

COOS BAY SALE NO. ORC00-TS-2016.0030
ZUMWALT CT

COOS BAY DISTRICT OFFICE
MYRTLEWOOD RESOURCE AREA

SALE DATE: November 20, 2015
SALE TIME: 10:00 a.m.

SALE NO.: ORC00-TS-2016.0030, ZUMWALT CT

COOS COUNTY: OREGON: CBWR: ORAL AUCTION: Bid deposit required: \$27,400

All timber designated for cutting on: T. 28 S., R. 11 W., Sec. 19, Lot 1, NE¼NW¼; T. 28 S., R. 12 W., Sec. 13, Lot 2, W½NE¼, S½NW¼, SW¼, W½SE¼, 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
7,453	1,879	Douglas-fir	2,236	\$96.20	\$215,103.20
8,279	490	red alder	658	\$40.40	\$26,583.20
1,637	523	grand fir	649	\$42.80	\$27,777.20
172	24	Port Orford-cedar	30	\$44.60	\$1,338.00
244	14	western redcedar	18	\$109.90	\$1,978.20
94	13	western hemlock	16	\$39.80	\$636.80
17,879	2,943	Total	3,607		\$273,416.60

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 \$0.10 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 14.0 inches: the average gross merchantable log contains 58 bd. ft.; the total gross volume is approximately 3,931 thousand bd. ft.; and 92 % recovery is expected. The average DBHOB for Douglas-fir is 15.4 inches; and the average gross merchantable log contains 61 bd. ft. None of the total sale volume is salvage material. The following cruise methods were used for volume determination:

VARIABLE PLOT: Timber volumes in Units 1, 2, 3, 5 & 6 were based on a variable plot cruise. Using a 20 basal area factor (BAF), 341 plots were measured and 260 trees were randomly selected to be sampled. The

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sample trees were cruised and their volumes computed using form class tables for estimating board foot volumes of trees in 16-foot logs. The volumes are then expanded to a total sale volume.

3P: Douglas-fir, red alder, and grand fir in Unit 4 and Douglas-fir volume within the road right-of-way was calculated using the 3P system to select 143 sample trees. The sample trees were cruised and their volumes computed using form class tables for estimating board foot volumes of trees in 16-foot logs. The volumes are then expanded to a total sale volume.

100% CRUISE: Volumes for western hemlock, red alder, Port Orford-cedar, western redcedar and grand fir 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: Six units totaling approximately 213 acres must be partial cut. Five acres of right-of-way must be cut.

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

DIRECTIONS TO SALE AREA: From Coquille, OR (at junction of N. Adams St. and Hwy. 42), travel east on Hwy. 42 towards Myrtle Point approximately 5.1 miles, turn left onto Lee Valley Rd. Travel approximately 4.2 miles and turn right onto Fox Bridge-Gravelford Rd. Travel approximately 0.9 miles to Zumwalt Rd. (BLM Rd. No. 28-12-23.0). Refer to Exhibits A and A-1 for unit locations.

ROAD USE & MAINTENANCE: Refer to Exhibit E Summary attached. Operator maintenance required on 4.54 miles of road.

Rockwear Fees Payable to BLM:	\$2,757.20
Road Use Fees Payable to Moore Mill & Lumber Co.:	\$13,347.60
Rockwear Fees Payable to Moore Mill & Lumber Co.:	\$158.47

ROAD CONSTRUCTION:

Road Construction estimates include the following:

New Construction:

62.79 stations

Road Renovation:

201.95 stations

Aggregate (All quantities are truck measurement):

3" minus hardrock: 4,519 L.C.Y.
1 ½" minus hardrock: 6,764 L.C.Y.
Drain rock: 250 L.C.Y.

Pit run: 180 L.C.Y.

Riprap: 160 L.C.Y.

Geotextile Fabric:

606 S.Y.

Drainage:

24" CPE single wall, perforated: 38'

24" CPE double wall: 120'

18" CPE double wall: 322'

24" CPE single wall full round downspout: 20'

18" CPE single wall full round downspout: 140'

Culvert Markers: 35

Sediment Control Devices: 1

Soil Stabilization:

Dry Seed, fertilizer, & mulch: 4.5 acres (Pre-haul)

Hydro Seed fertilizer & mulch: 1.7 acres (Pre-haul)

Dry Seed, fertilizer, & mulch: 0.5 acres (Post-haul)

Roadside Brushing:

9.0 acres

Road Decommissioning:

Riprap Barriers: 7 (70 L.C.Y. minimum)

Normal Decommissioning: 65.58 stations

DURATION OF CONTRACT: Shall 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: This list is not comprehensive. Please review the entire contract.

1. License agreement is required with Moore Mill & Lumber Company.
2. All equipment must be washed prior to entry into the contract area to control the spread of noxious weeds.
3. A Seasonal Restriction affects portions of Units 1 & 2. Tree felling, yarding, and road construction operations are prohibited from March 1 through August 5. Additionally, a daily timing restriction confines tree felling, yarding, and road construction operations to the period from two hours after sunrise to two hours before sunset from August 6 through September 15.
4. BLM Road Nos. 28-11-18.0C and 28-11-19.2 are approved for dry-season haul (June 1 through October 15) only. All other roads are approved for all-season haul.
5. No trees shall be felled into the Reserve Area, shown on the Exhibit A. Line pulling, jacking, or other mechanical devices shall be used as necessary.
6. Damage shall affect less than 5% of reserve trees.
7. Lift trees and intermediate support trees may be necessary.
8. One-end suspension required in cable and ground-based yarding areas.
9. Full suspension required over any stream channels. Trees cut for yarding corridors within the Reserve Area adjacent to Stream Channels shall be felled toward the channel and left on site.
10. Yarding corridors and skid trails shall be placed to avoid cutting reserve trees greater than or equal to 24" DBH within 220' of a Stream Channel. If a reserve tree greater than or equal to 24" DBH is cut for a yarding corridor or skid trail within 220' of a Stream Channel, the tree shall be left on site and will counted towards the required post-harvest down wood creation requirements.
11. A forwarder, log loader, tractor, or rubber tire skidder may be used to yard logs within the ground-based yarding areas. Ground-based equipment shall not operate within fifty feet of any Stream Channel and are restricted to areas with slopes less than 35%.
12. Conifer log lengths shall not exceed 41 feet. Hardwoods within the Special Yarding Area shall be whole tree yarded wherever possible.
13. All trees greater than 3" DBHOB and/or 25' in height designated for cutting within the Special Yarding Area shall be felled concurrently with all other timber.
14. All non-alder hardwood slash at least 5" in diameter and 8' in length generated from harvesting within the Special Yarding Area shall be yarded to the landing.
15. Purchaser shall verify all landing locations and stake required clearing limits prior to construction.
16. Shape and restore all landings to a natural contour to prevent erosion.
17. Seed and fertilize all landings, road cuts and fills, and waste areas.
18. Soil stabilization, water bar construction, road decommissioning, and road barrier construction shall be conducted after the completion of harvest activities but no later than October 15.
19. BLM will assume supervisory responsibility for disposal of logging slash.
20. Machine piling of logging slash are required at all landing areas and along all roads.
21. After yarding is complete the purchaser shall top 210 conifer trees and fall 86 conifer trees in Units 1-3, & 6.
22. This contract contains provisions (Sec. 42.b(10) and Sec. 42.b(11)) for the sale and removal of additional timber necessary to facilitate safe and efficient Purchaser operations. These provisions include:
 - a. The designation and sale of additional timber, such as corridor and guyline trees, at contract price, as necessary to facilitate safe and efficient logging. Such trees may be felled and removed when they are

painted by the Authorized Officer;

b. Sale of additional timber volume at current fair market value where the species and/or size of trees are not representative of the forest stand(s) being thinned;

c. Government reservation of trees previously marked for cutting replacement when the Authorized Officer determines that it is necessary in order to maintain stand densities consistent with objectives set forth in management prescriptions;

d. The use of unilateral modifications executed by BLM for such additional and replacement timber;

e. Revocation of the Purchaser's right to cut additional timber if the Authorized Officer determines that trees have been cut and removed that were not previously marked and approved for cutting and removal by the Authorized Officer; and,

f. It is estimated that approximately ten percent of the sale volume (estimated at 360 MBF) of such additional timber may be removed under the contract. This volume is not included in the advertised sale volume nor was it included in the timber sale appraisal. This estimate is a net figure reduced by the estimate of the volume of trees previously marked for cutting, which the Authorized Officer may elect to reserve.

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Seasonal Restriction Matrix ORC00-TS-2016.0030 ZUMWALT CT Timber Sale Prospectus

***Restricted periods are Shaded; Conditional periods are hatched; See Exhibit A for portions of units affected.**

Sale Area	Activity	Jan		Feb		Mar		Apr		May		June		July		Aug		Sept		Oct		Nov		Dec	
		1	15	1	15	1	15	1	15	1	15	1	15	1	15	1	15	1	15	1	15	1	15	1	15
General All Units	Falling and bucking ²																								
	Cable yarding ²																								
	Road Construction, Renovation, or Improvement Work ¹																								
	Hauling ¹																								
	Hauling on approved rocked roads ⁴																								
	Ground based yarding ³											25 %													
Units 1 & 2	Seasonal Restriction Area (NSO & MM) ⁵															5 th									

¹ Wet season restrictions may be shortened or extended depending on weather conditions.

² Bark slip seasonal restrictions may be conditionally waived upon written request and Authorized Officer approval. Strict compliance with damage provision required for continued operations.

³ Ground based yarding restricted to periods when soil moisture levels are below 25% as determined by the Authorized Officer.

⁴ Wet season haul on rocked roads may be suspended during periods of heavy rain (>1" in 24 hours).

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 timber marked, by the Government, with orange paint above and below stump height within the Partial Cut Units, shown on Exhibit A.
- c. All existing standing dead trees, except those snags that must be felled to permit safe working operation provided that all snags felled must be retained on site;
- d. All existing downed wood in decay classes 3-5 and all existing downed wood 20 inches or larger in diameter measured on the large end regardless of decay class;
- e. All Bearing Trees with metal tags that mark property corners.

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 30 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 5% 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 15 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 30 days, and the interruption or delay is beyond the Purchaser's 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 they plan to begin operations. The Purchaser shall also notify the Authorized Officer in writing if they intend to cease operations for any period of ten or more days.

(3) Due to bark slippage, falling or yarding may be restricted by the Authorized Officer within the contract area between March 1 and June 30 of the same calendar year, both days inclusive.

(4) No trees may be felled into the Reserve Area. Line pulling, jacking, or other mechanical devices shall be used as necessary to prevent trees from falling into these areas.

(5) Damage to residual trees shall affect less than 5% of reserve trees. Bark removed to cambium three inches wide or wider, top broken at three inches diameter or greater, root sprung trees, or any root collar damage shall constitute damage. Damage levels will be upon government sample of an affected area. Failure to resolve excess damage to reserve trees may result in suspension of operations and recovery of the value of the damaged timber in accordance with Sec. 13.

(6) In the Seasonal Restriction Area (NSO & MM), shown on Exhibit A, falling, yarding, and new road construction operations are prohibited in the period between March 1 and August 5. In addition, a daily timing restriction confines operations to the period from two hours after sunrise to two hours before sunset between August 6 and September 15 of the same calendar year, both days inclusive.

(7) Conifer trees shall be felled, limbed, topped into lengths not to exceed 41 feet prior to yarding within the Partial Cut Units as shown on the Exhibit A. Hardwood trees shall be whole-tree yarded wherever possible.

(8) All trees three (3) inches DBHOB or larger and/or twenty five (25) feet or taller designated for cutting shall be felled concurrently with all other trees designated for cutting in the Special Yarding Area, shown on the Exhibit A.

(9) In the Special Yarding Area, all non-alder hardwood slash generated from harvesting operations to a minimum size of five (5) inches in diameter and eight (8) feet in length shall be gross yarded to the landing and piled in accordance with the requirements in Sec.42.e.(3). If a piece of slash meeting the minimum size requirements is bucked, all pieces shall be yarded to the landing.

(10) In the Partial Cut Units, yarding (except for road rights-of-way and Ground Base Area, shown on Exhibit A) shall be done with a skyline cable system according to the following:

(a) The skyline cable system shall be capable of being rigged in a multi-span configuration utilizing a carriage capable of yarding 75 feet laterally from the skyline. Skyline roads shall not be spaced closer than 150 feet apart, unless approved by the Authorized Officer.

(b) One-end log suspension is required during yarding operations. Intermediate supports and/or lift trees may be required to obtain the required suspension. Full suspension is required when yarding over a Stream Channel, shown on the Exhibit A.

(c) If the placement of a yarding corridor requires the cutting of a tree within the Reserve Area, adjacent to a Stream Channel, the tree shall remain on-site and felled toward the direction of the channel in a manner to protect the stream bank from disturbance during yarding. Yarding corridors shall cross Stream Channels perpendicular where possible to minimize cutting of trees within the Reserve Area. Yarding corridor location within the Reserve Area shall be approved by the Authorized Officer prior to cutting.

(d) Yarding corridors shall be placed to avoid cutting reserve trees greater than or equal to 24" in diameter within 220 feet of a Stream Channel where possible. If a reserve tree greater than or equal to 24 inches in diameter is required to be cut for a yarding corridor within 220 feet of a Stream Channel, the tree shall be felled and left on site.

(e) The Purchaser shall make all cable sky road changes by completely respooling cables and restringing the layout from head spar to tailhold.

(f) Where road locations allow, yarding will be done so that corridors run parallel to each other rather than radiate from a central landing.

(11) In the Ground Base Area and within road right-of-ways, cutting and yarding shall be done according to the following:

(a) In addition to the requirements set forth in Sec. 26 of this contract, no ground-based logging operations shall be conducted on the contract area between October 15 of one calendar year and June 1 of the following calendar year, both days inclusive.

(b) Ground-based operations shall be conducted when soil moisture content is below 25%, 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 shall cease operations during periods of rain and shall be notified, after a soil-moisture assessment by the Authorized Officer, when operations may resume.

(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.

(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 that 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 Base 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.

(e) Primary skid trails shall use existing trails wherever possible, be spaced at least 95 feet apart, and be

no wider than 12 feet as measured between reserve trees.

(f) Primary skid trails shall be placed to avoid cutting reserve trees greater than or equal to 24" in diameter within 220 feet of a Stream Channel where possible. If a reserve tree greater than or equal to 24 inches in diameter is required to be cut for a skid trail within 220 feet of a Stream Channel, the tree shall be felled and left on site.

