineering:

Subtotal: \$0.00

Section 2400 Minor Concrete:

Subtotal: \$0.00

Section 2500 Gabions:

Subtotal: \$0.00

Section 8000 Miscellaneous:

Subtotal: \$0.00

Mobilization:

Construction - 1.89% of total Costs = \$117.19

Surfacing - 0.00% by rock volume = \$0.00

Subtotal: \$117.19

Quarry Development:

Based on 0.00% of total rock volume

Subtotal: \$0.00

Total: \$5,954.03

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Fern Top CT Sale Date:

Road Number: 21-9-30.7 R Road Name:

Road Renovation: 0.03 mi 16 ft Subgrade 0 ft ditch

200 Clearing and Grubbing: acres	\$0.00
300 Excavation:	\$0.00
400 Drainage:	\$0.00
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$22.63
Blading 0.03 mi	
700-1200 Surfacing:	\$0.00
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.0 acres	\$0.00
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing (Mechanical):0.1 acres	\$24.16
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$0.94 Surf. \$0.00.....	\$0.94
Quarry Development:	\$0.00
Total:	\$47.73

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 21-9-30.7 R Road Name:

Section 200 Clearing and Grubbing:

Subtotal: \$0.00

Section 300 Excavation:

Subtotal: \$0.00

Section 400 Drainage:

Subtotal: \$0.00

Section 500 Renovation:

Blading w/o Ditches: \$428.91/mi x 0.03 mi = \$12.87

Compaction: \$325.47/mi x 0.03 mi = \$9.76

Subtotal: \$22.63

Section 700-1200 Surfacing:

Surfacing:

Subtotal: \$0.00

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Subtotal: \$0.00

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Mechanical Brushing

Brushing width Left: 10ft. Right: 10ft.

RoadSide Brushing Light: \$241.61/acre x 0.10 acres = \$24.16

Subtotal: \$24.16

Section 2300 Engineering:

Subtotal: \$0.00

Section 2400 Minor Concrete:

Subtotal: \$0.00

Section 2500 Gabions:

Subtotal: \$0.00

Section 8000 Miscellaneous:

Subtotal: \$0.00

Mobilization:

Construction - 0.02% of total Costs = \$0.94

Surfacing - 0.00% by rock volume = \$0.00

Subtotal: \$0.94

Quarry Development:

Based on 0.00% of total rock volume

Subtotal: \$0.00

Total: \$47.73

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Fern Top CT Sale Date:

Road Number: 21-9-32.0 R Road Name: FERNTOP ROAD

Road Renovation: 0.40 mi 16 ft Subgrade 2 ft ditch

200 Clearing and Grubbing: acres	\$0.00
300 Excavation:	\$0.00
400 Drainage:	\$0.00
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$1,412.72
Blading 0.40 mi	
Slide Removal 100 cy	
700-1200 Surfacing:	\$3,075.10
Quarry Name: WWD 6-0" 50 LCY	
Quarry Name: WWD 1.5-0" SPOT ROCK 50 LCY	
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.0 acres	\$0.00
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing (Mechanical):1.0 acres	\$241.61
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$94.96 Surf. \$0.00.....	\$94.96
Quarry Development:	\$0.00

Total: \$4,824.38

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 21-9-32.0 R Road Name: FERNTOP ROAD

Section 200 Clearing and Grubbing:

Subtotal: \$0.00

Section 300 Excavation:

Subtotal: \$0.00

Section 400 Drainage:

Subtotal: \$0.00

Section 500 Renovation:

Comment: Bank slough removal @ MP 3.47, use adjacent TO for spoils

Slide Removal 100 cy

Blading: \$694.50/mi x 0.40 mi = \$277.80

Compaction: \$325.47/mi x 0.40 mi = \$130.19

Clean Culverts: \$365.82/mi x 0.40 mi = \$146.33

Bank slough removal MP 3.47

Backhoe 10 hr x \$85.84/hr = \$858.40

Subtotal: \$1,412.72

Section 700-1200 Surfacing:

Commercial Quarry Name: WWD 6-0"

Comment: Existing landing @ MP 1.80

Length	TopW	BotW	Depth	CWid	#TOs	Width	F.W.L	Taper	Other
									50 LCY

Rock Volume = 50 LCY

Purchase Price / Royalty: \$10.00/LCY x 50 LCY = \$500.00

Processing: \$0.88/LCY x 50 LCY = \$44.00

Compaction: \$1.08/LCY x 50 LCY = \$54.00

Basic Rock Haul cost: \$0.58/LCY x 50 LCY = \$29.00

Rock Haul -15% grades: \$0.88/LCY-mi x 50 LCY x 3.95 mi= \$173.80

Rock Haul St& Co Roads: \$0.39/LCY-mi x 50 LCY x 33.10 mi= \$645.45

Basic Water Haul cost: \$0.53/LCY x 50 LCY = \$26.50

Water Haul -15% grades: \$0.12/LCY-mi x 50 LCY x 1.00 mi= \$6.00

Commercial Quarry Name: WWD 1.5-0" SPOT ROCK

Comment: For area contaminated by bank sloughs

Length	TopW	BotW	Depth	CWid	#TOs	Width	F.W.L	Taper	Other
									50 LCY

Rock Volume = 50 LCY

Purchase Price / Royalty: \$10.90/LCY x 50 LCY = \$545.00

Processing: \$0.88/LCY x 50 LCY = \$44.00

Compaction: \$1.08/LCY x 50 LCY = \$54.00

Basic Rock Haul cost: \$0.58/LCY x 50 LCY = \$29.00

Rock Haul -15% grades: \$0.88/LCY-mi x 50 LCY x 5.60 mi= \$246.40

Rock Haul St& Co Roads: \$0.39/LCY-mi x 50 LCY x 33.10 mi= \$645.45

Basic Water Haul cost: \$0.53/LCY x 50 LCY = \$26.50

Water Haul -15% grades: \$0.12/LCY-mi x 50 LCY x 1.00 mi= \$6.00

Subtotal: \$3,075.10

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Subtotal: \$0.00

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Mechanical Brushing

Brushing width Left: 10ft. Right: 10ft.

RoadSide Brushing Light: \$241.61/acre x 1.00 acres = \$241.61

Subtotal: \$241.61

Section 2300 Engineering:

Subtotal: \$0.00

Section 2400 Minor Concrete:

Subtotal: \$0.00

Section 2500 Gabions:

Subtotal: \$0.00

Section 8000 Miscellaneous:

Subtotal: \$0.00

Mobilization:

Construction - 1.53% of total Costs = \$94.96

Surfacing - 1.28% by rock volume = \$0.00

Subtotal: \$94.96

Quarry Development:

Based on 1.28% of total rock volume

Subtotal: \$0.00

Total: \$4,824.38

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Fern Top CT Sale Date:

Road Number: 21-9-32.3 R Road Name:

Road Renovation: 0.15 mi 16 ft Subgrade 2 ft ditch

200 Clearing and Grubbing: acres	\$0.00
300 Excavation:	\$849.42
400 Drainage:	\$0.00
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$207.87
Blading 0.15 mi	
700-1200 Surfacing:	\$1,478.75
Quarry Name: WWD 6-0" 50 LCY	
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.1 acres	\$83.24
Includes Small Quantity Factor of 1.29	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing (Mechanical):0.4 acres	\$96.64
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$54.53 Surf. \$0.00.....	\$54.53
Quarry Development:	\$0.00

Total: \$2,770.45

Notes:

Quantities shown are estimates only and not pay items.
 Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 21-9-32.3 R Road Name:

Section 200 Clearing and Grubbing:

Subtotal: \$0.00

Section 300 Excavation:

Construct LDNG @ MP 0.04

Tractor: D7 with rippers 2 hr x \$158.11/hr = \$316.22

Vibratory roller, Steel Drum 1 hr x \$108.49/hr = \$108.49

Construct LDNG @ MP 0.15

Tractor: D7 with rippers 2 hr x \$158.11/hr = \$316.22

Vibratory roller, Steel Drum 1 hr x \$108.49/hr = \$108.49

Subtotal: \$849.42

Section 400 Drainage:

Subtotal: \$0.00

Section 500 Renovation:

Blading: \$694.50/mi x 0.15 mi = \$104.18

Compaction: \$325.47/mi x 0.15 mi = \$48.82

Clean Culverts: \$365.82/mi x 0.15 mi = \$54.87

Subtotal: \$207.87

Section 700-1200 Surfacing:

Commercial Quarry Name: WWD 6-0"

Comment: LDNG @ MP 0.04

Length	TopW	BotW	Depth	CWid	#TOs	Width	F.W.L	Taper	Other
									50 LCY

Rock Volume = 50 LCY

Purchase Price / Royalty: \$10.00/LCY x 50 LCY = \$500.00

Processing: \$0.88/LCY x 50 LCY = \$44.00

Compaction: \$1.08/LCY x 50 LCY = \$54.00

Basic Rock Haul cost: \$0.58/LCY x 50 LCY = \$29.00

Rock Haul -15% grades: \$0.88/LCY-mi x 50 LCY x 3.95 mi= \$173.80

Rock Haul St& Co Roads: \$0.39/LCY-mi x 50 LCY x 33.10 mi= \$645.45

Basic Water Haul cost: \$0.53/LCY x 50 LCY = \$26.50

Water Haul -15% grades: \$0.12/LCY-mi x 50 LCY x 1.00 mi= \$6.00

Subtotal: \$1,478.75

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Dry Method with Mulch: \$478.38/acre x 0.10 acres = \$47.84

Includes Small Quantity Factor of 1.29

+ Fertilizer Cost: \$34.00/acre x 0.10 acres = \$3.40

+ Mulch Cost: \$320.00/acre x 0.10 acres = \$32.00

Subtotal: \$83.24

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Mechanical Brushing

Brushing width Left: 10ft. Right: 10ft.

RoadSide Brushing Light: \$241.61/acre x 0.40 acres = \$96.64

	Subtotal:	\$96.64
Section 2300 Engineering:		
	Subtotal:	\$0.00
Section 2400 Minor Concrete:		
	Subtotal:	\$0.00
Section 2500 Gabions:		
	Subtotal:	\$0.00
Section 8000 Miscellaneous:		
	Subtotal:	\$0.00
Mobilization:		
Construction - 0.88% of total Costs = \$54.53		
Surfacing - 0.64% by rock volume = \$0.00		
	Subtotal:	\$54.53
Quarry Development:		
Based on 0.64% of total rock volume		
	Subtotal:	\$0.00
	Total:	\$2,770.45

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Fern Top CT Sale Date:

Road Number: Spur 1 C Road Name:

Road Construction: 0.10 mi 12 ft Subgrade 0 ft ditch

200 Clearing and Grubbing: acres	\$0.00
300 Excavation:	\$3,444.66
400 Drainage:	\$0.00
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$0.00
700-1200 Surfacing:	\$0.00
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.3 acres	\$249.71
Includes Small Quantity Factor of 1.29	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing (NONE):0.0 acres	\$0.00
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$74.17 Surf. \$0.00.....	\$74.17
Quarry Development:	\$0.00
Total:	\$3,768.55

Notes:

Quantities shown are estimates only and not pay items.
 Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: Spur 1 C Road Name:

Section 200 Clearing and Grubbing:

Subtotal: \$0.00

Section 300 Excavation:

Subgrade Compaction: 4 Sta/hr \$27.12/sta. x 7.3 sta = \$196.62

Blading without ditch: \$11.84/station x 7.25 stations = \$85.84

Subgrade construction + 2 LDNG

Tractor: D7 with rippers 20 hr x \$158.11/hr = \$3,162.20

Subtotal: \$3,444.66

Section 400 Drainage:

Subtotal: \$0.00

Section 500 Renovation:

Subtotal: \$0.00

Section 700-1200 Surfacing:

Surfacing:

Subtotal: \$0.00

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Dry Method with Mulch: \$478.38/acre x 0.30 acres = \$143.51

Includes Small Quantity Factor of 1.29

+ Fertilizer Cost: \$34.00/acre x 0.30 acres = \$10.20

+ Mulch Cost: \$320.00/acre x 0.30 acres = \$96.00

Subtotal: \$249.71

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Subtotal: \$0.00

Section 2300 Engineering:

Subtotal: \$0.00

Section 2400 Minor Concrete:

Subtotal: \$0.00

Section 2500 Gabions:

Subtotal: \$0.00

Section 8000 Miscellaneous:

Subtotal: \$0.00

Road Number: Spur 1 C Continued

Mobilization:

Construction - 1.20% of total Costs = \$74.17

Surfacing - 0.00% by rock volume = \$0.00

Subtotal: \$74.17

Quarry Development:

Based on 0.00% of total rock volume

Subtotal: \$0.00

Total: \$3,768.55

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Fern Top CT Sale Date:

Road Number: Spur 2 C Road Name:

Road Construction: 0.07 mi 12 ft Subgrade 0 ft ditch

200 Clearing and Grubbing: acres	\$0.00
300 Excavation:	\$1,719.41
400 Drainage:	\$0.00
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$0.00
700-1200 Surfacing:	\$0.00
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.3 acres	\$249.71
Includes Small Quantity Factor of 1.29	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing (NONE):0.0 acres	\$0.00
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$39.54 Surf. \$0.00.....	\$39.54
Quarry Development:	\$0.00
Total:	\$2,008.66

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: Spur 2 C Road Name:

Section 200 Clearing and Grubbing:

Subtotal: \$0.00

Section 300 Excavation:

Subgrade Compaction: 4 Sta/hr \$27.12/sta. x 3.6 sta = \$96.28

Blading without ditch: \$11.84/station x 3.55 stations = \$42.03

Subgrade construction

Tractor: D7 with rippers 10 hr x \$158.11/hr = \$1,581.10

Subtotal: \$1,719.41

Section 400 Drainage:

Subtotal: \$0.00

Section 500 Renovation:

Subtotal: \$0.00

Section 700-1200 Surfacing:

Surfacing:

Subtotal: \$0.00

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Dry Method with Mulch: \$478.38/acre x 0.30 acres = \$143.51

Includes Small Quantity Factor of 1.29

+ Fertilizer Cost: \$34.00/acre x 0.30 acres = \$10.20

+ Mulch Cost: \$320.00/acre x 0.30 acres = \$96.00

Subtotal: \$249.71

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Subtotal: \$0.00

Section 2300 Engineering:

Subtotal: \$0.00

Section 2400 Minor Concrete:

Subtotal: \$0.00

Section 2500 Gabions:

Subtotal: \$0.00

Section 8000 Miscellaneous:

Subtotal: \$0.00

Road Number: Spur 2 C Continued

Mobilization:

Construction - 0.64% of total Costs = \$39.54

Surfacing - 0.00% by rock volume = \$0.00

Subtotal: \$39.54

Quarry Development:

Based on 0.00% of total rock volume

Subtotal: \$0.00

Total: \$2,008.66

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Fern Top CT Sale Date:

Road Number: Spur 3 C Road Name:

Road Construction: 0.07 mi 16 ft Subgrade 0 ft ditch

200 Clearing and Grubbing: acres	\$0.00
300 Excavation:	\$1,721.36
400 Drainage:	\$0.00
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$0.00
700-1200 Surfacing:	\$9,216.12
Quarry Name: WWD 3-0" 75 LCY	
Quarry Name: WWD 6-0" 223 LCY	
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.3 acres	\$208.09
Includes Small Quantity Factor of 1.29	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing (NONE):0.0 acres	\$0.00
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$223.78 Surf. \$0.00.....	\$223.78
Quarry Development:	\$0.00

Total: \$11,369.35

Notes:

Quantities shown are estimates only and not pay items.
 Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: Spur 3 C Road Name:

Section 200 Clearing and Grubbing:

Subtotal: \$0.00

Section 300 Excavation:

Subgrade Compaction: 4 Sta/hr \$27.12/sta. x 3.6 sta = \$97.63

Blading without ditch: \$11.84/station x 3.60 stations = \$42.62

Subgrade construction

Tractor: D7 with rippers 10 hr x \$158.11/hr = \$1,581.10

Subtotal: \$1,721.36

Section 400 Drainage:

Subtotal: \$0.00

Section 500 Renovation:

Subtotal: \$0.00

Section 700-1200 Surfacing:

Commercial Quarry Name: WWD 3-0"

Length	TopW	BotW	Depth	CWid	#TOs	Width	F.W.L	Taper	Other
--------	------	------	-------	------	------	-------	-------	-------	-------

0.07mi	12ft	13.3ft	4in						
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Rock Volume = 75 LCY

Purchase Price / Royalty: \$10.65/LCY x 75 LCY = \$798.75

Processing: \$0.88/LCY x 75 LCY = \$66.00

Compaction: \$1.08/LCY x 75 LCY = \$81.00

Basic Rock Haul cost: \$0.58/LCY x 75 LCY = \$43.50

Rock Haul -15% grades: \$0.88/LCY-mi x 75 LCY x 5.30 mi= \$349.80

Rock Haul St& Co Roads: \$0.39/LCY-mi x 75 LCY x 33.10 mi= \$968.18

Basic Water Haul cost: \$0.53/LCY x 75 LCY = \$39.75

Water Haul -15% grades: \$0.12/LCY-mi x 75 LCY x 1.00 mi= \$9.00

Commercial Quarry Name: WWD 6-0"

Length	TopW	BotW	Depth	CWid	#TOs	Width	F.W.L	Taper	Other
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0.07mi	13.3ft	16ft	8in	0%					
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Rock Volume = 173 LCY

Purchase Price / Royalty: \$10.00/LCY x 173 LCY = \$1,730.00

Processing: \$0.88/LCY x 173 LCY = \$152.24

Compaction: \$1.08/LCY x 173 LCY = \$186.84

Basic Rock Haul cost: \$0.58/LCY x 173 LCY = \$100.34

Rock Haul -15% grades: \$0.88/LCY-mi x 173 LCY x 5.30 mi= \$806.87

Rock Haul St& Co Roads: \$0.39/LCY-mi x 173 LCY x 33.10 mi= \$2,233.26

Basic Water Haul cost: \$0.53/LCY x 173 LCY = \$91.69

Water Haul -15% grades: \$0.12/LCY-mi x 173 LCY x 1.00 mi= \$20.76

Commercial Quarry Name: WWD 6-0"

Comment: End LDNG

Length	TopW	BotW	Depth	CWid	#TOs	Width	F.W.L	Taper	Other
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									50 LCY
--	--	--	--	--	--	--	--	--	--------

Rock Volume = 50 LCY

Purchase Price / Royalty: \$10.00/LCY x 50 LCY = \$500.00

Processing: \$0.88/LCY x 50 LCY = \$44.00

Compaction: \$1.08/LCY x 50 LCY = \$54.00

Basic Rock Haul cost: \$0.58/LCY x 50 LCY = \$29.00

Rock Haul -15% grades: \$0.88/LCY-mi x 50 LCY x 5.30 mi= \$233.20

Rock Haul St& Co Roads: \$0.39/LCY-mi x 50 LCY x 33.10 mi= \$645.45

Basic Water Haul cost: \$0.53/LCY x 50 LCY = \$26.50

Water Haul -15% grades: \$0.12/LCY-mi x 50 LCY x 1.00 mi= \$6.00

Subtotal: \$9,216.12

Section 1300 Geotextiles:

	Subtotal:	\$0.00
Section 1400 Slope Protection:		
	Subtotal:	\$0.00
Section 1800 Soil Stabilization:		
Dry Method with Mulch: $\$478.38/\text{acre} \times 0.25 \text{ acres} = \119.59		
Includes Small Quantity Factor of 1.29		
+ Fertilizer Cost: $\$34.00/\text{acre} \times 0.25 \text{ acres} = \8.50		
+ Mulch Cost: $\$320.00/\text{acre} \times 0.25 \text{ acres} = \80.00		
	Subtotal:	\$208.09
Section 1900 Cattleguards:		
	Subtotal:	\$0.00
Section 2100 Roadside Brushing:		
	Subtotal:	\$0.00
Section 2300 Engineering:		
	Subtotal:	\$0.00
Section 2400 Minor Concrete:		
	Subtotal:	\$0.00
Section 2500 Gabions:		
	Subtotal:	\$0.00
Section 8000 Miscellaneous:		
	Subtotal:	\$0.00
Mobilization:		
Construction - 3.61% of total Costs = \$223.78		
Surfacing - 3.80% by rock volume = \$0.00		
	Subtotal:	\$223.78
Quarry Development:		
Based on 3.80% of total rock volume		
	Subtotal:	\$0.00
	Total:	\$11,369.35