(g) Primary skid trails shall be blocked with 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 Stream Channels.

(i) Primary skid trails with a slope greater than 15% and/or are left 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 15 as directed by the Authorized Officer.

(12) Sec 42.b(13) shall be the primary method for the identification, cutting, and removal of additional timber required for skyline corridors, yarding trails, and guy-line trees. Sec. 42.b(14) may be used at the discretion of the Authorized Officer. The purchaser shall be notified in writing when Sec. 42.b(14) is authorized for use.

(13) Before cutting and removing any trees necessary to facilitate logging in the Partial Cut Units the Purchaser shall identify the location of the 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 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 removal of timber sold under this contract and shall be limited to the minimum width necessary for yarding of logs with a minimum of damage to reserve trees, however, unless otherwise approved in writing by the Authorized Officer, the width of each cable yarding road shall be limited to 12 feet.

(b) The Purchaser may immediately cut and remove additional timber to clear cable yarding roads; 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 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 Contracting Officer and that such timber shall be sold at the unit prices shown in Exhibit B of this contract unless: the value of the timber must be reappraised subject to the terms for contract extension set forth in Sec. 9 of the contract; or, the Authorized Officer determines that 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 Contracting Officer shall issue a written notice to the Purchaser that the sale of additional timber under this special provision is no longer approved. In this case, the Purchaser shall inform the Authorized Officer at least two 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 Exhibit B of the contract or in accordance with Sec. 8 or 9 of the contract as determined by the Authorized Officer in accordance with this provision. The Contracting Officer may issue a written order to the Purchaser to suspend, delay, or interrupt any or all contract work for the period of time deemed necessary and

(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 roads 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, or 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 shall be reduced accordingly through a unilateral modification to the contract executed by the Contracting Officer.

(14) In accordance with the requirements of Sec. 8 of the contract 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 which, is obstructing needed cable yarding roads, hazardous to workers, needed for guyline, tailhold, and/or tieback trees to meet all applicable State safety laws, codes or regulations. This timber must be cut or removed so that the Purchaser can continue active falling and yarding operations. The Purchaser is, therefore, authorized to cut and remove such additional timber in accordance with the provisions of Sec. 8 of the contract: provided, however, that:

(a) Seed trees, bearing trees, trees larger than 24 inches in diameter at breast height, and trees located within the Reserve Areas are not included in this authorization;

(b) 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 florescent red paint so that the stump can be visually located from a distance of not less than 100 feet;

(c) concurrently with falling, paint the end of the butt log of each tree with florescent red paint. When

butt logs are yarded, deck separately for inspection by Authorized Officer;

(d) 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;

(e) 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 been made; and,

(f) 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" cut and red paint.
2. failed to properly mark any butt log with red paint.
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. failed to properly segregate any pulled over tree that was yarded to the landing.
7. cut any reserve tree that was not severely (as defined during the prework conference and documented in the approved logging plan) damaged from felling and yarding operations.
8. cut more than the minimum number of trees necessary to properly serve as guyline anchor stumps.
9. cut or topped more than the minimum number of trees necessary to properly serve as tailhold trees.
10. 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.

If the permission to cut and remove additional timber provision is withdrawn, the Authorized Officer shall deliver to the Purchaser a written notice that additional sale of timber under this special provision is no longer approved.

If the permission to cut and remove additional timber provision is withdrawn, the Contracting Officer shall issue a written notice to the Purchaser that the sale of additional timber under this special provision is no longer approved. In this case, the Purchaser shall inform the Authorized Officer at least two 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 Exhibit B of the contract or in accordance with Sec. 8 or 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.

All cable yarding and/or ground-based equipment yarding trails upon which timber may be cut and removed in accordance with this special provision must be needed for the removal of timber sold under this contract and shall be limited to the narrowest width necessary for the yarding of logs with minimum damage to reserved

trees.

The Purchaser shall be liable for damages in accordance with Sec. 13 of the contract for any reserved timber cut or removed in violation of the terms of this special provision.

(15) Prior to attaching any logging equipment to any tree within the Reserve Area, or any reserve tree within a Partial Cut Unit larger than 24 inches in diameter at breast height, the Purchaser shall obtain written approval from the Authorized Officer, and shall take precautions to protect the trees from damage, as directed in writing by the Authorized Officer.

(16) During logging operations, the Purchaser shall keep BLM Road No. 28-12-22.0, where it passes through the contract area, clear of trees, rock, dirt and other debris so far as is practicable. This road shall not be blocked by such operations for more than 20 minutes. The Purchaser shall provide signage and flaggers to control traffic when conducting operations adjacent to any road.

(17) To control the spread of noxious weeds and Port-Orford-cedar root disease, 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 a part hereof. All road building and logging equipment shall be washed prior to moving in the Contract Area to minimize the spread of noxious weeds.

(18) After completion of yarding operations, the Purchaser shall top 210 conifer trees and fall 86 conifer trees in Units 1 through 6, as directed by the Authorized Officer, according to the following:

- (a) Unit 1: top 42 conifer trees;
- (b) Unit 2: top 83 conifer trees, fall 30 conifer trees;
- (c) Unit 3: top 23 conifer trees, fall 15 conifer trees;
- (d) Unit 2: no treatment;
- (e) Unit 5: no treatment;
- (f) Unit 6: top 62 conifer trees, fall 41 conifer trees.

The Purchaser shall top the trees above the third live whorl at a minimum height of 40 feet or at 60 feet if no live limbs occur below 60 feet. Trees selected for treatment shall be from the co-dominant tree class as directed by the Authorized Officer. Topped trees shall have a number painted at breast height with fluorescent paint such that they are visible from at least 150 feet, felled trees shall have the butt ends painted. Existing snags, windfalls and reserve trees meeting the desired characteristics including recent broken tops or logging damage may be counted towards the requirements as directed by the Authorized Officer. Number and location of existing or treated trees shall be depicted on a map such that they may be easily verified.

c. Road Construction

(1) The Purchaser shall construct and renovate roads 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 or renovation of structures and roads shall be completed and accepted prior to the removal of any timber, except right-of-way timber, over that road.

(3) 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 15 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.

(4) The Purchaser, prior to construction of landings, shall 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.

(2) 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.

(3) The Purchaser is authorized to use the roads shown on Exhibit E, 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 the road maintenance fees and rockwear fees totaling \$2,757.20 shown on Exhibit E. Unless the total maintenance and rockwear fees due BLM are 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.

(4) The Purchaser shall perform maintenance and repair of such roads shown on Exhibit D in accordance with the maintenance specifications listed in Exhibit D, attached hereto and made a part hereof.

(5) 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 resulting from wear or damage in accordance with the maintenance specifications as shown on Exhibit D.

(6) 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 Sec. 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.

(7) The Authorized Officer may at any time, by written notice, terminate the Purchaser's operator road maintenance obligations and require instead payment of current Bureau of Land Management road maintenance fees for the particular surface type of the road(s) involved. These fees will be applied to the remaining contract volume on the sale area, as determined by the Authorized Officer, to be transported over the roads listed in Sec. 42.c.(1) and 42.d.(3). If the total road maintenance fee does not exceed \$500.00, the Purchaser shall pay such amount in full prior to use of such roads. If the total road maintenance fee exceeds \$500.00, the Authorized Officer shall establish an installment schedule of payments of the maintenance obligation.

(8) BLM Road Nos. 28-11-18.0 C and 28-11-19.2 are approved for dry season haul only between June 1 and October 15 unless dry conditions extend the hauling season, as directed by the Authorized Officer. All other roads are approved for all season haul.

(9) The following management practices shall be used to prevent delivery of haul-related sediment to the stream network during wet season haul:

Apply additional lift of rock to the area of road that can influence the stream if rill erosion is evident or likely in the road near a stream crossing. Hard rock shall be in place at the start of winter haul and additional rock shall be applied as necessary to maintain the stream crossing for the duration of wet season haul.

Contain offsite movement of sediment from the road or ditch flow near stream by installing a silt fence or other sediment-trapping device. Such control measures must allow for the free flow of water without detention or plugging. The control measure must receive frequent maintenance with accumulated sediment disposed of in accordance with Authorized Officer instructions. Silt fences or sediment traps shall be in place prior to the start of winter haul.

Hauling during the wet season may be suspended if more than 1 inch of rain is expected in a 24-hour period and the Authorized Officer determines that the soils in the contract area are already saturated and the sediment prevention measures in described in Sec 42.d(9) would be ineffective at preventing sediment delivery to the stream network. The NOAA - National Weather Service - Hydrometeorological Prediction Center web site, <http://www.hpc.ncep.noaa.gov> (Quantitative Precipitation Forecast) shall be used as the rainfall forecast tool unless otherwise directed by the Authorized Officer.

(10) In the use of required company roads shown on the Exhibit E, the Purchaser shall comply with the conditions of the Right-of-Way and Road Use Agreement between the United States and Moore Mill & Lumber Company, RWA C-364. The agreement is available for inspection at the Bureau of Land Management, Coos Bay, Oregon.

Prior to commencement of operations, the Purchaser shall furnish to the Authorized Officer a copy of the executed License Agreements issued under the terms of the Right-of-Way Agreements. Default by the Purchaser of said Right-of-Way and Road Use Agreements, of any License Agreements executed pursuant thereto, for failure to pay appropriate road use fees or road maintenance fees shall be considered a violation of this contract. The amount of unpaid fees shall be considered as the amount of damage suffered by the Government as a result of the violation of this provision. Road maintenance fees may change during the course of the contract as determined by the Licensor. It is the responsibility of the Purchaser to pay fees current at time of haul. The fees used for the appraisal include:

Road Use Fees Payable to Moore Mill & Lumber Co.:	\$13,347.60
Rockwear Fees Payable to Moore Mill & Lumber Co.:	\$158.47

Merchantable timber located on Moore Mill Lumber Company lands within the right-of-way of the BLM Road No. 28-11-18.0 C shall be cut, limbed, and bucked to a 5" top, and decked in a location with suitable access for a self-loading log truck. The Purchaser shall obtain current bucking specifications from Moore Mill & Lumber Company prior to felling.

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 prepare a fire prevention and control plan 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, Roadside Hazard Reduction and Biomass Removal. Primarily for purposes of fire prevention the Purchaser shall comply with the following provisions:

(a) Notwithstanding the provisions of Sec. 15 of this contract, the Government shall be responsible for disposing of slash created by the Purchaser's operations at all landing sites in the sale area.

(b) All logging debris accumulated on the landing shall be piled. As much as possible, piling on landings shall be reduced to the least amount of piles necessary and shall be free of soil and rock. Alternatively, accumulations of logging debris can be scattered throughout the unit by logging equipment at the direction of the Authorized Officer.

(c) Unless directed by the Authorized Officer, no landing piles shall be within 15 feet of any reserve tree.

(d) All logging slash within 20 feet of BLM Road Nos. 28-12-13.0, -13.2, -13.3, & -23.0 shall be scattered back into the completed harvest unit or piled as directed by the Authorized Officer.

Specifications for Landing and Roadside Pile Covering

(a) The Purchaser shall place polyethylene plastic, maximum 4 MIL thick and black in color over the pile to provide a barrier from winter rains. Unless otherwise directed, the size of plastic shall not exceed 100 square feet (10 X 10).

(b) Larger piles may receive additional polyethylene plastic sheeting in excess of the 100 square feet to adequately cover the pile. Piles within this size limit will be identified by the Authorized Officer before the landing pile covering begins.

(c) In the piled area being covered, material that extends beyond the general contour of the pile shall be cut off and placed on the pile to prevent tearing of the plastic during seasonal winds.

(d) Plastic covering shall be placed on top of the pile to ensure the center of the piles remains dry and shall be weighted down with logging debris and shall be tied down with twine on all four corners.

(e) All piles shall be covered by September 30 of the same year of piling.

(f) Biomass Utilization Option:

1. If the Purchaser elects to remove biomass generated from harvest activities within the Partial Cut Unit, the Purchaser shall notify the Authorized Officer in order to arrange for on-site inspections of the removal operations and shall provide information on the total tonnage of biomass material removed from the sale area.

2. Upon completion of the biomass removal, the Purchaser shall notify the Authorized Officer to arrange for a final inspection of the landing site.

Specifications Applicable to Landing and Roadside Pile Burning

- (a) The Purchaser shall begin landing pile burning within 14 hours of notification by the Authorized Officer.
- (b) The Purchaser shall remove and dispose of all plastic exceeding the 100 square foot limit in accordance with Federal, State and municipal laws. Removed polyethylene sheeting shall be not be disposed of in burn piles.
- (c) Manpower and Equipment Requirements for burning of piles are:
 - 1. One (1) English-speaking foreman for crew supervision
 - 2. Three (3) person burn crew
 - 3. Three (3) drip torches and a sufficient amount of fuel to complete all landing pile burning.
- (d) A minimum of 80 % consumption of each pile is required.
- (e) No mop-up is required of the Purchaser.

All listed personnel shall be physically fit, experienced and fully capable of functioning as required. All personnel shall arrive at the project area(s) with the following personal safety equipment: Long sleeve natural fabric shirt (or nomex), full length natural fabric trousers (or nomex), minimum eight-inch top leather boots, hardhat, and leather gloves. All listed equipment shall be in good usable condition.

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

Time is of the essence in complying with this provision. In the event the Purchaser fails to provide the men and equipment 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 and appropriate additional overhead expenses.

f. 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. 94165 and 43 CFR 5400 and 5424 as amended.

(1) All timber sold to the Purchaser under the terms of this contract 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. For the purpose of this contract, unprocessed timber is defined as (1) any logs except those of utility grade or below, such as sawlogs, peeler logs, and pulp logs; (2) cants or squares to be subsequently remanufactured exceeding eight and three-quarters (8-3/4) inches in thickness; (3) split or round bolts or other roundwood not processed to standards and specifications suitable for end-product uses; or (4) western red cedar lumber which does not meet lumber of American Lumber Standards Grades of Number 3 dimension or better,

or Pacific Lumber Inspection Bureau R-List Grades of Number 3 Common or better. Thus, timber manufactured into the following will be considered processed: (1) lumber and construction timbers, regardless of size, manufactured to standards and specifications suitable for end-product uses; (2) chips, pulp and pulp products; (3) green or dry veneer and plywood; (4) poles and piling cut or treated for use as such; (5) cants, squares, and lumber cut for remanufacturing of eight and three-quarters (8-3/4) inches in thickness or less; (6) shakes and shingles.

Substitution will be determined under the definition found in 43 CFR 5400.0-5(n).

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

- (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 12 months prior to purchasing or otherwise acquiring Federal timber sold under this contract, the Purchaser shall, upon request, obtain from the affiliate information in a form specified by the Authorized Officer and furnish the information

(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 (11) 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.

g. 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 \$2,705.25. In the event only a portion of the contract timber is scaled, the purchase price shall be reduced by that portion of \$2,705.25 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.

h. Equal Opportunity in Employment

(1) Certification of Nonsegregated Facilities, Form 1140-3, is attached hereto and made a part hereof.

i. 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.

j. 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
- (i) RMP, the Contracting Officer determines it may be necessary to modify or terminate the contract.

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

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

In the event of a suspension period or a combination of suspension periods that exceed a total of 30 days, the First Installment held on deposit may be temporarily reduced upon the written request of the Purchaser. For the period of suspension extending beyond 30 days, the First Installment on deposit may be reduced to five (5) percent of the First Installment amount listed in 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 15 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 30 days, the unamortized Out-of-Pocket Expenses for road or other construction required pursuant to Exhibit C of the contract shall be refunded or transferred to another BLM contract at the request of the Purchaser. Upon written notice from the Contracting Officer lifting the suspension, the Purchaser shall reimburse the Government the amounts refunded or transferred. The Purchaser may choose to pay this reimbursement at once or in installments payable at the same time as payments are due for the timber under the contract and in amounts approximately equal to the expenses associated with the timber for which payment is due.

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

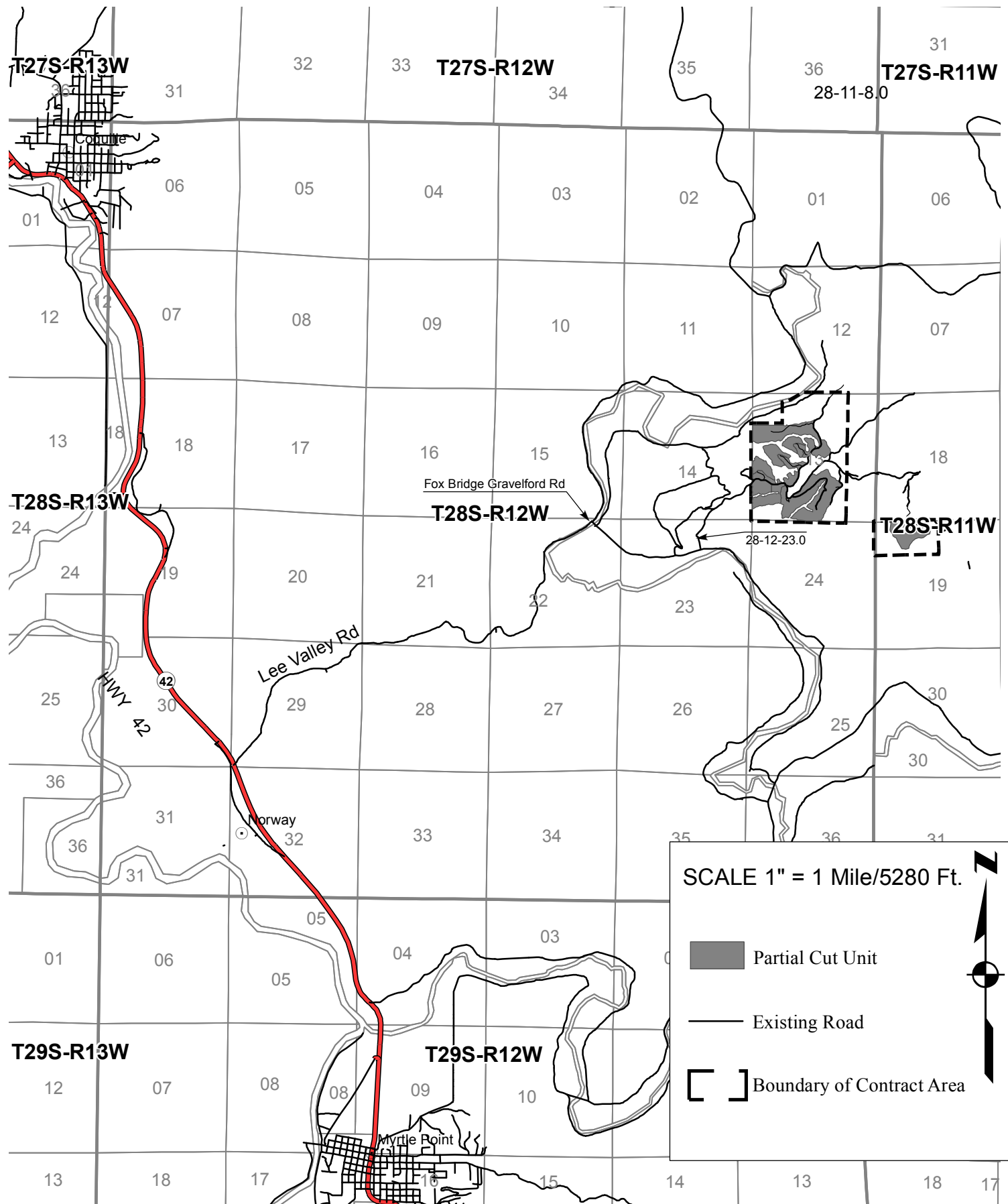
The Contracting Officer may determine that it is necessary to terminate the cutting and removal rights under the contract in order to comply with the Endangered Species Act, protect occupied marbled murrelet sites in accordance with the ROD and RMP, protect species that have been discovered which were 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.

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TIMBER SALE CONTRACT MAP
 USDI-BLM COOS BAY DISTRICT
 T. 28 S., R. 11 W., Sec. 19 &
 T. 28 S., R. 12 W., Sec. 13

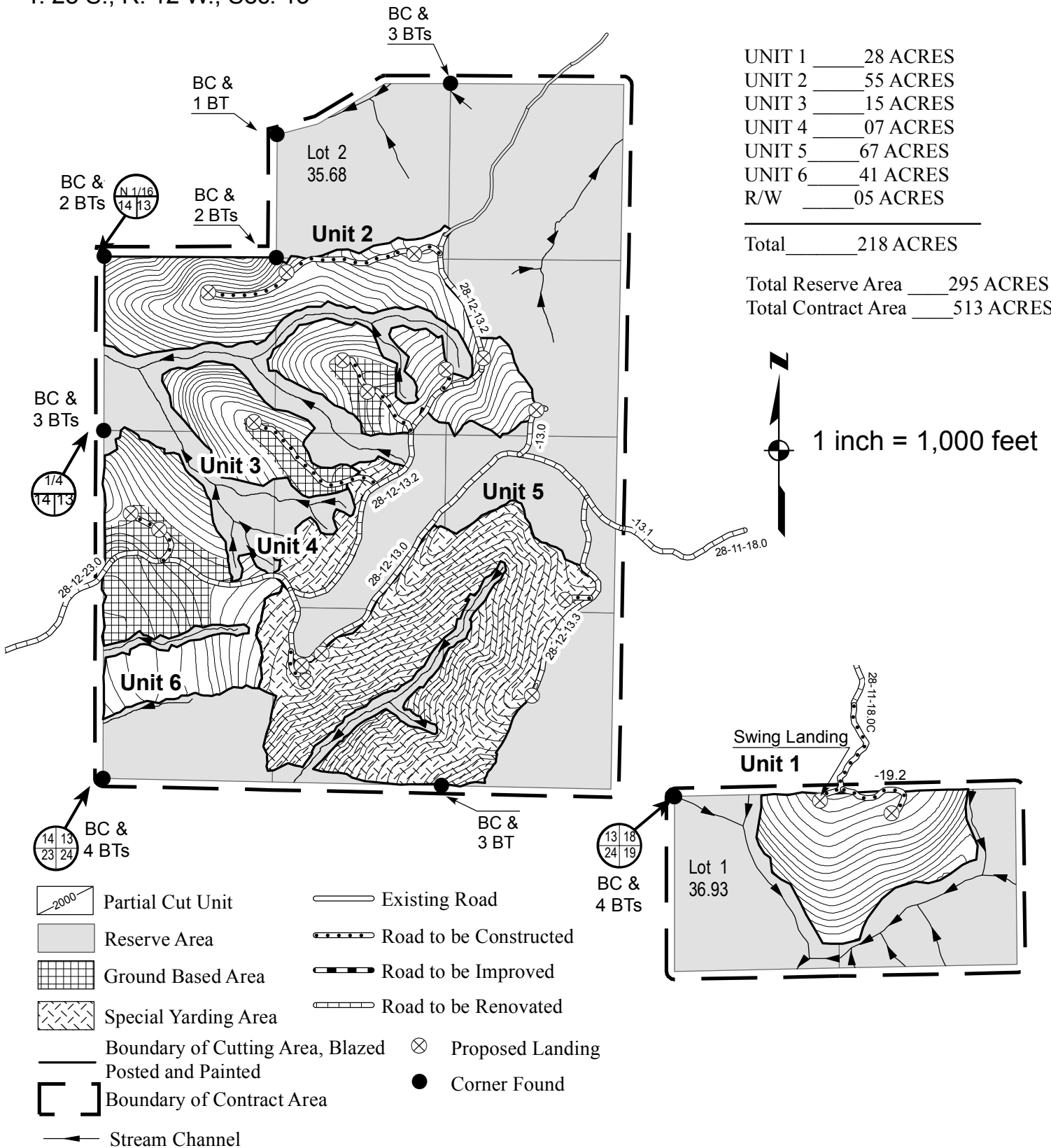
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UNIT 1	28 ACRES
UNIT 2	55 ACRES
UNIT 3	15 ACRES
UNIT 4	07 ACRES
UNIT 5	67 ACRES
UNIT 6	41 ACRES
R/W	05 ACRES

Total 218 ACRES

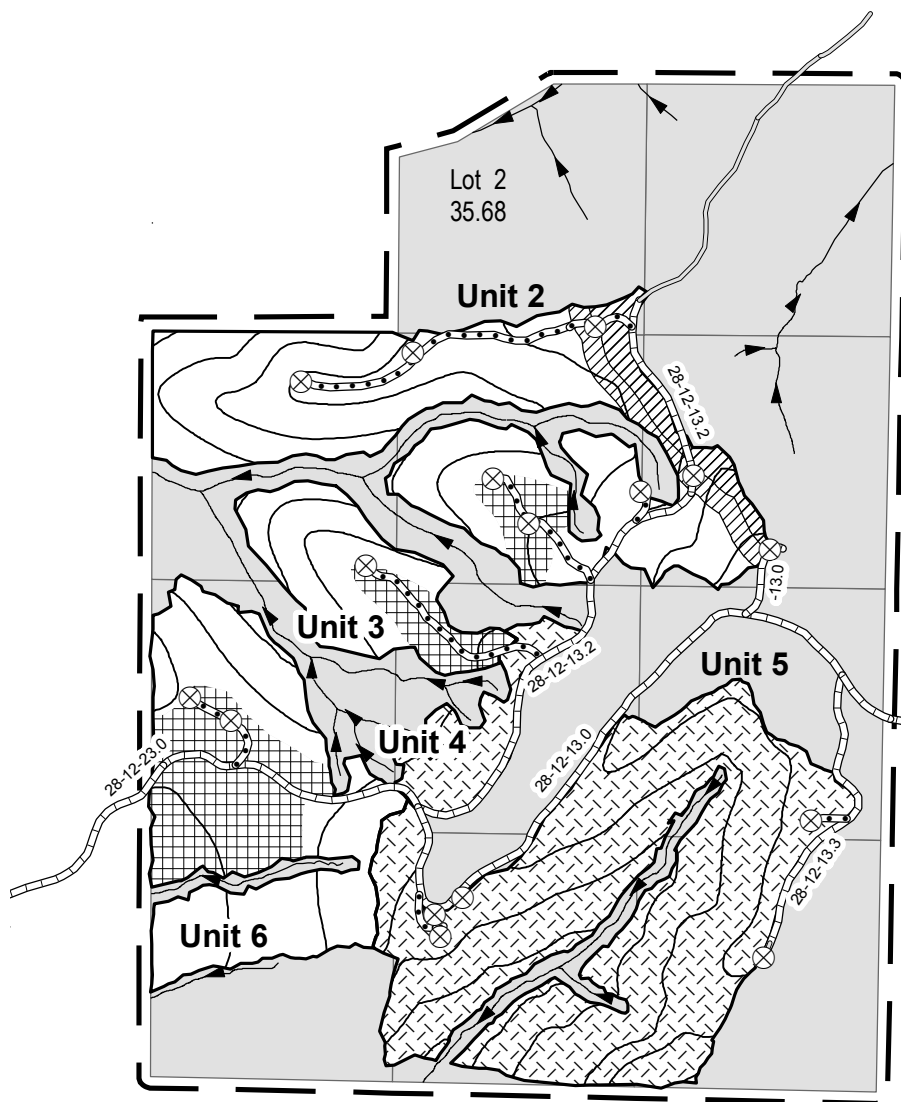
Total Reserve Area 295 ACRES

Total Contract Area 513 ACRES



TIMBER SALE CONTRACT MAP
 USDI-BLM COOS BAY DISTRICT
 T. 28 S., R. 11 W., Sec. 19 &
 T. 28 S., R. 12 W., Sec. 13

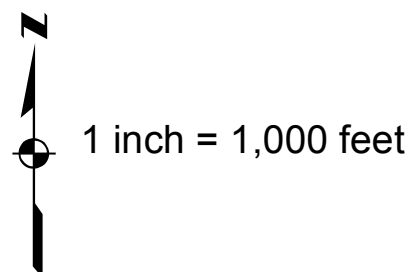
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






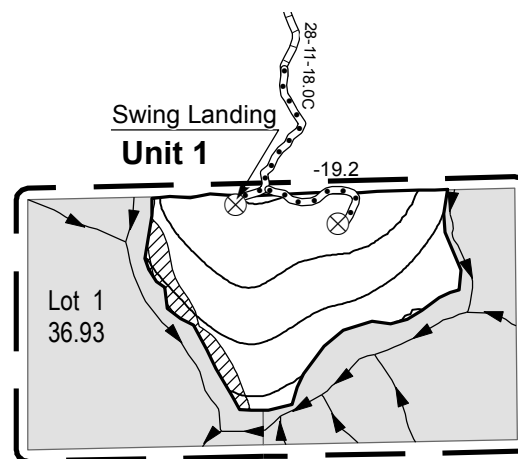
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R/W	05 ACRES

Total 218 ACRES

Total Reserve Area 295 ACRES
 Total Contract Area 513 ACRES



-  Partial Cut Unit
-  Reserve Area
-  Ground Based Area
-  Special Yarding Area
-  Seasonal Restriction Area (NSO & MM)



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

Coos Bay
Zumwalt CT
ORC00-TS-2016.0030

Exhibit B

The following estimates and calculations of timber sold are made solely as an administrative aid for determining: (1) Adjustments made or credits given in accordance with Sections 6, 9, or 11; (2) When payments are due; and (3) Value of timber subject to any special bonding provisions. The value of timber will be determined by multiplying the value per acre as shown below, times the amount of acreage as determined by the authorized officer, which has been cut or removed or designated for taking.