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Fern Top CT Sale Date:

Road Number: Spur 4 C Road Name:

Road Construction: 0.06 mi 12 ft Subgrade 0 ft ditch

200 Clearing and Grubbing: acres	\$0.00
300 Excavation:	\$1,418.77
400 Drainage:	\$0.00
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$0.00
700-1200 Surfacing:	\$0.00
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.2 acres	\$166.48
Includes Small Quantity Factor of 1.29	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing (NONE):0.0 acres	\$0.00
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$31.83 Surf. \$0.00.....	\$31.83
Quarry Development:	\$0.00
Total:	\$1,617.08

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: Spur 4 C Road Name:

Section 200 Clearing and Grubbing:

Subtotal: \$0.00

Section 300 Excavation:

Subgrade Compaction: 4 Sta/hr \$27.12/sta. x 4.0 sta = \$107.12

Blading without ditch: \$11.84/station x 3.95 stations = \$46.77

Subgrade const + approach adj

Tractor: D7 with rippers 8 hr x \$158.11/hr = \$1,264.88

Subtotal: \$1,418.77

Section 400 Drainage:

Subtotal: \$0.00

Section 500 Renovation:

Subtotal: \$0.00

Section 700-1200 Surfacing:

Surfacing:

Subtotal: \$0.00

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Dry Method with Mulch: \$478.38/acre x 0.20 acres = \$95.68

Includes Small Quantity Factor of 1.29

+ Fertilizer Cost: \$34.00/acre x 0.20 acres = \$6.80

+ Mulch Cost: \$320.00/acre x 0.20 acres = \$64.00

Subtotal: \$166.48

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Subtotal: \$0.00

Section 2300 Engineering:

Subtotal: \$0.00

Section 2400 Minor Concrete:

Subtotal: \$0.00

Section 2500 Gabions:

Subtotal: \$0.00

Section 8000 Miscellaneous:

Subtotal: \$0.00

Road Number: Spur 4 C Continued

Mobilization:

Construction - 0.51% of total Costs = \$31.83

Surfacing - 0.00% by rock volume = \$0.00

Subtotal: \$31.83

Quarry Development:

Based on 0.00% of total rock volume

Subtotal: \$0.00

Total: \$1,617.08

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Fern Top CT Sale Date:

Road Number: Spur 5 I Road Name:

Road Improvement: 0.05 mi 14 ft Subgrade 0 ft ditch

200 Clearing and Grubbing: acres	\$0.00
300 Excavation:	\$0.00
400 Drainage:	\$0.00
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$37.72
Blading 0.05 mi	
700-1200 Surfacing:	\$5,209.66
Quarry Name: WWD 6-0" 164 LCY	
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.0 acres	\$0.00
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing (Mechanical):0.1 acres	\$24.16
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$105.84 Surf. \$0.00.....	\$105.84
Quarry Development:	\$0.00
Total:	\$5,377.38

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: Spur 5 I Road Name:

Section 200 Clearing and Grubbing:

Subtotal: \$0.00

Section 300 Excavation:

Subtotal: \$0.00

Section 400 Drainage:

Subtotal: \$0.00

Section 500 Renovation:

Blading w/o Ditches: \$428.91/mi x 0.05 mi = \$21.45

Compaction: \$325.47/mi x 0.05 mi = \$16.27

Subtotal: \$37.72

Section 700-1200 Surfacing:

Commercial Quarry Name: WWD 6-0"

Length	TopW	BotW	Depth	CWid	#TOs	Width	F.W.L	Taper	Other
0.05mi	12ft	13.3ft	8in	0%					

Rock Volume = 114 LCY

Purchase Price / Royalty: \$10.00/LCY x 114 LCY = \$1,140.00

Processing: \$0.88/LCY x 114 LCY = \$100.32

Compaction: \$1.08/LCY x 114 LCY = \$123.12

Basic Rock Haul cost: \$0.58/LCY x 114 LCY = \$66.12

Rock Haul -15% grades: \$0.88/LCY-mi x 114 LCY x 6.44 mi= \$646.06

Rock Haul St& Co Roads: \$0.39/LCY-mi x 114 LCY x 33.10 mi= \$1,471.63

Basic Water Haul cost: \$0.53/LCY x 114 LCY = \$60.42

Water Haul -15% grades: \$0.12/LCY-mi x 114 LCY x 1.00 mi= \$13.68

Commercial Quarry Name: WWD 6-0"

Comment: End LDNG

Length	TopW	BotW	Depth	CWid	#TOs	Width	F.W.L	Taper	Other
									50 LCY

Rock Volume = 50 LCY

Purchase Price / Royalty: \$10.00/LCY x 50 LCY = \$500.00

Processing: \$0.88/LCY x 50 LCY = \$44.00

Compaction: \$1.08/LCY x 50 LCY = \$54.00

Basic Rock Haul cost: \$0.58/LCY x 50 LCY = \$29.00

Rock Haul -15% grades: \$0.88/LCY-mi x 50 LCY x 6.44 mi= \$283.36

Rock Haul St& Co Roads: \$0.39/LCY-mi x 50 LCY x 33.10 mi= \$645.45

Basic Water Haul cost: \$0.53/LCY x 50 LCY = \$26.50

Water Haul -15% grades: \$0.12/LCY-mi x 50 LCY x 1.00 mi= \$6.00

Subtotal: \$5,209.66

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Subtotal: \$0.00

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Mechanical Brushing

Brushing width Left: 10ft. Right: 10ft.

Road Number: Spur 5 I Continued

RoadSide Brushing Light: \$241.61/acre x 0.10 acres = \$24.16	Subtotal:	\$24.16
Section 2300 Engineering:	Subtotal:	\$0.00
Section 2400 Minor Concrete:	Subtotal:	\$0.00
Section 2500 Gabions:	Subtotal:	\$0.00
Section 8000 Miscellaneous:	Subtotal:	\$0.00
Mobilization:		
Construction - 1.71% of total Costs = \$105.84		
Surfacing - 2.09% by rock volume = \$0.00	Subtotal:	\$105.84
Quarry Development:		
Based on 2.09% of total rock volume	Subtotal:	\$0.00
	Total:	\$5,377.38

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Fern Top CT Sale Date:

Road Number: Swingroad1 C (Not built for log haul, for harvest operations)

Road Construction: 0.02 mi 12 ft Subgrade 0 ft ditch

200 Clearing and Grubbing: acres	\$0.00
300 Excavation:	\$1,007.53
400 Drainage:	\$0.00
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$0.00
700-1200 Surfacing:	\$0.00
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.2 acres	\$166.48
Includes Small Quantity Factor of 1.29	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing (NONE):0.0 acres	\$0.00
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$23.57 Surf. \$0.00.....	\$23.57
Quarry Development:	\$0.00

Total: \$1,197.58

Notes:

Quantities shown are estimates only and not pay items.
 Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: Swingroad1 C Road Name:

Section 200 Clearing and Grubbing:

Subtotal: \$0.00

Section 300 Excavation:

Swing road + LDNG

Tractor: D7 with rippers 5 hr x \$158.11/hr = \$790.55

Vibratory roller, Steel Drum 2 hr x \$108.49/hr = \$216.98

Subtotal: \$1,007.53

Section 400 Drainage:

Subtotal: \$0.00

Section 500 Renovation:

Subtotal: \$0.00

Section 700-1200 Surfacing:

Surfacing:

Subtotal: \$0.00

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Dry Method with Mulch: \$478.38/acre x 0.20 acres = \$95.68

Includes Small Quantity Factor of 1.29

+ Fertilizer Cost: \$34.00/acre x 0.20 acres = \$6.80

+ Mulch Cost: \$320.00/acre x 0.20 acres = \$64.00

Subtotal: \$166.48

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Subtotal: \$0.00

Section 2300 Engineering:

Subtotal: \$0.00

Section 2400 Minor Concrete:

Subtotal: \$0.00

Section 2500 Gabions:

Subtotal: \$0.00

Section 8000 Miscellaneous:

Subtotal: \$0.00

Mobilization:

Construction - 0.38% of total Costs = \$23.57

Surfacing - 0.00% by rock volume = \$0.00

Subtotal: \$23.57

Quarry Development:

Based on 0.00% of total rock volume

Subtotal: \$0.00

Total: \$1,197.58

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Mobilization Costs - Construction and Surfacing

T.S. Contract Name: Fern Top CT Sale Date:

Average Mobilization distance = 50 miles Factor = 1.00

Mobilization: Construction

Fire Equipment: 1 ea x (1.00 x \$74.00/ea + 0 mi x \$4.09/mi)= \$74.00
Graders-all: 1 ea x (1.00 x \$410.00/ea + 0 mi x \$14.10/mi)= \$410.00
Brush Cutter: 1 ea x (1.00 x \$410.00/ea) = \$410.00
Loaders < 3cy: 1 ea x (1.00 x \$410.00/ea + 0 mi x \$8.84/mi)= \$410.00
Rollers & Comp: 1 ea x (1.00 x \$410.00/ea + 0 mi x \$21.70/mi)= \$410.00
Excavators: 1 ea x (1.00 x \$861.00/ea = \$861.00
RTBackhoes 24/30: 1 ea x (1.00 x \$305.00/ea + 0 mi x \$5.65/mi)= \$305.00
Tractors <= D7: 1 ea x (1.00 x \$635.00/ea + 0 mi x \$31.00/mi)= \$635.00
Dump Truck<=15cy: 1 ea x (1.00 x \$89.00/ea + 0 mi x \$3.72/mi)= \$89.00
Water Truck: 1 ea x (1.00 x \$95.00/ea + 0 mi x \$3.94/mi)= \$95.00
Equipment Washing: 10 ea x (\$250.00) /ea = \$2,500.00

Subtotal: \$6,199.00

Mobilization: Surfacing

Subtotal: \$0.00

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Summary of Construction Quantities

T.S. Contract Name: Fern Top CT Sale Date:

Road Number	Const	Improv	Renov	Decomm	Temp
21-9-20.2 I		16.90			
21-9-20.2 R			4.22		
21-9-21.2 R			2.11		
21-9-21.4 C	5.05				
21-9-21.4 R			4.00		
21-9-29.0 R			107.71		
21-9-29.5 C	10.00				
21-9-29.6 I		4.90			
21-9-29.6 R			13.60		
21-9-29.7 C	5.65				
21-9-29.8 I		14.00			
21-9-29.9 I		7.75			
21-9-29.9 R			7.25		
21-9-30.0 R			15.84		
21-9-30.4 R			10.50		
21-9-30.7 C	12.25				
21-9-30.7 R			1.60		
21-9-32.0 R			21.12		
21-9-32.3 R			7.92		
Spur 1 C	5.25				
Spur 2 C	3.55				
Spur 3 C	3.60				
Spur 4 C	2.95				
Spur 5 I		2.75			
Swingroad1 C	1.30				
Total Sta:	49.60	46.30	195.87		

200 Clearing and Grubbing*	Clearing acres
21-9-20.2 I	0.0
21-9-20.2 R	0.0
21-9-21.2 R	0.0
21-9-21.4 C	0.0
21-9-21.4 R	0.0
21-9-29.0 R	0.0
21-9-29.5 C	0.0
21-9-29.6 I	0.0
21-9-29.6 R	0.0
21-9-29.7 C	0.0
21-9-29.8 I	0.0
21-9-29.9 I	0.0
21-9-29.9 R	0.0
21-9-30.0 R	0.0
21-9-30.4 R	0.0
21-9-30.7 C	0.0
21-9-30.7 R	0.0
21-9-32.0 R	0.0
21-9-32.3 R	0.0
Spur 1 C	0.0
Spur 2 C	0.0
Spur 3 C	0.0
Spur 4 C	0.0
Spur 5 I	0.0

Continuation of Construction Quantities

Swingroad1 C 0.0

Totals: 0.0
 *Included in Time and Equipment for Excavation

300 Excavation	Excav LCY.s	Haul sta-yds	Haul yd-mi
Totals:	0	0	0
Const LDNG @ 18+50 21-9-29.6 R			
Tractor: D7 with rippers			1 hr
Vibratory roller, Steel Drum			1 hr
Const LDNG @ MP 1.81 21-9-29.0 R			
Tractor: D7 with rippers			2 hr
Vibratory roller, Steel Drum			1 hr
Const LDNG w/appr @ 2+80 21-9-21.4 R			
Tractor: D7 with rippers			5 hr
Const LDNG w/appr @ 7+15 21-9-21.4 C			
Tractor: D7 with rippers			5 hr
Const. end LDNG + adj approach 21-9-29.9 R			
Excavator - Large (3 CY)			3 hr
Const. LDNG @ MP 0.92 21-9-29.0 R			
Tractor: D7 with rippers			2 hr
Vibratory roller, Steel Drum			1 hr
Const. LDNG w/appr @ MP 1.35 21-9-29.0 R			
Tractor: D7 with rippers			5 hr
Vibratory roller, Steel Drum			1 hr
Const. LDNG w/approach @ 2+00 21-9-29.6 I			
Tractor: D7 with rippers			5 hr
Vibratory roller, Steel Drum			1 hr
Const. LDNG w/approach @ 4+90 21-9-29.6 I			
Tractor: D7 with rippers			5 hr
Vibratory roller, Steel Drum			1 hr
Const. LDNG w/approach @ 9+00 21-9-29.8 I			
Tractor: D7 with rippers			3 hr
Vibratory roller, Steel Drum			1 hr
Construct LDNG @ MP 0.04 21-9-32.3 R			
Tractor: D7 with rippers			2 hr
Vibratory roller, Steel Drum			1 hr
Construct LDNG @ MP 0.15 21-9-32.3 R			
Tractor: D7 with rippers			2 hr
Vibratory roller, Steel Drum			1 hr
Construct TOR @ MP 0.67 21-9-29.0 R			
Tractor: D7 with rippers			2 hr
Vibratory roller, Steel Drum5 hr
LDNG w/appr @ 10+05 21-9-30.7 C			
Tractor: D7 with rippers			4 hr
Vibratory roller, Steel Drum			1 hr
Subgrade + LDNG construction 21-9-29.5 C			
Tractor: D7 with rippers			15 hr
Subgrade const + approach adj Spur 4 C			
Tractor: D7 with rippers			8 hr
Subgrade construction 21-9-30.7 C			
Tractor: D7 with rippers			25 hr
Subgrade construction 21-9-29.7 C			
Tractor: D7 with rippers			10 hr
Subgrade construction 21-9-21.4 C			
Tractor: D7 with rippers			25 hr
Subgrade construction Spur 3 C			
Tractor: D7 with rippers			10 hr
Subgrade construction Spur 2 C			
Tractor: D7 with rippers			10 hr

Continuation of Construction Quantities

Subgrade construction + 2 LDNG Spur 1 C

Tractor: D7 with rippers	20 hr
Swing road + LDNG Swingroad1 C	
Tractor: D7 with rippers	5 hr
Vibratory roller, Steel Drum	2 hr

400 Drainage

Road Number	Culvert	Polypipe	Downspout
21-9-29.0 R	0 lf	120 lf	0 lf
21-9-30.0 R	0 lf	60 lf	40 lf
Total Drainage:		180 lf	40 lf

Culvert marker installation	21-9-30.0 R	
Culvert marker = material + labor		2 ea
Culvert marker installation	21-9-29.0 R	
Culvert marker = material + labor		8 ea

500 Renovation

	Blade Miles	Slide cy
21-9-20.2 I	0.32	0
21-9-20.2 R	0.08	0
21-9-21.2 R	0.04	0
21-9-21.4 R	0.08	0
21-9-29.0 R	2.04	100
21-9-29.6 I	0.09	0
21-9-29.6 R	0.26	0
21-9-29.8 I	0.27	0
21-9-29.9 I	0.15	0
21-9-29.9 R	0.14	0
21-9-30.0 R	0.30	0
21-9-30.4 R	0.20	0
21-9-30.7 R	0.03	0
21-9-32.0 R	0.40	100
21-9-32.3 R	0.15	0
Spur 5 I	0.05	0
Totals:	4.60	200

Bank slough removal MP 3.47	21-9-32.0 R	
Backhoe		10 hr
Reestablish approach @ 0+00	21-9-29.6 I	
Tractor: D7 with rippers		11 hr
Excavator - Large (3 CY)		11 hr
Dump Truck 10 cy		11 hr
Roadway tree removal+RD brush.	21-9-29.9 R	
Excavator - Large (3 CY)		3 hr
Roadway tree remove+road brush	21-9-29.9 I	
Excavator - Large (3 CY)		2 hr
Roadway tree remove+road brush	21-9-29.8 I	
Excavator - Large (3 CY)		5 hr
Slough removal @ MP 1.12	21-9-29.0 R	
Backhoe		10 hr

Continuation of Construction Quantities

Surfacing (Loose Cubic Yards)

Note: Due to slight rounding differences between total LCY vs. subtotaled LCY, Totals shown here may not be exactly as shown in the road summaries and worksheets.

Quarry Name: WWD 1.5-0"

Commercial	Roadway	Turnouts	Other	
21-9-29.0 R	2,941	0	0	2,941
21-9-20.2 R	88	0	0	88
Totals:	3,029	0	0	3,029

Quarry Name: WWD 3-0"

Commercial	Roadway	Turnouts	Other	
21-9-29.0 R	0	0	100	100
21-9-29.6 I	104	0	0	104
21-9-29.6 I	0	0	25	25
21-9-29.6 I	0	0	25	25
21-9-29.9 I	161	0	0	161
21-9-29.8 I	291	12	0	303
Spur 3 C	75	0	0	75
21-9-29.8 I	0	0	60	60
21-9-20.2 I	355	0	0	355
Totals:	986	12	210	1,208

Quarry Name: WWD 6-0"

Commercial	Roadway	Turnouts	Other	
21-9-29.0 R	0	0	50	50
21-9-29.0 R	0	0	60	60
21-9-29.0 R	0	0	100	100
21-9-29.0 R	0	0	80	80
21-9-29.6 I	240	0	0	240
21-9-29.6 I	0	0	150	150
21-9-29.6 I	0	0	110	110
21-9-29.9 I	373	0	0	373
21-9-29.8 I	674	25	0	699
21-9-29.8 I	0	0	50	50
Spur 3 C	173	0	0	173
Spur 3 C	0	0	50	50
Spur 5 I	114	0	0	114
Spur 5 I	0	0	50	50
21-9-32.0 R	0	0	50	50
21-9-32.3 R	0	0	50	50
21-9-29.8 I	0	0	110	110
21-9-29.0 R	0	0	50	50
21-9-20.2 I	821	0	0	821
21-9-20.2 I	0	0	50	50
Totals:	2,395	25	1,010	3,430

Quarry Name: WWD 1.5-0" SPOT ROCK

Commercial	Roadway	Turnouts	Other	
21-9-29.0 R	0	0	100	100
21-9-32.0 R	0	0	50	50
21-9-30.0 R	0	0	20	20
Totals:	0	0	170	170

1300 Geotextiles

Totals: No Quantities

Continuation of Construction Quantities

1400 Slope Protection

Totals: 0 cyTotals: 0

1800 Soil stabilization - acres	Dry W/O Mulch	Dry/with Mulch	Hydro Mulch
21-9-21.4 C	0.0	0.4	
21-9-21.4 R	0.0	0.2	
21-9-29.0 R	0.0	0.3	
21-9-29.5 C	0.0	0.6	
21-9-29.6 I	0.0	0.3	
21-9-29.7 C	0.0	0.4	
21-9-29.8 I	0.0	0.4	
21-9-29.9 R	0.0	0.3	
21-9-30.0 R	0.0	0.2	
21-9-30.7 C	0.0	0.8	
21-9-32.3 R	0.0	0.1	
Spur 1 C	0.0	0.3	
Spur 2 C	0.0	0.3	
Spur 3 C	0.0	0.3	
Spur 4 C	0.0	0.2	
Swingroad1 C	0.0	0.2	