Except provided in Section 2, Purchaser shall be liable for the total purchase price even though the 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 the Exhibit A.

Sale Totals (16' MBF)

Species	Net Volume	Bid Price	Sale SubTotal
Douglas-fir	2,236		
Red Alder	658		
Grand Fir	649		
Port-Orford-cedar	30		
Western red-cedar	18		
Western Hemlock	16		
Sale Totals	3,607		

Unit Details (16' MB)

Unit	1	28 Acres	Value per Acre : \$0.00
Species	Net Volume	Bid Price	Species Value
Douglas-fir	269		
Grand Fir	76		
Port-Orford-cedar	4		
Red Alder	83		
Western Hemlock	2		
Western red-cedar	2		
Unit Totals	436		

Coos Bay
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Species	Net Volume	Bid Price	Species Value
Douglas-fir	528		
Grand Fir	149		
Port-Orford-cedar	7		
Red Alder	163		
Western Hemlock	4		
Western red-cedar	4		
Unit Totals	855		

Species	Net Volume	Bid Price	Species Value
Douglas-fir	144		
Grand Fir	41		
Port-Orford-cedar	2		
Red Alder	44		
Western Hemlock	1		
Western red-cedar	1		
Unit Totals	233		

Species	Net Volume	Bid Price	Species Value
Douglas-fir	1		
Grand Fir	4		
Red Alder	42		
Unit Totals	47		

Species	Net Volume	Bid Price	Species Value
Douglas-fir	643		
Grand Fir	181		
Port-Orford-cedar	9		
Red Alder	199		
Western Hemlock	5		
Western red-cedar	4		
Unit Totals	1,041		

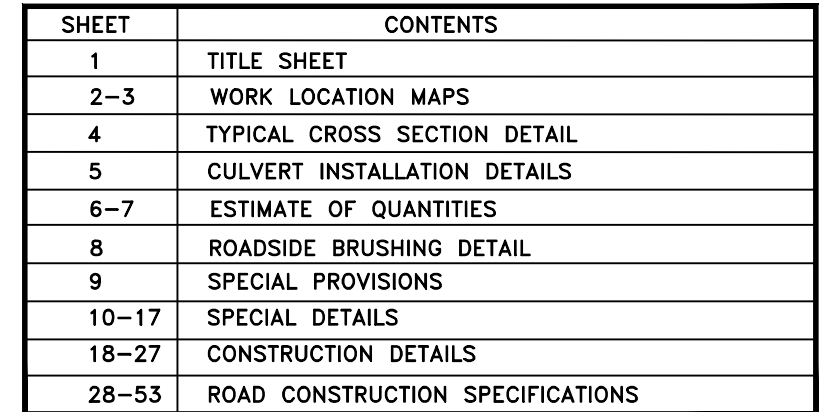
Coos Bay
Zumwalt CT
ORC00-TS-2016.0030

Species	Net Volume	Bid Price	Species Value
Douglas-fir	393		
Grand Fir	111		
Port-Orford-cedar	5		
Red Alder	122		
Western Hemlock	3		
Western red-cedar	3		
Unit Totals	637		

Species	Net Volume	Bid Price	Species Value
Douglas-fir	258		
Grand Fir	87		
Port-Orford-cedar	3		
Red Alder	5		
Western Hemlock	1		
Western red-cedar	4		
Unit Totals	358		

TIMBER SALE NAME: ZUMWALT CT

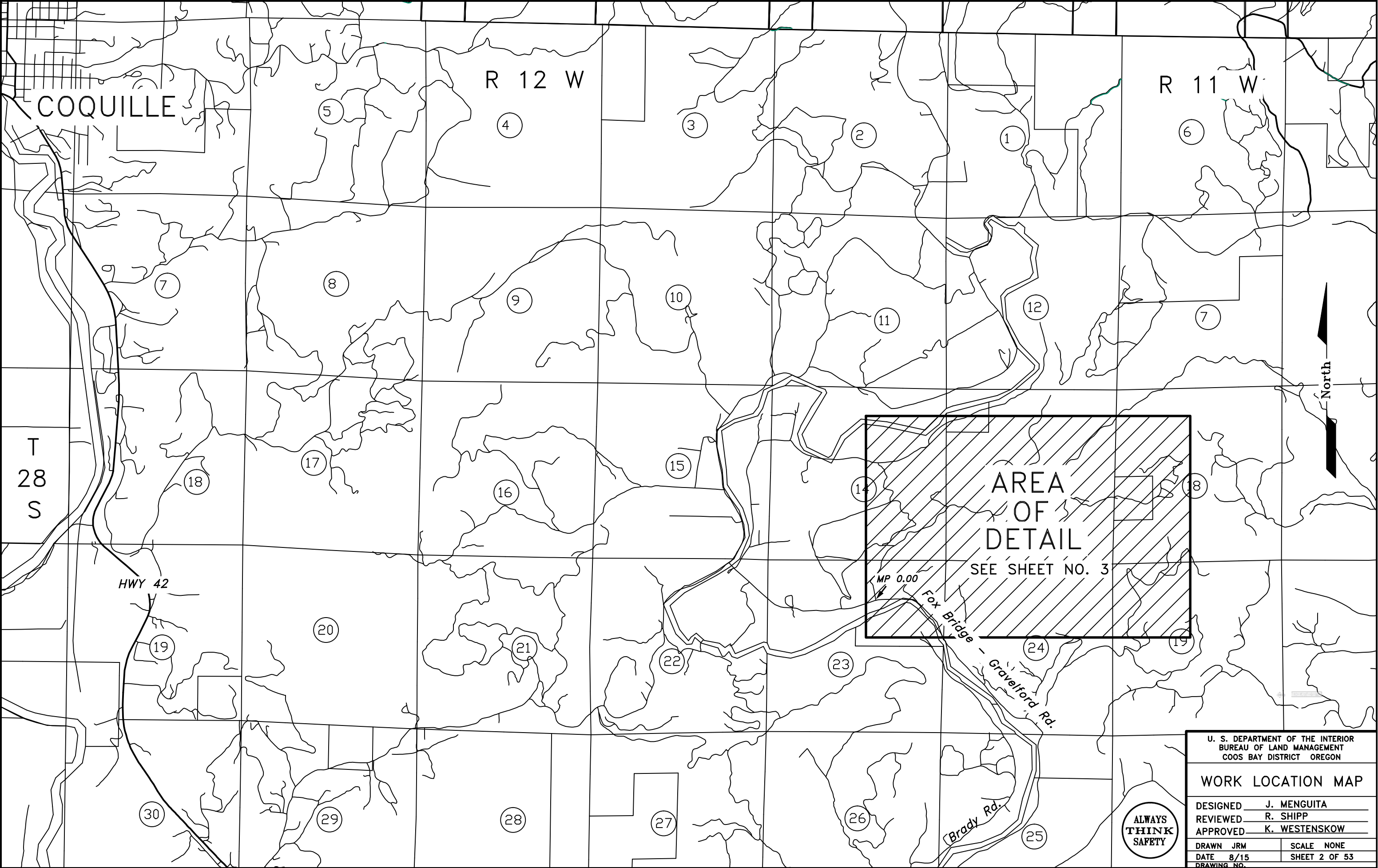
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
COOS BAY DISTRICT OFFICE
MYRTLEWOOD RESOURCE AREA



TITLE SHEET

DATE 8/15	SHEET 1 OF 53
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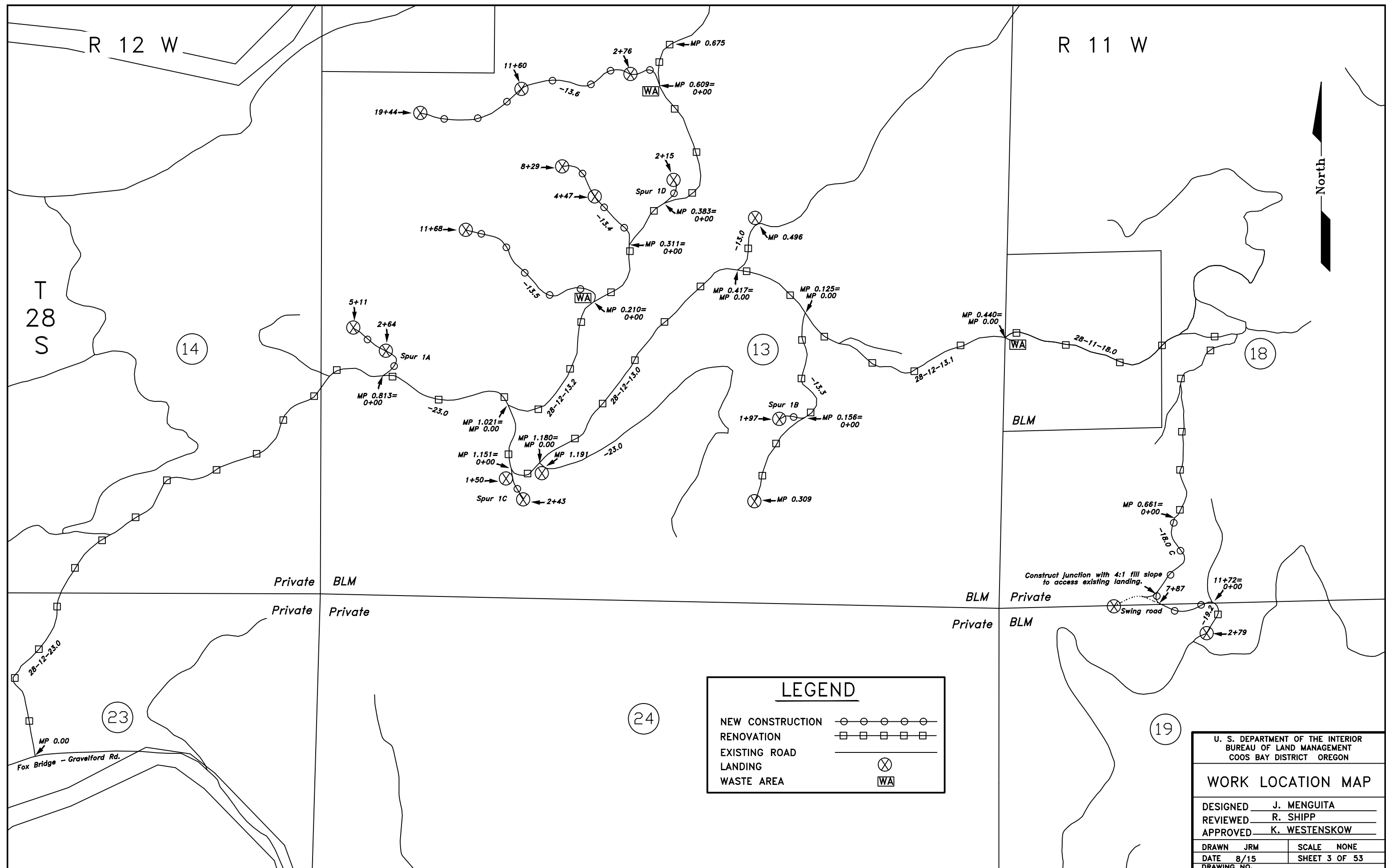


U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
COOS BAY DISTRICT OREGON

WORK LOCATION MAP

DESIGNED	J. MENGUITA
REVIEWED	R. SHIPP
APPROVED	K. WESTENSKOW
DRAWN	JRM
DATE	8/15
DRAWING NO.	
SCALE	NONE
	SHEET 2 OF 53

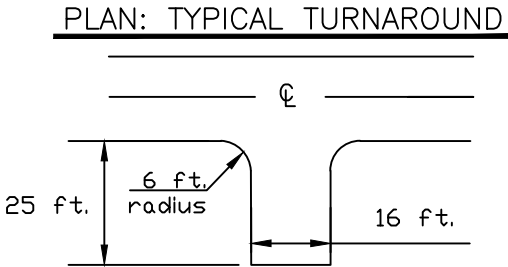
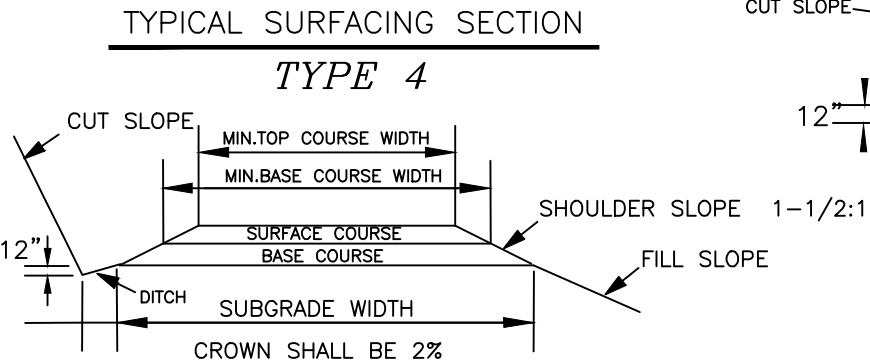
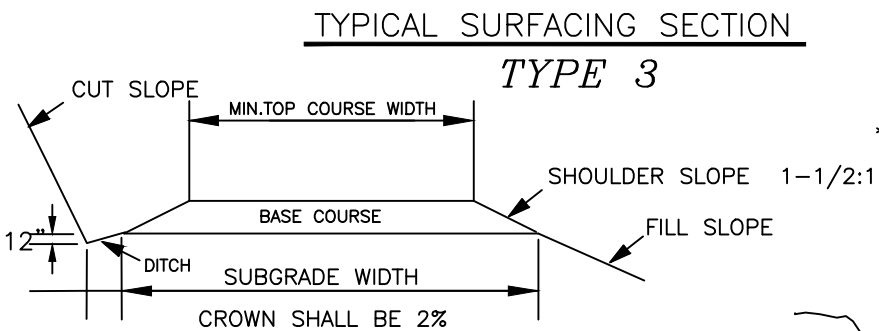
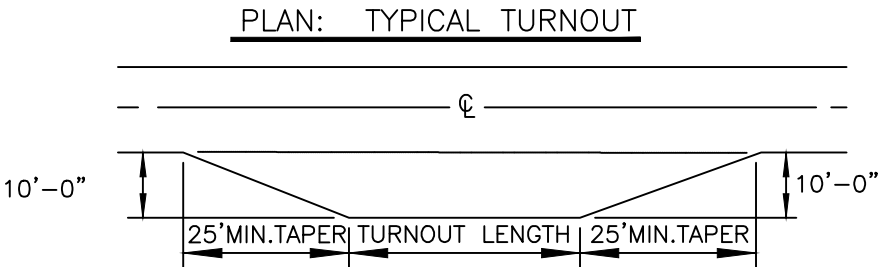
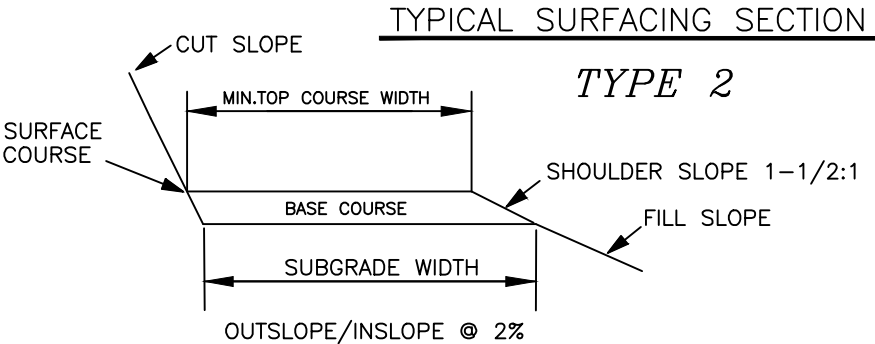
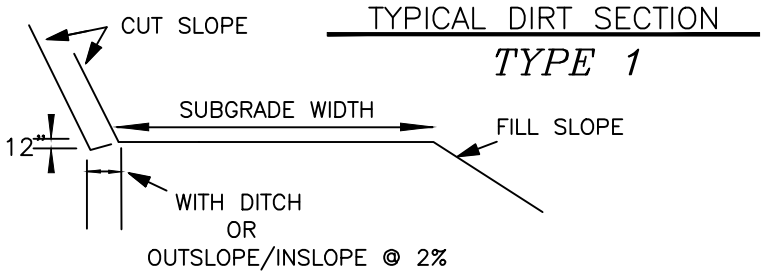




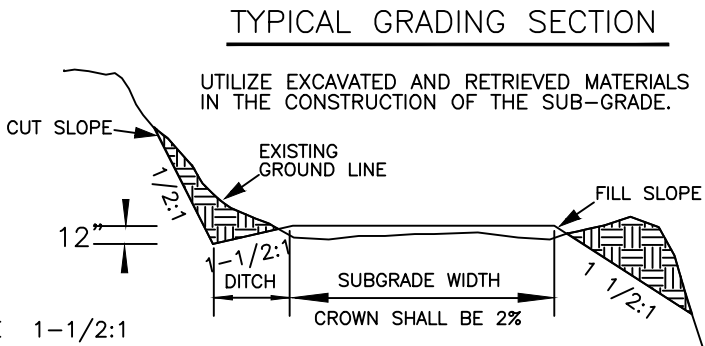
ROAD NUMBER ***	FROM MILEPOST/ STATION	TO MILEPOST/ STATION	LENGTH MILES/ STATIONS	TYPICAL SECTION TYPE	ROAD WIDTH ¹		CLEARING WIDTH	BRUSHING WIDTH		SURFACING										REMARKS			
										Subgrade	Ditch	BEYOND TOP CUT	TOE FILL	EXISTING ROADS L R		BASE COURSE						SURFACE COURSE	
					Minimum Top Width	Comp. Depth	Type ²	Grading								Minimum Top Width	Comp. Depth	Type ²	Grading				
28-12-23.0 R	0.000	1.191	1.191	4	16'	2'			10	10	70 CY	3"-0"	SPOT	ROCK							2% CROWNED W/ DITCH		
28-11-18.0 R	0.000	0.335	0.335	3	16'	2'			10	10											2% CROWNED W/ DITCH		
-18.0 R	0.335	0.386	0.051	4	24'	2'	*	*	10	10	15 CY	3"-0"	SPOT	ROCK		22'	4"	D	1.5"-0"		50' Radius curve		
-18.0 R	0.386	0.447	0.061	3	16'	2'			10	10											2% CROWNED W/ DITCH		
-18.0 R	0.447	0.480	0.033	4	20'	2'	*	*	10	10	18'	8"		D	3-0"		17'	4"	D	1.5-0"	Curve/Fill; 2% CROWNED W/ DITCH		
-18.0 R	0.480	0.553	0.073	3	16'	2'			10	10											2% CROWNED W/ DITCH		
-18.0 R	0.553	0.602	0.049	4	16'	2'		*	10	10	45 CY	3"-0"	SPOT	ROCK		23 CY	1-1/2"-0"	SPOT	ROCK		2% CROWNED W/ DITCH		
-18.0 R	0.602	0.661	0.059	3	16'	2'			10	10											2% CROWNED W/ DITCH		
-18.0 C	0+00	11+72	11.72	1	14'	0'	10	5													2% OUTSLOPE W/ NO DITCH		
28-11-19.2 R	0+00	2+79	2.79	1	14'	0'	10	5													2% OUTSLOPE W/ NO DITCH		
28-12-13.0 R	0.000	0.417	0.417	4	16'	2'	**	**	10	10	30 CY	3"-0"	SPOT	ROCK		12'	4"	D	1.5"-0"		2% CROWNED W/ DITCH		
-13.0 R	0.417	0.496	0.079	4	16'	2'	**	**	10	10						12'	6"	D	1.5"-0"		2% CROWNED W/ DITCH		
28-12-13.1 R	0.000	0.440	0.440	4	16'	2'	**	**	10	10	40 CY	3"-0"	SPOT	ROCK		12'	4"	D	1.5"-0"		2% CROWNED W/ DITCH		
28-12-13.2 R	0.000	0.568	0.568	4	16'	2'	*,**,*	**	10	10	90 CY	3"-0"	SPOT	ROCK		12'	6"	D	1.5"-0"		2% CROWNED W/ DITCH		
-13.2 R	0.568	0.626	0.058	4	16'	2'	**	**	10	10	13'	8"		D	3-0"	12'	4"	D	1.5"-0"		2% CROWNED W/ DITCH		
-13.2 R	0.626	0.675	0.049	4	16'	2'	**	**	10	10						12'	6"	D	1.5"-0"		2% CROWNED W/ DITCH		
28-12-13.3 R	0.000	0.309	0.309	4	16'	2'	**	**	10	10						12'	6"	D	1.5"-0"		2% CROWNED W/ DITCH		
28-12-13.4 C	0+00	8+29	8.29	4	16'	2'	10	5			13'	8"		D	3-0"	12'	4"	D	1.5"-0"		2% CROWNED W/ DITCH		
28-12-13.5 C	0+00	11+68	11.68	4	16'	2'	10	5			13'	8"		D	3-0"	12'	4"	D	1.5"-0"		2% CROWNED W/ DITCH		
28-12-13.6 C	0+00	19+44	19.44	4	16'	2'	10	5			13'	8"		D	3-0"	12'	4"	D	1.5"-0"		2% CROWNED W/ DITCH		
Spur 1A C	0+00	5+11	5.11	4	16'	2'	10	5			13'	8"		D	3-0"	12'	4"	D	1.5"-0"		2% CROWNED W/ DITCH		
Spur 1B C	0+00	1+97	1.97	4	16'	0'	10	5			13'	8"		D	3-0"	12'	4"	D	1.5"-0"		2% OUTSLOPE W/ NO DITCH		
Spur 1C C	0+00	2+43	2.43	4	16'	2'	10	5			13'	8"		D	3-0"	12'	4"	D	1.5"-0"		2% CROWNED W/ DITCH		
Spur 1D C	0+00	2+15	2.15	4	16'	0'	10	5			13'	8"		D	3-0"	12'	4"	D	1.5"-0"		2% OUTSLOPE W/ NO DITCH		

NOTES

- 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.
- 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.
- SURFACING
A. TURNOUTS, CURVE WIDENING AND ROAD APPROACH APRONS SHALL BE SURFACED.
- DITCHES
A. 4:1 SLOPE FROM SUBGRADE, OR AS OTHERWISE NOTED. DEPTH MAY BE EXCEEDED TO OBTAIN REQUIRED DRAINAGE.
- 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.

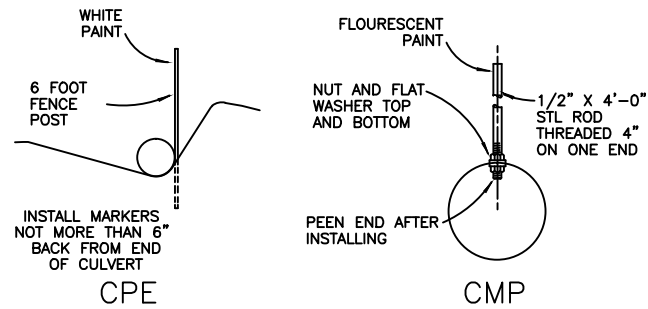


- * WHERE MARKED FOR PULLBACK, WIDENINGS, FRENCH DRAIN
- ** CULVERT INSTALLATIONS, DITCHLINES, TURNOUTS, TURNAROUNDS, LANDINGS, WASTE AREAS
- *** RENOVATION = R
IMPROVEMENT = I
CONSTRUCTION = C

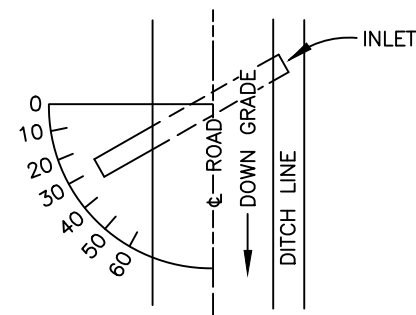


ALWAYS
THINK
SAFETY

U. S. DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT COOS BAY DISTRICT OREGON	
TYPICAL CROSS SECTION DETAIL	
DESIGNED <u>V. STONE/J. MENGUITA</u>	
REVIEWED <u>R. SHIPP</u>	
APPROVED <u>K. WESTENSKOW</u>	
DRAWN <u>JRM</u>	SCALE <u>NONE</u>
DATE <u>8/15</u>	SHEET <u>4</u> OF <u>53</u>
DRAWING NO.	



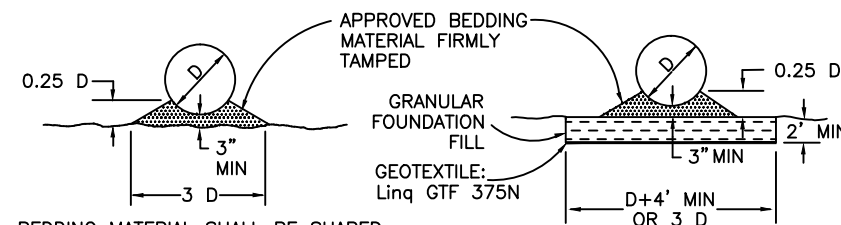
CULVERT MARKERS



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%.

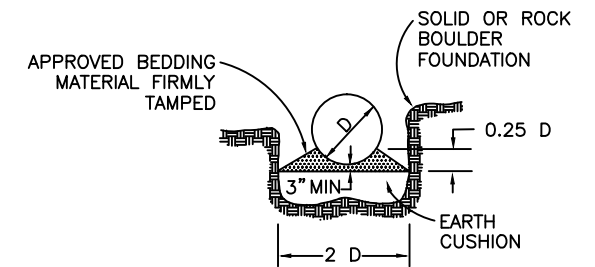
BEDDING OF CULVERTS



BEDDING OF CULVERTS ON STABLE NATURAL GROUND FOUNDATION OR COMPACTED EMBANKMENT

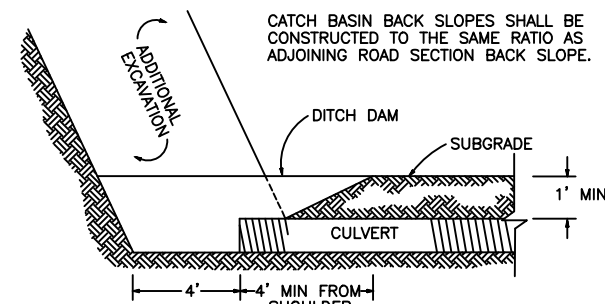
BEDDING MATERIAL SHALL BE SHAPED TO FIT THE BOTTOM OF THE CULVERT.