Totals: 0.0 5.3 0.0

Small Quantity Factor of 1.29 used

1900 Cattleguards

Totals: No Quantities

2100 RoadSide Brushing	acres
21-9-20.2 I - Mechanical Brushing	0.8
21-9-20.2 R - Mechanical Brushing	0.2
21-9-21.2 R - Mechanical Brushing	0.1
21-9-29.0 R - Mechanical Brushing	5.0
21-9-29.6 I - Mechanical Brushing	0.2
21-9-29.6 R - Mechanical Brushing	0.6
21-9-30.0 R - Mechanical Brushing	0.7
21-9-30.4 R - Mechanical Brushing	0.5
21-9-30.7 R - Mechanical Brushing	0.1
21-9-32.0 R - Mechanical Brushing	1.0
21-9-32.3 R - Mechanical Brushing	0.4
Spur 5 I - Mechanical Brushing	0.1

Totals: 9.72300 Engineering stationsTotals: 0.00

2400 Minor Concrete

Totals: No Quantities

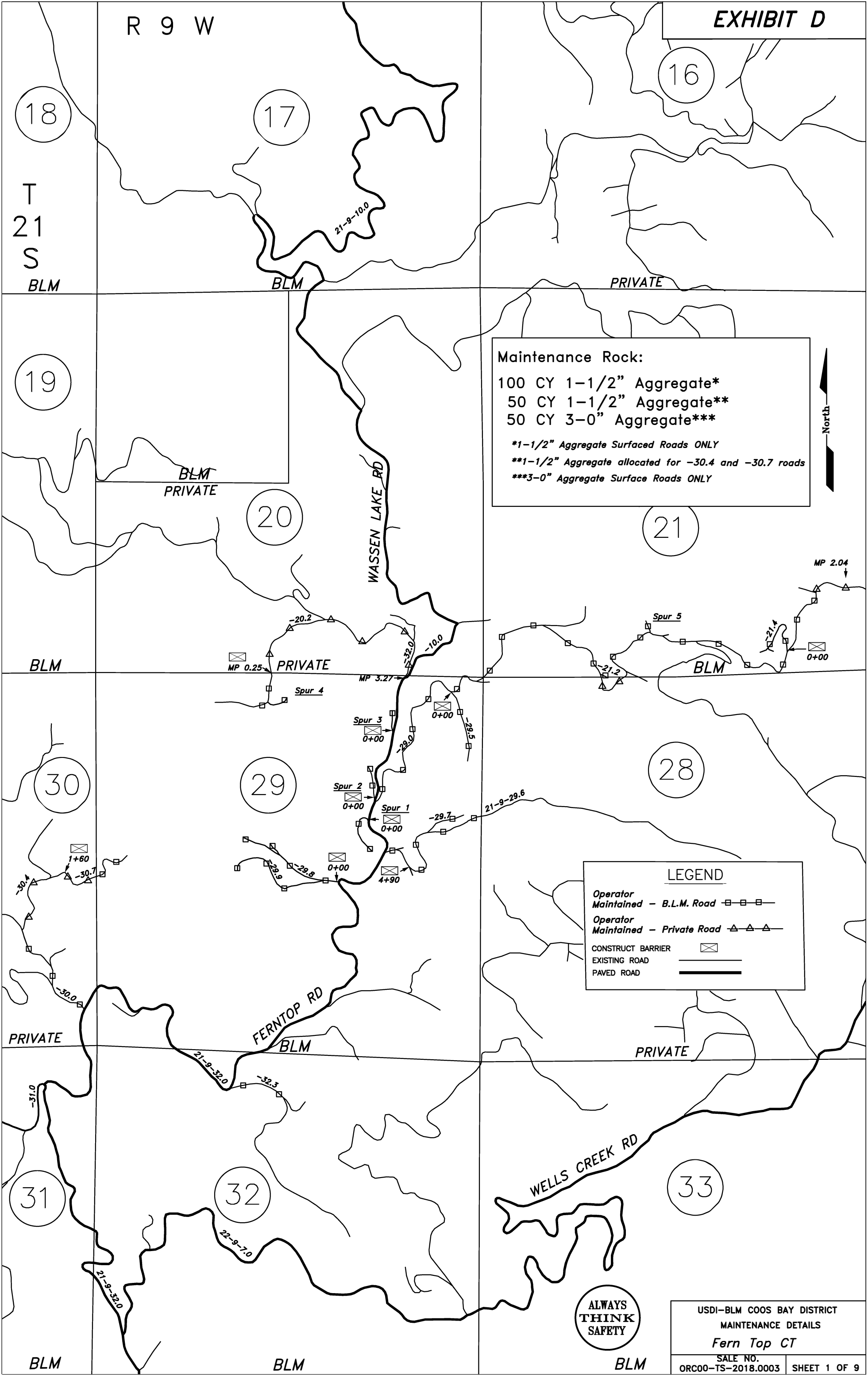
Continuation of Construction Quantities

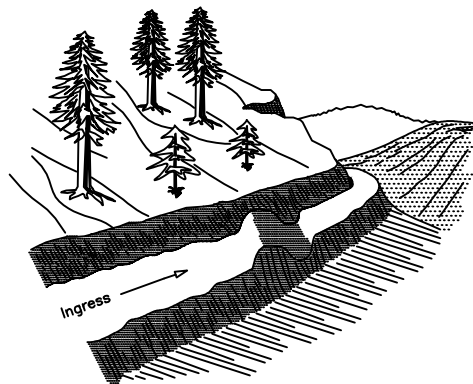
2500 Gabions

Totals: No Quantities

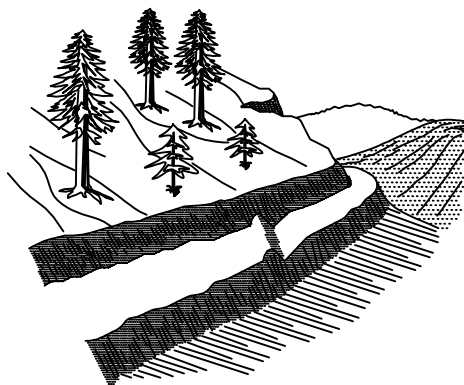
8000 Miscellaneous

Totals: No Quantities

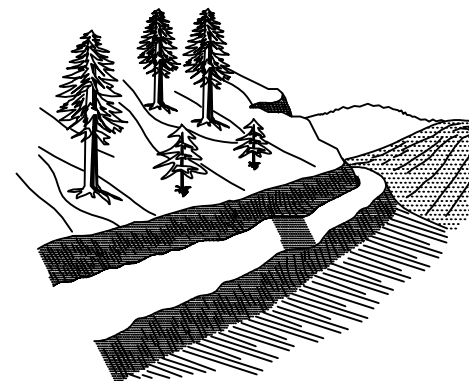




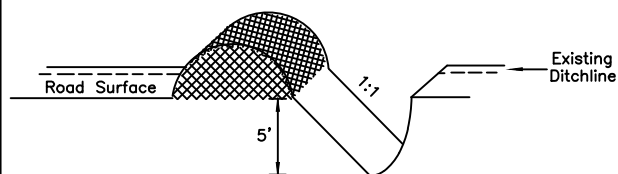
BARRIERS



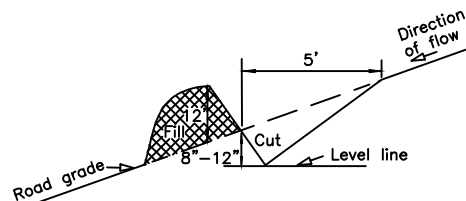
WATER BAR



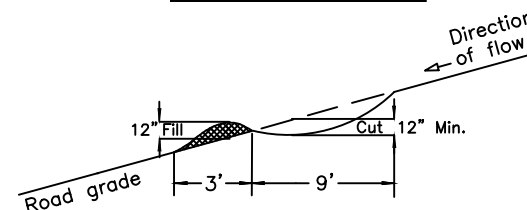
WATER DIP



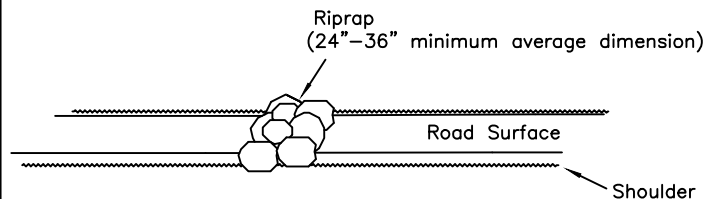
(NOT TO SCALE)



(NOT TO SCALE)



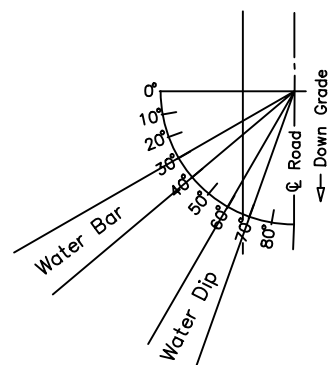
(NOT TO SCALE)



NOTES

1. ALL BARRIERS, WATER BARS, AND WATER DIPS AS REQUIRED SHALL BE CONSTRUCTED AS SHOWN.
2. LOCATIONS WILL BE AS DIRECTED BY THE AUTHORIZED OFFICER PRIOR TO CONSTRUCTION.
3. ALL WATER BARS SHALL BE SKEWED 30° - 40°.
4. ALL WATER DIPS SHALL BE SKEWED 60° - 70°.
5. ALL WATER BARS AND WATER DIPS SHALL BE CUT INTO THE ROADBED FROM THE BOTTOM OF THE DITCHLINE.
6. DITCHLINES SHALL BE BLOCKED WITH EXCAVATED MATERIAL (DITCH DAM) DOWNGRADE FROM ALL WATER BARS AND WATER DIPS.
7. EXCAVATED MATERIAL FROM BARRIER TRENCH SHALL BE PLACED ON THE SIDE NEAREST THE BEGINNING OF THE ROAD.
8. OUTLETS OF WATER DIPS MUST BE ROCKED ON FILL SLOPE.
9. RIPRAP BARRIERS SHALL BE AT LEAST 4' HIGH, 4' DEEP, AND OF SUFFICIENT WIDTH TO COMPLETELY BLOCK THE ROADWAY AND ANY ADJACENT SHOULDERS THAT CAN BE TRAVELED WITH A VEHICLE.
10. ALL BERMS INCLUDING WATER BARS, WATER DIPS, AND EARTHEN BARRIERS SHALL BE COMPACTED TO 85% OF MAXIMUM DENSITY.

SKEW DIAGRAM



WATER DIP/BAR SPACING

ROAD GRADE	MAXIMUM SPACING
%	FEET
0-4	500
5-6	400
7-9	300
10-14	100
15-20	50

ALWAYS
THINK
SAFETY

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
COOS BAY DISTRICT OREGON

BARRIER AND EROSION
CONTROL DETAIL

DESIGNED T. AGUILAR
REVIEWED J. MENGUITA
APPROVED G. HARKLEROD
DRAWN JRM SCALE NONE
DATE 01/18 SHEET 2 OF 9
DRAWING NO.

"EXHIBIT D" ESTIMATE OF QUANTITIES*

ROAD NUMBER	SURFACING				OTHER			SOIL STABILIZATION		OTHER	
	TOP **	AGG. MAINT. ROCK **	AGG. MAINT. ROCK **	WATER DIP ARMOR. **	RIPRAP BARRIER **	RIPRAP ARMOR **	JAWRUN ROCK **	DRY	HYDRO- MULCH		
SPEC. NO.	1200	1200	1000	1000	1400			1800	1800		
UNITS	C.Y.	C.Y.	C.Y.	C.Y.	C.Y.	C.Y.	C.Y.	ACRES	ACRES		
	(C)	(C)	(A)	(B)	(A)	(B)	(A)				
21-9-20.2	(C)	(C)	(A)	(B)	10 (A)	(B)	(A)	0.6			
21-9-21.2	(C)	(C)	(A)	(B)	(A)	(B)	(A)				
21-9-21.4	(C)	(C)	(A)	(B)	10 (A)	(B)	(A)	0.6			
21-9-29.0	(C)	(C)	(A)	(B)	(A)	(B)	(A)				
21-9-29.5	(C)	(C)	(A)	(B)	10 (A)	(B)	(A)	0.6			
21-9-29.6	(C)	(C)	(A)	(B)	10 (A)	(B)	(A)	0.7			
21-9-29.7	(C)	(C)	(A)	(B)	(A)	(B)	(A)	0.3			
21-9-29.8	(C)	(C)	(A)	(B)	10 (A)	(B)	(A)				
21-9-29.9	(C)	(C)	(A)	(B)	(A)	(B)	(A)	0.4			
21-9-30.0	(C)	(C)	(A)	(B)	(A)	(B)	(A)				
21-9-30.4	(C)	(C)	(A)	(B)	(A)	(B)	(A)				
21-9-30.7	(C)	(C)	(A)	(B)	10 (A)	(B)	(A)	0.7			
21-9-32.0	(C)	(C)	(A)	(B)	(A)	(B)	(A)				
21-9-32.3	(C)	(C)	(A)	(B)	(A)	(B)	(A)				
Spur 1	(C)	(C)	(A)	(B)	10 (A)	(B)	(A)	0.3			
Spur 2	(C)	(C)	(A)	(B)	10 (A)	(B)	(A)	0.3			
Spur 3	(C)	(C)	(A)	(B)	10 (A)	(B)	(A)				
Spur 4	(C)	(C)	(A)	(B)	(A)	(B)	(A)	0.2			
Spur 5	(C)	(C)	(A)	(B)	(A)	(B)	(A)				
	(C)	(C)	(A)	(B)	(A)	(B)	(A)				
	(C)	(C)	(A)	(B)	(A)	(B)	(A)				
	(C)	(C)	(A)	(B)	(A)	(B)	(A)				
	(C)	(C)	(A)	(B)	(A)	(B)	(A)				
	(C)	(C)	(A)	(B)	(A)	(B)	(A)				
	(C)	(C)	(A)	(B)	(A)	(B)	(A)				
	(C)	(C)	(A)	(B)	(A)	(B)	(A)				
TOTALS	(C)	150 (C)	50 (A)	(B)	90 (A)	(B)	(A)	4.7			

* FOR INFORMATIONAL USE ONLY. QUANTITIES SHOWN ARE NOT PAY ITEMS.
 ** ROCK QUANTITIES ARE TRUCK MEASUREMENT.

ITEM	SIZE	GRADE
PITRUN		
1000 (Base)	3"	A
	TBD	B
1100	4"	B
1200 (Top)	1 1/2"	C
1400 (RIPRAP)	34"	A
	28"	B
CHIP SEAL ROCK	3/4"	S

GRADE INDICATED IN CIRCLE ○



U. S. DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT COOS BAY DISTRICT OREGON	
"EXHIBIT D" ESTIMATE OF QUANTITIES	
DESIGNED <u>T. AGUILAR</u>	
REVIEWED <u>J. MENGUITA</u>	
APPROVED <u>G. HARKLEROD</u>	
DRAWN TA	SCALE NONE
DATE 01/18	SHEET 3 OF 9
DRAWING NO.	

ROAD MAINTENANCE SPECIFICATIONS

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

Section

3000	GENERAL
3100	OPERATIONAL MAINTENANCE
3200	SEASONAL MAINTENANCE
3300	FINAL MAINTENANCE
3400	OTHER MAINTENANCE

GENERAL - 3000

- 3001 The Purchaser shall be required to maintain all roads as shown on the Exhibit D map of this contract in accordance with Sections 3000, 3100, 3200, 3300, and 3400 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 standards required in Exhibit C of this contract.**
- 3003 The minimum required maintenance on any 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 road(s) with logging units substantially completed prior to moving operations to other roads. 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 patrol grader. 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 place **150 yds³ of crushed aggregate**, conforming to the requirements in Section 1200 of Exhibit C of this contract, and **50 yds³ of crushed aggregate**, conforming to the requirements in Section 1000 of this contract, on the roadway at locations and in the amounts designated by the Authorized Officer.
- This crushed 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 patrol grader.
- 3103 The Purchaser shall maintain established berms and place additional berms using adjacent material where needed to protect fills as directed by the Authorized Officer.
- 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 patrol 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 suitable turnout or 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.
- 3104b The Purchaser shall be responsible for removal of all slides or slough, up to fifteen (15) 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 (15) 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 work, based on current BLM Timber Appraisal Production Cost Schedules. 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.
- 3106 The Purchaser shall be responsible for repair and replacement of all materials eroded from road shoulders and fill slopes, up to fifteen (15) station yards in quantity, at any one site. The work includes unlimited multiple sites on all roads required to be maintained by the Purchaser. Prior to repair and replacement of eroded material exceeding fifteen (15) 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, borrow source, and method of repair. 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 upon current BLM Timber Sale Appraisal Production Cost Schedules. Adjustments in purchase price for completed work shall be made as necessary, and no less than once per year when actual work is ongoing.
- 3107 The Purchaser shall cut or trim trees and brush which obstructs vision or prevents the safe passage of traffic along the traveled way, when directed by the Authorized Officer.
- The Purchaser shall also cut trees or brush encroaching on the road prism that are a result of his activities or winter damage during the contract period. Disposal of such vegetative material shall be by scattering below the road.
- 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 by such skidding activity is not considered maintenance and shall be performed at the Purchaser's expense.
- 3108a The Purchaser shall perform logging operations on gravel and/or bituminous roadways only where the locations have been marked on the ground and/or approved by the Authorized Officer.

SEASONAL MAINTENANCE - 3200

- 3201 The Purchaser shall perform preventive maintenance at the end of Purchaser's hauling each season and during nonhauling periods which occur between other operations on the contract area. This includes cross ditching, blockage, removing ruts or other surface irregularities, and all other 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, prior to October 1 each year, except as specified in Subsection 3203, after initial commencement of construction or logging operations. Thereafter all roads shall have continuous preventive maintenance and road cleanup until suspension of seasonal operations. 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 road(s) 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 30 calendar days following the expiration of Purchaser's right to cut and remove timber (Sec. 4) 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 Section 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 Subsections 3108 and 3108a. **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.

3420 The Purchaser shall perform the following work:

<u>Road No.</u>	<u>Work</u>
-----------------	-------------

21-9-20.2	At MP 0.25, construct riprap barrier in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.
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21-9-21.4	Construct riprap barrier in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.
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Scarify full width of subgrade to a depth of 12" and pullback any bermed excavation.

Seed, fertilize, and mulch all scarified and disturbed areas in accordance with Section 1800 of the Exhibit C.

<u>Road No.</u>	<u>Work</u>
21-9-29.5	<p>Construct riprap barrier in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.</p> <p>Scarify full width of subgrade to a depth of 12" and pullback any bermed excavation.</p> <p>Seed, fertilize, and mulch all scarified and disturbed areas in accordance with Section 1800 of the Exhibit C.</p>
21-9-29.6	<p>At Sta. 4+90, construct riprap barrier in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.</p> <p>From Sta. 4+90 to 18+50, construct water bars in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.</p> <p>Seed, fertilize, and mulch roadway and disturbed areas in accordance with Section 1800 of the Exhibit C.</p>
21-9-29.7	<p>Scarify full width of subgrade to a depth of 12" and pullback any bermed excavation.</p> <p>Seed, fertilize, and mulch all scarified and disturbed areas in accordance with Section 1800 of the Exhibit C.</p>
21-9-29.8	<p>Construct riprap barrier in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.</p> <p>Construct water bars in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.</p>
21-9-29.9	<p>From Station 0+00 to 7+75, construct water bars in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer</p> <p>From Sta. 7+75 to 15+00 , scarify full width of subgrade to a depth of 12" and pullback any bermed excavation. Seed, fertilize, and mulch all scarified and disturbed areas in accordance with Section 1800 of the Exhibit C.</p>
21-9-30.7	<p>At Sta. 1+60, construct riprap barrier in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.</p> <p>From Station 1+60 to 7+05, apply mulch only (no grass seed) to roadway and construct 7 water bars in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.</p> <p>From Station 7+05 to 13+85, scarify full width of subgrade to a depth of 12" and pullback any bermed excavation. Seed, fertilize, and mulch all scarified and disturbed areas in accordance with Section 1800 of the Exhibit C.</p>
Spur No. 1	<p>Construct riprap barrier in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.</p> <p>Scarify full width of subgrade to a depth of 12" and pullback any bermed excavation.</p> <p>Seed, fertilize, and mulch all scarified and disturbed areas in accordance with Section 1800 of the Exhibit C.</p>

SALE NO. ORC00-TS 2018.0003
FERN TOP CT
EXHIBIT D
Sheet 9 of 9 Sheets

<u>Road No.</u>	<u>Work</u>
Spur No. 2	Construct riprap barrier in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer. Scarify full width of subgrade to a depth of 12" and pullback any bermed excavation. Seed, fertilize, and mulch all scarified and disturbed areas in accordance with Section 1800 of the Exhibit C.
Spur No. 3	Construct riprap barrier in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer. Construct water bars in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.
Spur No. 4	Scarify full width of subgrade to a depth of 12" and pullback any bermed excavation. Seed, fertilize, and mulch all scarified and disturbed areas in accordance with Section 1800 of the Exhibit C.
Spur No. 5	Construct water bars in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.