BEDDING OF CULVERTS ON SOFT SPONGY OR UNSTABLE SOIL FOUNDATION

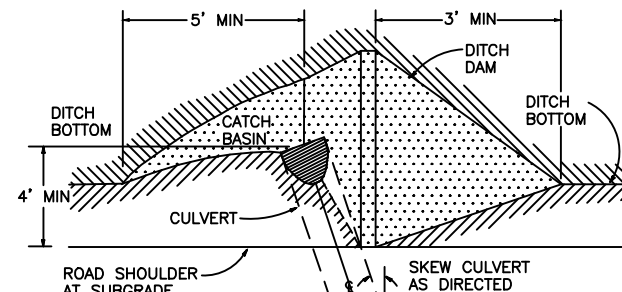


BEDDING MATERIAL SHALL BE SHAPED TO FIT THE BOTTOM OF THE CULVERT. EARTH CUSHIONING OF SILTY CLAY LOAM OR SAND MAY BE USED IF MATERIAL CAN BE PLACED IN THE DRY CONDITION. IF THE EXCAVATION IS WET, USE GRANULAR FOUNDATION FILL MATERIAL. MAINTAIN 8" MIN. DEPTH BETWEEN HIGH POINTS OF ROCKS AND/OR BOULDERS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

BEDDING OF CULVERT IN SOLID ROCK OR BOULDER FOUNDATION

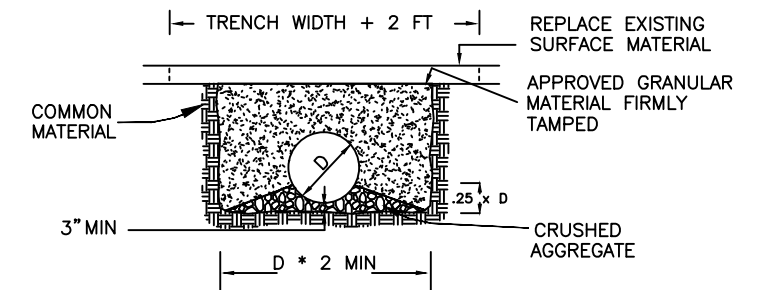
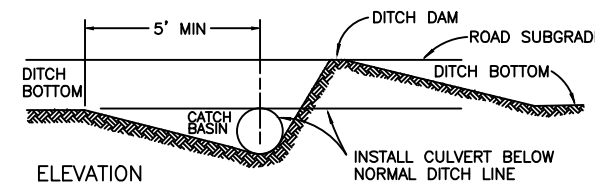


CROSS SECTION AT CATCH BASIN



PLAN VIEW

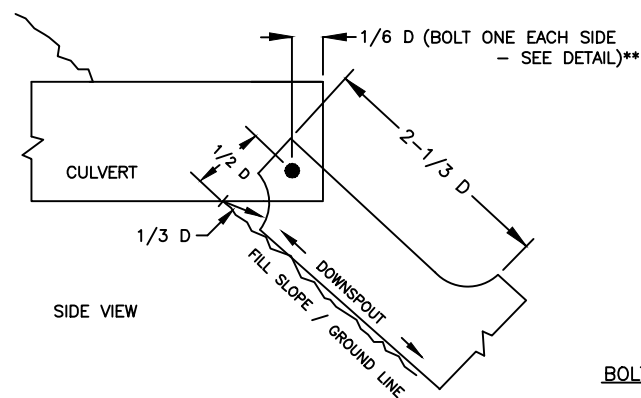
CATCH BASIN



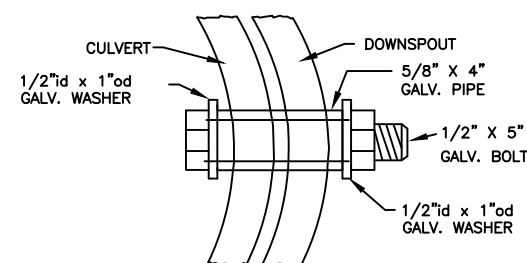
BEDDING MATERIAL SHALL BE SHAPED TO FIT THE BOTTOM OF THE CULVERT. BACKFILL MATERIAL SHALL BE APPROVED GRANULAR MATERIAL.

BEDDING OF CULVERTS ON EXISTING SURFACED ROADS

USE "ADJUSTABLE ELBOW" FOR CPE AND CMP DOWNSPOUTS



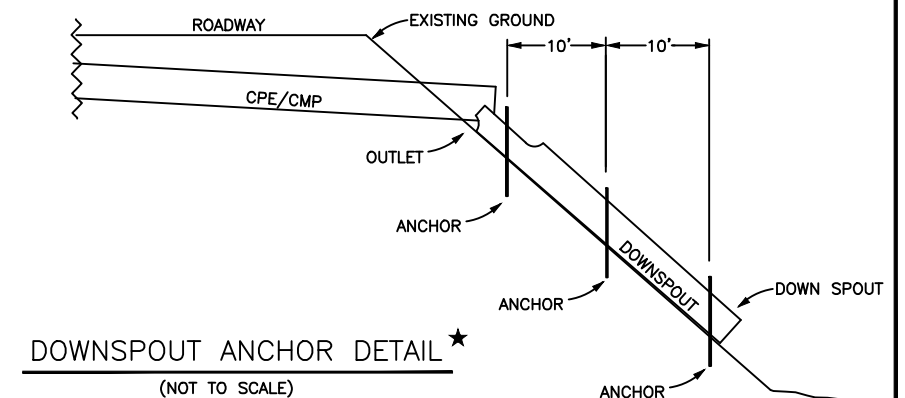
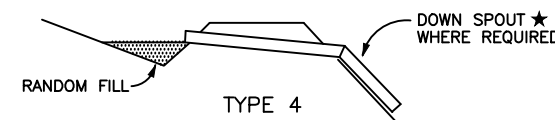
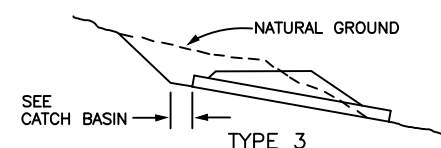
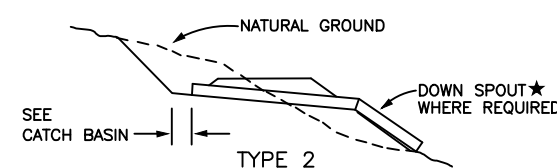
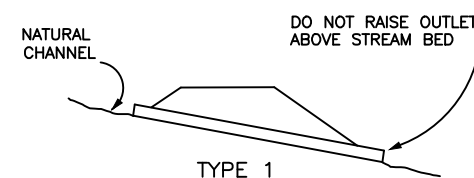
BOLT ASSEMBLY DETAIL**



★ 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 J. MENGUITA

REVIEWED R. SHIPP

APPROVED K. WESTENSKOW

DRAWN JRM SCALE NONE

DATE 8/15 SHEET 5 OF 53

DRAWING NO.

ROAD NUMBER	NEW CONSTRUCTION	RENOVATION	GRUBBING	ROADSIDE BRUSHING	SLOPE STAKING	EARTHWORK (DESIGNED)							CPE *1		CMP *2		DOWNSPOUTS *3				
						COMMON	RIPPABLE ROCK	FILL	WASTE AREA	MATERIAL DRIFTED 100–500’	SHORT HAUL 100–500’	LONG HAUL >500’	18”	24”	12”	24”	FULL ROUND		FULL ROUND		MARKERS
																	18” CPE	24” CPE	24” CMP	36” CMP	
SECTION NO.	300	500	200	2100	2300	300	300	300	300	300	300	300	400	400	400	400	400	400	400	400	400
UNITS	STA.	STA.	ACRES	ACRES	STA	C.Y.	C.Y.	YDS.	YDS.	STA.YD.	STA.YD.	YD.MI.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	EA.
28–11–18.0 Reno		34.90	0.2	1.5		• 1495**		• ****274 ****1211	#	• 822	• 20,032			38++							4
–18.0 New	11.72		0.8		11.72	1200	232	• ****1432		• 7160											
28–11–19.2		2.79	0.2			• 108		• ##38 ****70		• 292	108										
28–12–13.0		26.19	0.2	1.2					#		#										4
28–12–13.1		23.23	0.1	1.1					#		#		62				40				3
28–12–13.2		35.64	0.8	1.6		• 775		• 100	• #675	• 338	#		84	32			30				11
28–12–13.3		16.32	0.1	0.7					#		#										3
28–12–13.4	8.29		0.7			1285		1285		• 2170	775	510									
28–12–13.5	11.68		1.0		11.68	4100	206	451	• 2769	• 5383	1087	2768									
28–12–13.6	19.44		1.5		19.44	5000	330	x2024 xx748	• 2556	• 8096	2024	3305	66				20				2
28–12–23.0		62.88	0.8	2.9					#		#		34	88				20			8
Spur 1A	5.11		0.5			970		970		• 2425	970						50				
Spur 1B	1.97		0.2			134		134		• 67	134		36								
Spur 1C	2.43		0.3			513		513		• 615	513		40								
Spur 1D	2.15		0.1			115		115		• 123	115										
TOTAL	62.79	201.95	7.5	9.0	42.84	15695	768	9365	6000 #	27491	25758 #	6583	322	38++ 120			140	20			35

*1 CPE - CORRUGATED POLYETHYLENE PIPE

ESTIMATE OF QUANTITIES+

ROAD NUMBER	SURFACING								OTHER					SEEDING		OTHER (SEDIMENT CONTROL DEVICES)
	3"–0" BASE ROCK (includes turnouts)	3"–0" SPOT ROCK	3"–0" *LANDING **TURN– AROUND ROCK	3"–0" JUNCTION ROCK	1.5–0" SURFACE ROCK (includes turnouts)	1.5"–0" SPOT ROCK	1.5–0" *LANDING **TURN– AROUND ROCK	1.5"–0" JUNCTION ROCK	RIPRAP	GEO– TEXTILE	1.5"–0" CULVERT BEDDING ROCK	DRAIN ROCK	Pit–Run BACKFILL/ BASE ROCK	SEED, FERTILIZE AND MULCH		
														1800	1800	
SECTION NO.	1000	1000	1000	1000	1200	1200	1200	1200	1400	1300	400/1200	900	700	DRY	HYDRO	1700
UNITS	C.Y.	C.Y.	C.Y.	C.Y.	C.Y.	C.Y.		C.Y.	C.Y.	S.Y.	C.Y.	C.Y.	C.Y.	ACRES	ACRES	EACH
28–11–18.0 reno	104 (A)	60 (A)			141 (C)	23 (C)			50 (5)	206		100 (DR)	80 (PR)	0.9		
28–11–18.0 new															0.4	
28–11–19.2															0.1	
28–12–13.0	30 (A)	(A)	*40 **20 (A)		616 (C)		*20 **10 (C)		10 (3)					0.4		
28–12–13.1		40 (A)	**20 (A)		506 (C)		**10 (C)				24 (C)			0.2		
28–12–13.2	139 (A)	90 (A)	**20 (A)		1170 (C)		**10 (C)	15 (C)	80 (5) 10 (3)	400	89 (C)	150 (DR)	100 (PR)	0.8		
28–12–13.3			*105 **20 (A)		335 (C)		*52 **10 (C)							0.3		
28–12–13.4	394 (A)		*210 (A)	20 (A)	171 (C)		*104 (C)	10 (C)						0.2		
28–12–13.5	581 (A)		*105 **20 (A)	20 (A)	253 (C)		*52 **10 (C)	10 (C)						0.3	0.5	
28–12–13.6	923 (A)		*209 (A)	20 (A)	399 (C)		*104 (C)	10 (C)	10 (3)		24 (C)			0.3	0.7	
28–12–23.0	28 (A)	70 (A)	*105 (A)	20 (A)	1371 (C)		*52 (C)	40 (C)			82 (C)			0.6		1
Spur 1A	243 (A)		*210 (A)	20 (A)	105 (C)		*104 (C)	10 (C)						0.2		
Spur 1B	94 (A)		*105 (A)	20 (A)	40 (C)		*52 (C)	10 (C)						0.1		
Spur 1C	116 (A)		*210 (A)	20 (A)	50 (C)		*104 (C)	10 (C)						0.1		
Spur 1D	103 (A)		*105 (A)	20 (A)	44 (C)		*52 (C)	10 (C)						0.1		
TOTALS	2755 (A)	260 (A)	*1404 **100 (A)	160 (A)	5201 (C)	23 (C)	*696 **50 (C)	125 (C)	30 (3) 130 (5)	606	219 (C)	250 (DR)	180 (PR)	4.5	1.7	1

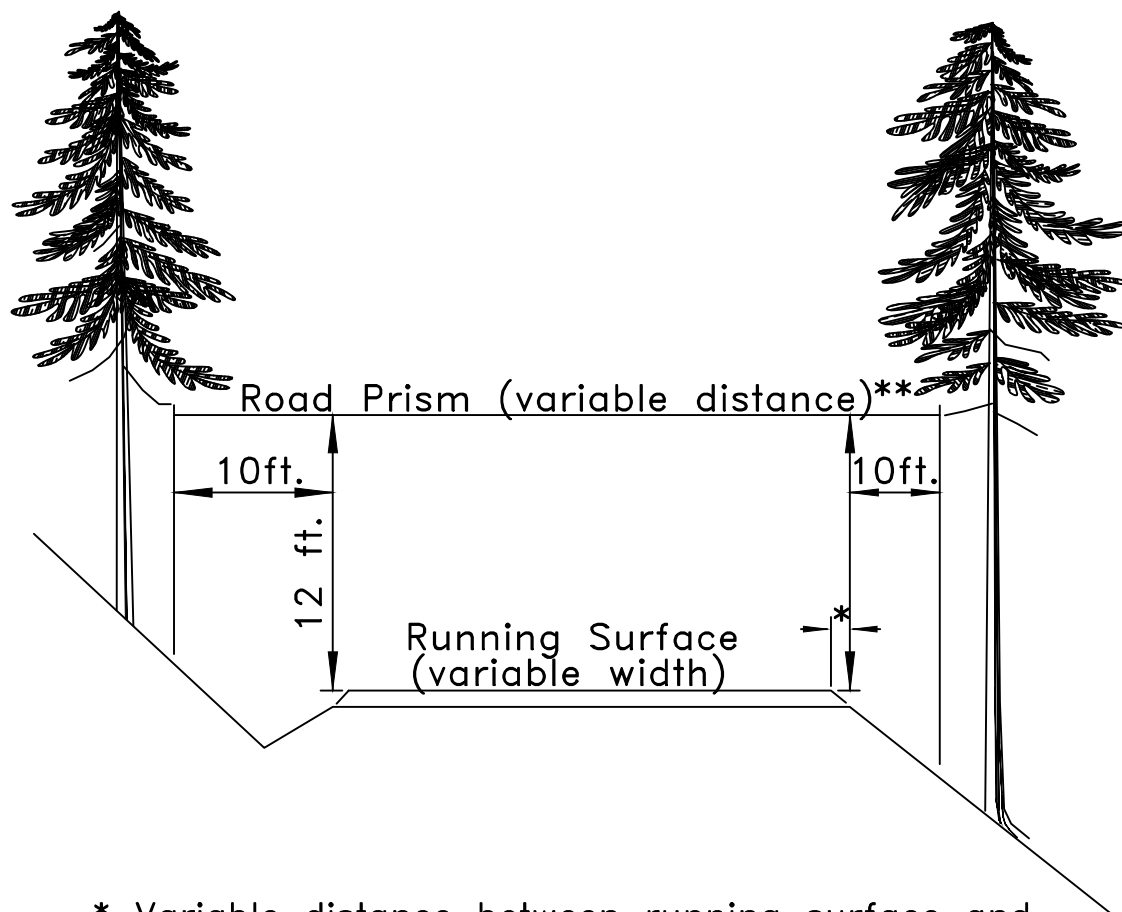
+ FOR INFORMATIONAL USE ONLY. QUANTITIES SHOWN ARE NOT PAY ITEMS.
ALL ROCK QUANTITIES ARE TRUCK (LOOSE) MEASUREMENT QUANTITIES.