ROAD MAINTENANCE APPRAISAL

SALE NO.
ORC00-TS-2018.0003

SALE NAME:
Fern Top CT

ROAD NUMBERS	MILES (Rnd.)
21-9-20.2	0.4
21-9-21.2	0.0
21-9-21.4	0.2
21-9-29.0	2.0
21-9-29.5	0.2
21-9-29.6	0.4
21-9-29.7	0.1
21-9-29.8	0.3
21-9-29.9	0.3
21-9-30.0	0.3
21-9-30.4	0.2
21-9-30.7	0.3
21-9-32.0	0.2
21-9-32.3	0.2
Spur 1	0.1
Spur 2	0.1
Spur 3	0.1
Spur 4	0.1
Spur 5	0.1
Total	<u>5.6</u>

-SUMMARY-

1.	MOVE IN:	\$1,344.00
2.	CULVERTS, SLOUGH, SLUMPS, & MISC	\$3,404.80
3.	GRADING FOR TIMBER HAUL	\$6,540.80
4.	GRADING FOR AGGREGATE HAUL	\$0.00
5.	MAINTENANCE ROCK	\$5,990.98
6.	OTHER MAINTENANCE	<u>\$9,405.00</u>
TOTAL MAINTENANCE:		\$26,685.58

ROAD MAINTENANCE APPRAISAL

SALE NO.
ORC00-TS-2018.0003

SALE NAME:
Fern Top CT

-APPRAISAL WORKSHEET-

1.	MOVE-IN: EQUIPMENT	MOVE-INS	COST/MOVE	
	DUMP TRUCK	1	\$114.00	\$114.00
	COMPACTOR	1	\$410.00	\$410.00
	GRADER	1	\$410.00	\$410.00
	BACKHOE W/ FE LOADER	1	\$410.00	\$410.00
		TOTAL =		\$1,344.00
2.	CULVERT MAINT., SLOUGH REMOVAL, SLUMP REPAIRS, ETC.			
	MAINT. OBLIGATION	AVE. COST		
	5.6 MILES @	\$608.00 / MILE =		\$3,404.80
3.	GRADING FOR TIMBER HAUL			
		2 5.6 11.2		
		TOTAL MILES	11.2	
	11.2 MILES @	\$584.00 / MILE =		\$6,540.80
4.	GRADING FOR AGGREGATE HAUL:			
	MILES @	/ MILE =		
5.	MAINTENANCE ROCK: WWD			
	SIZE 1.5-0"	APPR FROM	MILES	
	ROYALTY 150 CU. YDS. @	\$10.90		\$1,635.00
	PROCESSING 150 CU. YDS. @	\$0.88		\$132.00
	SLOW HAUL 0 CU. YDS. @	\$1.75		\$0.00
	MED. HAUL 150 CU. YDS. @	\$0.88 6.4		\$850.08
	FAST HAUL 150 CU. YDS. @	\$0.39 33.1		\$1,936.35
		TOTAL =		\$4,553.43
	MAINTENANCE ROCK: WWD			
	SIZE 3-0"	APPR FROM	MILES	
	ROYALTY 50 CU. YDS. @	\$10.65		\$532.50
	PROCESSING 50 CU. YDS. @	\$0.88		\$44.00
	SLOW HAUL 0 CU. YDS. @	\$1.75		\$0.00
	MED. HAUL 50 CU. YDS. @	\$0.88 4.9		\$215.60
	FAST HAUL 50 CU. YDS. @	\$0.39 33.1		\$645.45
		TOTAL =		\$1,437.55
	SIZE	APPR FROM	MILES	
	ROYALTY 0 CU. YDS. @	\$0.00		\$0.00
	PROCESSING 0 CU. YDS. @	\$0.00		\$0.00
	SLOW HAUL 0 CU. YDS. @	\$0.00		\$0.00
	MED. HAUL 0 CU. YDS. @	\$0.00 0.0		\$0.00
		TOTAL =		\$0.00

ROAD MAINTENANCE APPRAISAL

SALE NO.
ORC00-TS-2018.0003

SALE NAME:
Fern Top CT

6. OTHER MAINTENANCE:

<u>21-9-20.2</u>			
Rip rap barrier	\$420.00		
Scarification	\$0.00		
Soil stabilization	\$0.00		
Waterbars	<u>\$60.00</u>		
		\$480.00	
<u>21-9-21.4</u>			
Rip rap barrier	\$420.00		
Scarification	\$335.00		
Soil stabilization	<u>\$435.00</u>		
		\$1,190.00	
<u>21-9-29.5</u>			
Rip rap barrier	\$420.00		
Scarification	\$335.00		
Soil stabilization	<u>\$435.00</u>		
		\$1,190.00	
<u>21-9-29.6</u>			
Rip rap barrier	\$420.00		
Soil stabilization	\$510.00		
Waterbars	<u>\$280.00</u>		
		\$1,210.00	
<u>21-9-29.7</u>			
Scarification	\$180.00		
Soil stabilization	<u>\$220.00</u>		
		\$400.00	
<u>21-9-29.8</u>			
Rip rap barrier	\$420.00		
Waterbars	<u>\$100.00</u>		
		\$520.00	
<u>21-9-29.9</u>			
Waterbars	\$60.00		
Scarification	\$240.00		
Soil stabilization	<u>\$290.00</u>		
		\$590.00	
<u>21-9-30.7</u>			
Rip rap barrier	\$420.00		
Scarification	\$275.00		
Soil stabilization	\$500.00		
Waterbars	<u>\$140.00</u>		
		\$1,335.00	
<u>Spur 1</u>			
Rip rap barrier	\$420.00		
Scarification	\$180.00		
Soil stabilization	<u>\$220.00</u>		
		\$820.00	
<u>Spur 2 (incl. swing)</u>			
Rip rap barrier	\$420.00		
Scarification	\$150.00		
Soil stabilization	<u>\$255.00</u>		
		\$825.00	
<u>Spur 3</u>			
Rip rap barrier	\$420.00		
Waterbars	<u>\$100.00</u>		
		\$520.00	
<u>Spur 4</u>			
Scarification	\$120.00		
Soil stabilization	<u>\$145.00</u>		
		\$265.00	
<u>Spur 5</u>			
Waterbars	<u>\$60.00</u>		
		\$60.00	
		<u>\$9,405.00</u>	
	TOTAL:		

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Version: 5.2.0.116
Updated: 6/14/2017

Summary of All Roads and Projects

T.S. Contract Name: Fern Top CT Tract No: 2018.0003 Sale Date:
Prepared by: T. Aguilar Ph: 5417514397 Print Date: 3/2/2018 11:41:52 AM
Construction: 49.60 sta
Improve: 46.30 sta Renov: 195.87 sta Decom: 0.00 sta Temp: 0.00 sta

200 Clearing and Grubbing: 0.0 acres	\$0.00
300 Excavation:	\$31,539.34
Haul < 500 ft: 0 sta-yds	
Haul > 500 ft: 0 yd-mi	
400 Drainage:	\$10,343.20
Culvert: 0 lf	DownSpout: 40 lf
PolyPipe: 180 lf	
500 Renovation:	\$12,200.61
Blading 4.60 mi	
Slide Removal 200 cy	
700-1200 Surfacing:	\$247,954.47
Commercial Quarry Name: WWD 1.5-0" 3,029 LCY	
Commercial Quarry Name: WWD 3-0" 1,208 LCY	
Commercial Quarry Name: WWD 6-0" 3,430 LCY	
Commercial Quarry Name: WWD 1.5-0" SPOT ROCK 170 LCY	
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 5.3 acres	\$4,369.99
Includes Small Quantity Factor of 1.29	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing:	\$2,343.62
Mechanical Brushing: 9.7 acres	
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$6,199.00 Surf. \$0.00.....	\$6,199.00
Quarry Development:	\$0.00
Total: = \$314,950.23	

Notes:

Quantities shown are estimates only and not pay items.
Surfacing Quantities are loose cubic yards.



**United States
Department of the Interior
Bureau of Land Management**

Timber Appraisal

Sale Name: Fern Top	Sale Date: Friday, April 27, 2018
BLM District: Coos Bay DO	Unit of Measure: 16' MBF
Contract #: ORC00-TS-2018.0003	Contract Term: 36 months
Sale Type: Advertised	Contract Mechanism: 5450-3
	Sale of Timber - Lump Sum

SBA Set-Aside

Content

Timber Appraisal Summary
Stumpage Summary
Unit Summary
Stump to Truck
Transportation
Engineering Allowances
Other Allowances

Prepared By: Kirkland, Travis S

Approved By: Davis, Brian P

Legal Description of Contract Area

Land Status	County	Township	Range	Section	Subdivision	Meridian
O&C	Douglas	21S	9W	21	S1/2 SW1/4, S1/2 SE1/4	Willamette
O&C	Douglas	21S	9W	29	NE 1/4, E1/2 NW1/4, SW1/4 NW1/4, N1/2 SW 1/4, SE1/4 SW1/4, N1/2 SE1/4	Willamette
O&C	Douglas	21S	9W	32	NE1/4 NW1/4	Willamette

Species Totals

Species	Net	Gross Merch	Gross	# of Merch Logs	# of Cull Logs	# of Trees
Douglas Fir	3,561.0	3,699.0	3,708.0	59,678	554	13,086
Western Hemlock	2,454.0	2,643.0	2,666.0	45,160	1,424	13,058
Red Alder	1,411.0	1,564.0	1,630.0	30,521	3,202	11,176
Bigleaf Maple	35.0	41.0	46.0	890	319	605
Western Redcedar	15.0	16.0	16.0	404	4	155
Totals	7,476.0	7,963.0	8,066.0	136,653	5,503	38,080

Cutting Area Acres

Regeneration Harvest Acres	Partial Cut Acres	Right of Way Acres	Total Acres	Net Volume per Acre
0.0	322.0	4.0	326.0	22.9

Logging Costs

Stump to Truck	\$1,550,563.33
Transportation	\$415,957.84
Road Construction	\$314,950.23
Maintenance/Rockwear	\$85,249.76
Road Use	\$4,650.00
Other Allowances	\$41,910.18
Total:	\$2,413,281.34
Total Logging Cost per MBF:	\$322.80

Utilization Centers

Location	Distance	% of Net Volume
Southport	48.8 miles	60 %
Douglas County	54.4 miles	21 %
Douglas County Hardwood	65.9 miles	19 %

Profit & Risk

Basic Profit & Risk	10 %
Additional Risk	1 %
Total Profit & Risk	11 %

Tract Features

Quadratic Mean DBH	13.8 in
Average GM Log	58 bf
Average Volume per Acre	22.9 mbf
Recovery	93 %
<u>Net MBF volume:</u>	
Green	7,476.0 mbf
Salvage	0 mbf
Export	0 mbf
<u>Ground Base Logging:</u>	
Percent of Sale Volume	16 %
Average Yarding Slope	10 %
Average Yarding Distance	250 ft
<u>Cable Logging:</u>	
Percent of Sale Volume	84 %
Average Yarding Slope	60 %
Average Yarding Distance	354 ft
<u>Aerial Logging:</u>	
Percent of Sale Volume	0 %
Average Yarding Slope	0 %
Average Yarding Distance	0 ft

Cruise

Cruise Completed	January 2018
Cruised By	Kirkland, Herron
Cruise Method	

For all Harvest Areas: The timber volumes for all tree species are based on a variable plot cruise, containing a total of 275 plots and 255 randomly selected sample trees. Plots were measured using a 20 basal area factor (BAF). The volume of the randomly selected sample trees has been expanded to a total sale volume. For all right-of-ways: The volume of all R/W trees has been determined by a 3P sampling cruise with 91 random sample trees and individual tree measurements using a 100% cruise.

Stumpage Computation

Species	# of Trees	Net Volume	Pond Value	(-) Profit & Risk	(-) Logging Costs	(+) Marginal Log Value	Appraised Price/MBF	Appraised Value
Douglas Fir	13,086	3,561.0	\$544.40	\$59.88	\$322.80	\$0.00	\$161.70	\$575,813.70
Western Hemlock	13,058	2,454.0	\$487.42	\$53.62	\$322.80	\$0.00	\$111.00	\$272,394.00
Red Alder	11,176	1,411.0	\$487.87	\$53.67	\$322.80	\$0.00	\$111.40	\$157,185.40
Bigleaf Maple	605	35.0	\$120.00	\$13.20	\$322.80	\$0.00	\$12.00 *	\$420.00
Western Redcedar	155	15.0	\$733.30	\$80.66	\$322.80	\$0.00	\$329.80	\$4,947.00
Totals	38,080	7,476.0						\$1,010,760.10

* 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				64.0 %	31.0 %	5.0 %	

Species	Peeler	No. 1 Sawmill	Special Mill	No. 2 Sawmill	No. 3 Sawmill	No. 4 Sawmill	Camp Run
Western Hemlock				61.0 %	31.0 %	8.0 %	

Species	No. 1 Sawmill	No. 2 Sawmill	No. 3 Sawmill	No. 4 Sawmill	No. 5 Sawmill		Camp Run
Red Alder		45.0 %	33.0 %	22.0 %			

Species							
Bigleaf Maple			26.0 %	43.0 %	31.0 %		

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

Fern Top**Unit Summary****ORC00-TS-2018.0003****Unit: 1**

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	811.0	843.0	845.0	3,025
Western Hemlock	573.0	617.0	622.0	3,076
Red Alder	327.0	363.0	377.0	2,540
Bigleaf Maple	9.0	10.0	11.0	146
Western Redcedar	3.0	4.0	4.0	36
Totals:	1,723.0	1,837.0	1,859.0	8,823

Net Volume/Acre: 22.1 MBF

Regeneration Harvest	0.0
Partial Cut	78.0
Right of Way	0.0
Total Acres:	78.0

Unit: 2

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	1,758.0	1,826.0	1,830.0	6,554
Western Hemlock	1,239.0	1,335.0	1,348.0	6,665
Red Alder	709.0	785.0	818.0	5,503
Bigleaf Maple	19.0	21.0	25.0	318
Western Redcedar	8.0	8.0	8.0	79
Totals:	3,733.0	3,975.0	4,029.0	19,119

Net Volume/Acre: 22.1 MBF

Regeneration Harvest	0.0
Partial Cut	169.0
Right of Way	0.0
Total Acres:	169.0

Unit: 3

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	250.0	259.0	260.0	931
Western Hemlock	176.0	190.0	191.0	946
Red Alder	101.0	112.0	116.0	781
Bigleaf Maple	2.0	3.0	3.0	45
Western Redcedar	1.0	1.0	1.0	11
Totals:	530.0	565.0	571.0	2,714

Net Volume/Acre: 22.1 MBF

Regeneration Harvest	0.0
Partial Cut	24.0
Right of Way	0.0
Total Acres:	24.0

Unit: 4

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	208.0	216.0	217.0	776
Western Hemlock	147.0	158.0	160.0	789
Red Alder	84.0	93.0	97.0	651
Bigleaf Maple	2.0	3.0	3.0	38
Western Redcedar	1.0	1.0	1.0	9
Totals:	442.0	471.0	478.0	2,263

Net Volume/Acre: 22.1 MBF

Regeneration Harvest	0.0
Partial Cut	20.0
Right of Way	0.0
Total Acres:	20.0

Unit: 5

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	322.0	335.0	336.0	1,202
Western Hemlock	228.0	245.0	247.0	1,222
Red Alder	130.0	144.0	150.0	1,009
Bigleaf Maple	3.0	4.0	4.0	58
Western Redcedar	1.0	1.0	1.0	14
Totals:	684.0	729.0	738.0	3,505

Net Volume/Acre: 22.1 MBF

Regeneration Harvest	0.0
Partial Cut	31.0
Right of Way	0.0
Total Acres:	31.0

Unit: RW

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	212.0	220.0	220.0	598
Western Hemlock	91.0	98.0	98.0	360
Red Alder	60.0	67.0	72.0	692
Western Redcedar	1.0	1.0	1.0	6
Totals:	364.0	386.0	391.0	1,656

Net Volume/Acre: 91.0 MBF

Regeneration Harvest	0.0
Partial Cut	0.0
Right of Way	4.0
Total Acres:	4.0

Total Stump To Truck	Net Volume	\$/MBF
\$1,550,563.33	7,476.0	\$207.41

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

Yarding System	Unit of Measure	# of Units of Measure	\$/Unit of Measure	Total Cost	Remarks
Cable: Small Yarder	GM MBF	6,659.0	\$212.31	\$1,413,772.29	Uphill Yarding
Wheel Skidder	GM MBF	1,304.0	\$100.76	\$131,391.04	Groundbase and RW
Subtotal				\$1,545,163.33	

Additional Costs

Item	Unit of Measure	# of Units of Measure	\$/Unit of Measure	Total Cost	Remarks
Lift Tree	Each	36.0	\$150.00	\$5,400.00	
Subtotal				\$5,400.00	

Additional Moves

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

Comments:

Use 3 loads a day for yarder and 6 loads a day for Groundbase

Total	Net Volume	\$/MBF
\$415,957.84	7,476.0	\$55.64

Utilization Center	One Way Mileage	Description	Unit of Measure	# of Units	\$/Unit of Measure	Total Cost	% of Sale Volume
Douglas County Hardwood	65.9	Saw Logs	GM MBF	1,605.0	\$69.86	\$112,125.30	19 %
Douglas County	54.4	Saw Logs	GM MBF	1,672.0	\$49.63	\$82,981.36	21 %
Southport	48.8	Saw Logs	GM MBF	4,686.0	\$47.13	\$220,851.18	60 %

Engineering Allowances

Total	Net Volume	\$/MBF
\$404,849.99	7,476.0	\$54.15

Cost Item	Total Cost
Road Construction:	\$314,950.23
Road Maintenance/Rockwear:	\$85,249.76
Road Use Fees:	\$4,650.00

Comments:

Rockwear\maintenance= Ex.E+Ex.D

Total	Net Volume	\$/MBF
\$41,910.18	7,476.0	\$5.61

Environmental Protection

Cost item	Total Cost
Vehicle Washing	\$1,625.00
Subtotal	\$1,625.00

Logging

Cost item	Total Cost
Lift Trees	\$5,400.00
Asphalt Protection	\$939.50
Subtotal	\$6,339.50

Miscellaneous

Cost item	Total Cost
Cut and Deck PVT RW	\$556.66
Flaggers	\$10,933.12
Subtotal	\$11,489.78

Slash Disposal & Site Prep

Cost item	Total Cost
Landing Pullback	\$2,618.88
Pile Burning	\$3,402.19
Pile Covering	\$6,954.27
Slash, Lop and Scatter	\$9,480.56
Subtotal	\$22,455.90

Comments:

Appraised for flaggers along 21-9-32.0 rd. Appraised wood chips for asphalt protection. Appraised to fall and deck PVT RW