SECTION	GRADE	SIZE
400/1200	(C)	1.5"-0"
700	(PR)	PITRUN
900	(DR)	3"-1"
1000	(A)	3"-0"
1200	(C)	1.5"-0"
1400	(3)	Class 3
1400	(5)	Class 5

GRADE INDICATED IN CIRCLE ○



U. S. DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT COOS BAY DISTRICT OREGON	
ESTIMATE OF QUANTITIES	
DESIGNED <u>V. STONE/J. MENGUITA</u>	
REVIEWED <u>R. SHIPP</u>	
APPROVED <u>K. WESTENSKOW</u>	
DRAWN <u>VMS</u>	SCALE <u>NONE</u>
DATE <u>8/15</u>	SHEET <u>7</u> OF <u>53</u>
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 <u>J. MENGUITA</u>	
REVIEWED <u>R. SHIPP</u>	
APPROVED <u>K. WESTENSKOW</u>	
DRAWN <u>JRM</u>	SCALE <u>NONE</u>
DATE <u>8/15</u>	SHEET <u>8</u> OF <u>50</u>
DRAWING NO.	

SPECIAL PROVISIONS

Purchaser Responsibility

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.

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, assigned Civil Engineering Technician, 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 60 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.

Waste Areas

All waste areas shall be sloped, shaped to drain, seeded, fertilized, and mulched in accordance with Sections 200, 300, and 1800 of the Road Construction Specifications.

SPECIAL DETAILS

RENOVATION OF ROAD NO. 28-12-23.0

Milepost 0.000 to Milepost 1.191

<u>Milepost</u>	<u>Remarks</u>
General	Road is to be brushed, graded, and compacted prior to the placement of surfacing rock. Some clearing and grubbing will be required in culvert installation or replacement areas. All excavated material from the re-establishing of ditchlines shall be bunched and end-hauled to waste areas. All existing culverts removed for replacement shall be removed from government property and disposed of in a legal manner. Apply seed, fertilizer, and mulch in accordance with Section 1800 of the Road Construction Specifications on all exposed soils.
0.000	Junction with Gravelford Road. Begin slough and slide removal in accordance with Section 500 of the Road Specifications and Typical Cross Section Sheet No. 4. Ditchline has a partially buried water/spring-box line. Start spreading a 4" lift of 1-1/2"-0" crushed rock conforming to Section 1200, as directed by the Authorized Officer. <u>Call "811 DIG" for buried utility location prior to any construction activity.</u>
0.010	Cattle Guard.
0.108	Junction with Private road left.
0.109	Stream. Existing 18" CPP OK. Waterline/spring box at culvert inlet.
0.110	Construct a sediment catch basin with straw bales, in ditchline entering stream.
0.112	Remove and haul to waste area approx. 10 CY slough and debris from ditchline.
0.115	Existing 18" CPP OK. Install an inlet marker.
0.170	Existing 18" CPP OK. Install an inlet marker.
0.271	Entering cut area. Private property.
0.294	Cattle Guard.
0.316	Existing 18" CPP OK. Replace existing inlet marker.
0.374	Junction with Private road left.
0.406	Existing 18" CPP OK. Replace existing inlet marker.
0.585	Existing 18" CPP OK. Replace existing inlet marker.
0.689	Property Line. Leaving Private/Entering BLM.
0.813	Junction with Spur 1A to the left.
0.838	Existing 18" CMP bad, Replace with 18"x 34' CPP. Place 12 CY 1-1/2"-0" crushed bedding/backfill rock conforming to Section 1200 as directed by the Authorized Officer. Spread and compact 10 CY 3"-0" crushed Base rock over culvert, conforming to Section 1000, as directed by the Authorized Officer, before spreading surfacing lift rock. Install culvert inlet marker.
0.841	Construct a ditch-out to the right.

<u>Milepost</u>	<u>Remarks</u>
0.879	Wet/low area. Existing 18" CMP bad, replace with 24"x 46' CPP. Place 35 CY 1-1/2"-0" crushed bedding/backfill rock conforming to Section 1200 as directed by the Authorized Officer. Spread and compact 20 CY 3"-0" crushed Base rock over culvert and 20 CY 3"-0" crushed Base rock in low area, conforming to Section 1000, as directed by Authorized Officer, before spreading surfacing lift rock. Install culvert inlet marker.
0.938	Draw. Existing 18" CMP bad, Replace with 24"x 42' CPP with 20' downspout at outlet. Place 35 CY 1-1/2"-0" crushed bedding/backfill rock conforming to Section 1200 as directed by the Authorized Officer. Spread and compact 20 CY 3"-0" crushed Base rock, over culvert, conforming to Section 1000, as directed by the Authorized Officer, before spreading surfacing lift rock. Install culvert inlet marker.
1.021	Junction with 28-12-13.2 left. Flat area to the right may be used as waste area for ditchline re-establishment material. Place and shape slide material to drain as directed by the Authorized Officer. Apply seed, fertilizer, and mulch in accordance with Section 1800 of the Road Construction Specifications. Construct a ditch-out to the right, around waste area. Continue ditchline on left ahead into ditchline of the -13.2.
1.126	Construct a lead-off ditch/ditch-out to the right.
1.151	Junction with Spur 1C to the right.
1.180	Junction with 28-12-23.0 Segment B to the right and the 28-12-13.0 Segment A ahead. Wrap the ditchline on the right from the -13.0 into a ditchline along -23.0 Segment B. Start spreading a 8" lift 3"-0" base rock, conforming to Section 1000, as directed by the Authorized Officer, capped with 4" lift 1-1/2"-0" crushed, conforming to Section 1200, as directed by the Authorized Officer.
1.191	Construct a 60' diameter landing to the right. Spread 8" lift 3"-0" crushed base rock, conforming to Section 1000, as directed by the Authorized Officer, and cap it with a 4" lift of 1-1/2"-0" crushed surfacing, conforming to Section 1200, as directed by the Authorized Officer. Construct a ditch-out across the 28-12-23.0 to drain water from ditchline, away from landing. Flat area adjacent to landing may be used as waste area for ditchline re-establishment material. Apply seed, fertilizer, and mulch in accordance with Section 1800 of the Road Construction Specifications on the waste area. End renovation.

RENOVATION OF ROAD NO. 28-12-13.0
 Milepost 0.00 to Milepost 0.496

<u>Milepost</u>	<u>Remarks</u>
General	Road is to be brushed, graded, and compacted prior to the placement of surfacing rock. Some clearing and grubbing will be required in ditchline re-establishment and turnaround construction. All excavated material from the re-establishing of ditchlines shall be bunched and end-hauled to waste areas. Apply seed, fertilizer, and mulch in accordance with Section 1800 of the Road Construction Specifications on all exposed soils. Landing construction shall be restricted to August 6 – February 28 at MP 0.496, due to Marbled Murrelet and Spotted Owl Habitat.
0.000	Junction with Road No. 28-12-23.0 (MM 1.180). Begin slough and slide removal in accordance with Section 500 of the Road Specifications and Typical Cross Section Sheet No. 4. Start spreading a 4" lift of 1-1/2"-0" crushed rock conforming to Section 1200, as directed by the Authorized Officer.

<u>Milepost</u>	<u>Remarks</u>
0.011	Construct a truck turnaround to the left. Spread 20 CY 3"-0" Crushed Base Rock, on turnaround, conforming to Section 1000, as directed by the Authorized Officer and cap it with 10 CY of 1-1/2"-0" crushed surfacing, conforming to Section 1200, as directed by the Authorized Officer. Compact road surface according to Specifications in Section 1200 before spreading base and surfacing rock.
0.090	Existing 18" CPP OK. Place 5 CY Riprap at outlet for energy dissipater, conforming to Section 1400, as directed by the Authorized Officer. Replace culvert inlet marker.
0.300	Existing 18" CPP OK. Place 5 CY Riprap at outlet for energy dissipater, conforming to Section 1400, as directed by the Authorized Officer. Replace culvert inlet marker.
0.345	Spread 10 CY 3"-0" crushed leveling/spot rock on lower portion of road, conforming to Section 1000, as directed by the Authorized Officer. Compact according to Specifications in Section 1000 before spreading surfacing lift.
0.374	Existing 18" CPP OK. Replace existing culvert marker.
0.417	Junction with 28-12-13.0 Segment A2 to the left and 28-12-13.1 ahead. Spread 20 CY 3"-0" Crushed Spot/Leveling Rock at junction, conforming to Section 1000, as directed by the Authorized Officer. Compact according to Specifications in Section 1000 before spreading surfacing lift. Start spreading a 6" lift of 1-1/2"-0" crushed surfacing on Segment B, conforming to Section 1200, as directed by the Authorized Officer.
0.480	Existing 18" CMP OK. Install culvert inlet marker.
0.496	Construct a roadside landing to the left. Spread 40 CY 3"-0" Crushed Base Rock, on landing, conforming to Section 1000, as directed by the Authorized Officer. Compact according to Specifications in Section 1000 before spreading surfacing rock. Spread 20 CY 1-1/2"-0" crushed rock, on landing, conforming to Section 1200, as directed by the Authorized Officer. Construct a ditch-out across the 28-12-13.0 to drain water from ditchline, away from landing. End renovation.

RENOVATION OF ROAD NO. 28-12-13.1
Milepost 0.00 to Milepost 0.440

<u>Milepost</u>	<u>Remarks</u>
General	Road is to be brushed, graded, and compacted prior to the placement of surfacing rock. Some clearing and grubbing will be required in culvert replacement and installation areas. All excavated material from the re-establishing of ditchlines shall be bunched and end-hauled to waste areas. Apply seed, fertilizer, and mulch in accordance with Section 1800 of the Road Construction Specifications on all exposed soils.
0.000	Junction with Road No. 28-12-13.0 (MP 0.417). Begin slough and slide removal in accordance with Section 500 of the Road Specifications and Typical Cross Section Sheet No. 4. Start spreading a 4" lift of 1-1/2"-0" crushed rock conforming to Section 1200, as directed by the Authorized Officer.
0.033	Install 18"x30' CPP w/ 20' Downspout. Place 12 CY 1-1/2"-0" crushed bedding/backfill rock conforming to Section 1200 as directed by the Authorized Officer. Spread and compact 10 CY 3"-0" crushed Base rock over culvert, conforming to Section 1000, as directed by the Authorized Officer, before spreading surfacing lift rock. Install culvert inlet marker.
0.049	Spread 10 CY 3"-0" crushed leveling/spot rock on lower portion of road, conforming to Section 1200, as directed by the Authorized Officer. Compact according to Specifications in Section 1000 before spreading surfacing lift.

<u>Milepost</u>	<u>Remarks</u>
0.100	Construct a turnaround to the left. Spread 20 CY 3"-0" Crushed Base Rock, on turnaround, conforming to Section 1000, as directed by the Authorized Officer. Compact according to Specifications in Section 1000 before spreading surfacing rock. Spread 10 CY 1-1/2"-0" crushed surfacing, on turnaround, conforming to Section 1200, as directed by the Authorized Officer.
0.114	Existing 18" CPP OK. Install a culvert inlet marker.
0.125	Junction with 28-12-13.3 to the right. End lift of rock.
0.226	Spread 10 CY 3"-0" crushed leveling/spot rock on lower portion of road, conforming to Section 1200, as directed by the Authorized Officer. Compact according to Specifications in Section 1000 before spreading surfacing lift.
0.286	Install 18"x 32' CPP w/ 20' Downspout. Place 12 CY 1-1/2"-0" crushed bedding/backfill rock conforming to Section 1200 as directed by the Authorized Officer. Spread and compact 10 CY 3"-0" crushed Base rock over culvert, conforming to Section 1000, as directed by the Authorized Officer, before spreading surfacing lift rock. Install culvert inlet marker.
0.413	Construct a ditch-out to the left.
0.440	Junction with 28-12-13.1 Segment B to the right (to landing) and the 28-11-18.0 Segment A ahead. Flat area on landing may be used as waste area for ditchline re-establishment material. Place and shape waste material to drain as directed by the Authorized Officer. Apply seed, fertilizer, and mulch on waste area, in accordance with Section 1800 of the Road Construction Specifications. End renovation.

RENOVATION OF ROAD NO. 28-12-13.2
Milepost 0.00 to Milepost 0.675

<u>Milepost</u>	<u>Remarks</u>
General	Road is to be brushed, graded, and compacted prior to the placement of surfacing rock. Some clearing and grubbing will be required in ditchline re-establishment and culvert replacement and installation areas. All excavated material from the re-establishing of ditchlines shall be bunched and end-hauled to waste areas. Apply seed, fertilizer, and mulch in accordance with Section 1800 of the Road Construction Specifications on all exposed soils. All construction activities shall be restricted to August 6 – February 28, between MP 0.428 – 0.675, due to Marbled Murrelet and Spotted Owl Habitat.
0.000	Junction with Road No. 28-12-23.0 (MP 1.021). Begin slough and slide removal in accordance with Section 500 of the Road Specifications and Typical Cross Section Sheet No. 4. Start spreading a 6" lift of 1-1/2"-0" crushed rock conforming to Section 1200, as directed by the Authorized Officer. Wrap the ditchline on the left side of the 28-12-23.0 ahead into the ditchline along -13.2.
0.017	Existing 18" CPP OK. Install a culvert inlet marker.
0.053	Evidence of standing water in ditchline. Install 24"x 32' CPP. Place 30 CY 1-1/2"-0" crushed bedding/backfill rock conforming to Section 1200 as directed by the Authorized Officer. Spread and compact 20 CY 3"-0" crushed Base rock over culvert, conforming to Section 1000, as directed by Authorized Officer, before spreading surfacing lift rock. Install culvert inlet marker.
0.086	Existing 18" CPP OK. Install a culvert inlet marker. Install 10' Downspout at culvert outlet.
0.184	Existing 18" CPP OK. Install a culvert inlet marker.

<u>Milepost</u>	<u>Remarks</u>
0.200	Existing 18" CPP OK. Install a culvert inlet marker.
0.210	Junction with 28-12-13.5 to the left. Construct a truck turnaround left. Spread 20 CY 3"-0" crushed base rock, on turnaround, , conforming to Section 1000, capped with 10 CY 1-1/2"-0" crushed, according to Section 1200, as directed by the Authorized Officer. Construct Waste area behind turnaround and along the 28-12-13.5, as marked. Apply seed, fertilizer, and mulch on waste area, in accordance with Section 1800 of the Road Construction Specifications.
0.254	Existing 18" CPP OK. Install a culvert inlet marker. Spread 10 CY 3"-0" crushed spot rock in pot-holed area, conforming to Section 1000, as directed by Authorized Officer, before spreading surfacing lift rock.
0.280	Existing 18" CPP OK. Install a culvert inlet marker.
0.284	Construct a free draining fill by excavating approx. 4' deep at ditchline edge of road and marked/staked elevation on fill slope side of road (approx. 15 ft. depth), Line Perimeter of excavation with a non-woven fabric conforming to Section 1300. Backfill with 150 CY 3"-1" drain rock, conforming to Section 900, and wrap over rock with fabric. Stack 80 CY Class 5 Riprap, conforming to Section 1400, onto keyed bench at flagged/staked location of fill slope as a stabilization wall. Backfill over fabric wrapped drain rock with 100 CY Pit-Run fill/base material and compact fill/base rock, conforming to Section 700, as directed by Authorized Officer, before spreading surfacing lift rock. End-haul excavated material to waste areas.
0.311	Junction with 28-12-13.4 to the left. Start widening road to the right 5 feet for alignment with the 28-12-13.4 intersection. Use excavated material in subgrade. Spread 20 CY 3"-0" crushed base rock on exposed soil portion of new subgrade, conforming to Section 1000. Compact base rock, conforming to Section 1000 as directed by Authorized Officer, before spreading surfacing lift rock.
0.330	End widening right and spreading of crushed base rock.
0.354	Existing 18" CPP OK. Install a culvert inlet marker.
0.380	Existing 18" CPP OK. Install a culvert inlet marker.
0.383	Junction with Spur 1D to the left.
0.428	Draw. Water Presence in ditchline. Install 18"x 44' CPP w/ 20' /downspout at outlet. Place 12 CY 1-1/2"-0" crushed bedding/backfill rock conforming to Section 1200 as directed by the Authorized Officer. Spread and compact 20 CY 3"-0" crushed Base rock over culvert, conforming to Section 1000, as directed by the Authorized Officer, before spreading surfacing lift rock. Install culvert inlet marker. Place 5 CY Class 3 Riprap, conforming to 1400 as directed by Authorized Officer, as energy dissipater below downspout edge.
0.523	Construct a ditchout to the right.
0.568	Start raising the road elevation for vertical approach to the 28-12-13.6 ahead. Clearing and grubbing of trees on both sides of road will be needed for fill placement. Start spreading an 8" lift 3"-0" crushed base conforming to Section 1000, as directed by the Authorized Officer, capped with 4" lift 1-1/2"-0" crushed, conforming to Section 1200, as directed by the Authorized Officer. Compact base rock, conforming to Section 1000, as directed by Authorized Officer, before spreading surfacing lift rock.
0.592	Construct Waste area to the left and along the 28-12-13.5, as marked. Apply seed, fertilizer, and mulch on waste area, in accordance with Section 1800 of the Road Construction Specifications.

<u>Milepost</u>	<u>Remarks</u>
0.609	Junction with 28-12-13.6 to the left. Existing road elevation is to be raised to 4' at this point for vertical approach with 28-12-13.6.
0.626	End raising the road elevation for vertical approach to the 28-12-13.6. End 8" Lift crushed base rock capped with 4" lift cap. Start spreading a 6" lift of 1-1/2"-0" crushed rock conforming to Section 1200, as directed by the Authorized Officer. Install 18"x 40' CPP. Place 12 CY 1-1/2"-0" crushed bedding/backfill rock conforming to Section 1200 as directed by the Authorized Officer. Spread and compact 20 CY 3"-0" crushed Base rock over culvert, conforming to Section 1000, as directed by the Authorized Officer, before spreading surfacing lift rock. Install culvert inlet marker. Place 5 CY Class 3 Riprap, conforming to Section 1400, as directed by Authorized Officer, as energy dissipater below culvert edge.
0.648	Construct a ditchout to the right.
0.675	Timber type change along road. End renovation.

RENOVATION OF ROAD NO. 28-12-13.3
Milepost 0.000 to Milepost 0.309

<u>Milepost</u>	<u>Remarks</u>
General	Road is to be brushed, graded, and compacted prior to the placement of surfacing rock. Some clearing and grubbing will be required in ditchline re-establishment, landing construction, and turnaround construction. All excavated material from the re-establishing of ditchlines shall be bunched and end-hauled to waste areas. Apply seed, fertilizer, and mulch in accordance with Section 1800 of the Road Construction Specifications on all exposed soils.
0.000	Junction with Road No. 28-12-13.1 (MP 0.125). Begin slough and slide removal in accordance with Section 500 of the Road Specifications and Typical Cross Section Sheet No. 4. Start spreading a 6" lift of 1-1/2"-0" crushed rock conforming to Section 1200, as directed by the Authorized Officer.
0.059	Existing 18" CPP OK. Install a culvert inlet marker.
0.102	Existing 18" CPP OK. Install a culvert inlet marker.
0.128	Construct a ditchout left.
0.141	Construct a truck turnaround to the left. Spread 20 CY 3"-0" Crushed Base Rock, on turnaround, conforming to Section 1000, as directed by the Authorized Officer and cap it with 10 CY of 1-1/2"-0" crushed surfacing, conforming to Section 1200, as directed by the Authorized Officer. Compact road surface according to Specifications in Section 1000 before spreading base and surfacing rock.
0.156	Junction with Spur 1B to the right.
0.186	Existing 18" CPP OK. Install a culvert inlet marker.
0.309	End of Renovation. Construct a 60' diameter landing to the right. Spread 8" lift 3"-0" crushed base rock, conforming to Section 1000, as directed by the Authorized Officer, and cap it with a 4" lift of 1-1/2"-0" crushed surfacing, conforming to Section 1200, as directed by the Authorized Officer. Flat area adjacent to landing may be used as waste area for ditchline re-establishment material. Apply seed, fertilizer, and mulch in accordance with Section 1800 of the Road Construction Specifications on the waste area. End renovation.

RENOVATION OF ROAD NO. 28-11-18.0
 Milepost 0.00 to Milepost 0.661

<u>Milepost</u>	<u>Remarks</u>
General	Road is to be brushed, graded, and compacted. Some clearing and grubbing will be required in pullback and widening areas. All excavated material from the widening, sidecast pullback, and French drain excavation shall be end-hauled as fill material on Road No. 28-11-18.0 Segment C (Between Sta. 6+80 to Sta. 9+07). Begin Re-establishing ditchline by bunching and end-hauling material to waste areas. Apply seed, fertilizer, and mulch in accordance with Section 1800 of the Road Construction Specifications on the waste area and all exposed soils.
0.000	Junction with Road No. 28-12-13.1 (MP 0.440). Begin slough and slide removal in accordance with Section 500 of the Road Specifications and Typical Cross Section Sheet No. 4.
0.209	End of Segment A/Start of Segment B.
0.239	Property Line. Leaving BLM/Entering Moore Mill & Lumber Co.
0.268	Junction with Old Tie Road Left.
0.335	Start of 50' radius curve.
0.355 – 0.370	Junction, Moore Mill & Lumber Co. Road to the left. Start Widening into Bank Left for curve width. Spread 15 CY 3"-0" Base Rock on exposed soil portion of road due to widening, conforming to Section 1000 as directed by the Authorized Officer.
0.335 – 0.386	Spread 89 CY 1-1/2"-0" Cap Rock over this portion of road, conforming to Section 1200 as directed by the Authorized Officer. Compact road surface according to Specifications in Section 1000 before spreading surfacing rock.
0.447	Start widening to the right for failure fix. Start spreading a 8" Lift of 3"-0" Base Rock, conforming to Section 1000, as directed by the Authorized Officer, capped with a 4" Lift of 1-1/2"-0" crushed Cap Rock, conforming to Section 1200 as directed by the Authorized Officer.
0.475 – 0.480	End widening to the right for failure fix. Construct a free draining fill by excavating approx. 4' deep at ditchline edge of road and 10' depth at fill slope edge. Line Perimeter of excavation with a non-woven fabric conforming to Section 1300. Backfill with 100 CY 3"-1" drain rock, conforming to Section 900, and wrap over rock with fabric. Install a 24"x 38' perforated plastic pipe in the drain rock. Stack 50 CY Class 5 Riprap, conforming to Section 1400 onto keyed bench at flagged/staked location of fill slope as a stabilization wall. Have outlet of installed culvert use this Riprap wall as energy dissipater rock. Backfill over fabric wrapped drain rock with 80 CY Pit-Run fill/base material and compact fill/base rock, conforming to Section 700, as directed by Authorized Officer, before spreading surfacing lift rock. End Lifts of Base Rock and Cap Rock.
0.489	Junction with road right. Existing Cross drain ok. Needs Catch basin cleaned. Needs existing downspout to be re-attached. Needs culvert inlet marker.
0.545	Existing Cross drain ok. Needs Catch basin cleaned. Needs existing Half-Round to be re-attached. Need culvert inlet marker.
0.545 – 0.576	Pullback sidecasted material from fill slope (approx. 2 ft. width at top).
0.545 – 0.661	Widen to the right into bank for road width as marked. Spread 45 CY 3"-0" Base Rock, conforming to Section 1000 and directed by the Authorized Officer; capped with 23 CY 1-1/2"-0" Crushed Cap Rock, conforming to Section 1200 as directed by the Authorized Officer, on the exposed soil portion of road due to widening.

<u>Milepost</u>	<u>Remarks</u>
0.608	Existing Cross drain ok. Needs Catch basin cleaned. Needs existing Half-Round to be re-attached. Need culvert inlet marker.
0.629 – 0.639	Pullback sidecasted material from fill slope (approx. 3 ft. width at top).
0.661	Junctions with 28-11-18.0 Segment C to the left. End renovation.

RENOVATION OF ROAD NO. 28-11-19.2
 Station 0+00 to Station 2+79

<u>Station</u>	<u>Remarks</u>
General	Road is to be cleared and grubbed. All excavated material shall be used in the subgrade. Begin Re-establishing ditchline by pulling material over the road prism. Compact subgrade, conforming to Section 500 as directed by Authorized Officer. Hydromulch all exposed cuts and fills along road in accordance with Section 1800 of the Road Construction Specifications.
0+00	Junction with Road No. 28-11-18.0 Segment C (Sta. 11+72).
2+79	Construct a 60' diameter landing. End renovation.

EQUIPMENT WASHING

The purchaser is responsible for conforming to the Exhibit F.

CONSTRUCTION DETAIL SHEET
ROAD NO. 28-12-13.4

GENERAL

Purchaser shall construct Road No. 28-12-13.4 from Sta. 0+00 to Sta. 8+29 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 (16' subgrade w/ 2' ditch; 12' surfaced width).

TURNOUTS

None.

SUBGRADE

The subgrade shall be excavated and compacted in accordance with the Road Specifications, 200 and 300 Sections. All excavated material shall be used as fill in the subgrade and compacted in accordance with the Road Specifications, 200 and 300 Sections. Maximum Fill depth is 5ft and Maximum Cut depth is 6ft.

DRAINAGE FEATURES

Crowned at 2% with 2 ft. ditch to achieve drainage (double ditch through-cuts). Construct Ditchouts as needed and at the following locations:

Sta. 2+00:	Ditchout Left
Sta. 4+90:	Ditchout Right
Sta. 6+60:	Ditchout Left
Sta. 7+05:	Ditchout Right
Sta. 7+40:	Ditchout Left
Sta. 7+77:	Ditchout Right

SURFACING

Base: 8" lift of 3"-0" Crushed Base Rock, conforming to Section 1000, as directed by the Authorized Officer
Cap: 4" lift of 1-1/2"-0" Crushed Surfacing Rock, conforming to Section 1200, as directed by the Authorized Officer
All surfacing shall be spread and compacted in accordance with the Road Specifications, 1000 and 1200 Sections.

ALIGNMENT

Roadway shall be constructed within posted or painted right-of-way boundaries. Minimum curve radius shall be sixty (60) feet. Road has been slope staked and L-Line locations marked.

Sta. 0+00: Junction with Road No. 28-12-13.2 at MP 0.311.

GRADE

Grade shall not exceed 18% favorable and 18% adverse.

LANDINGS

Construct roadside landing (30ft each side of road) at Sta. 4+47.
Construct end landing (60ft diameter) at Sta. 8+29.
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. 28-12-13.5

GENERAL

Purchaser shall construct Road No. 28-12-13.5 from Sta. 0+00 to Sta. 11+68 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 (16' subgrade w/ 2' ditch; 12' surfaced width).

TURNOUTS

Sta. 1+90: Turnout right.

WASTE AREA

A waste area shall be cleared and constructed between Sta. 0+00 and Sta. 2+25 to the left as marked. Approx. 2,769 CY material shall be end-hauled and wasted from excavation of the 28-12-13.5. All waste shall be smoothed and compacted in accordance with the Road Specifications, 200 and 300 Sections.

SUBGRADE

The subgrade shall be excavated and compacted in accordance with the existing Slope Staking and the Road Specifications, 200 and 300 Sections. Maximum Fill depth is 6.2ft and Maximum Cut depth is 8.4ft.

DRAINAGE FEATURES

Crowned at 2% with 2 ft. ditch to achieve drainage (double ditch through-cuts). Construct Ditchouts as needed and at the following locations:

Sta. 4+15:	Ditchout Left
Sta. 5+00:	Ditchout Left
Sta. 6+40:	Ditchout Right
Sta. 8+00:	Ditchout Left
Sta. 9+57:	Ditchout Left
Sta. 10+00:	Ditchout Right
Sta. 10+58:	Ditchout Left
Sta. 10+80:	Ditchout Right

SURFACING

Base: 8" lift of 3"-0" Crushed Base Rock, conforming to Section 1000, as directed by the Authorized Officer
Cap: 4" lift of 1-1/2"-0" Crushed Surfacing Rock, conforming to Section 1200, as directed by the Authorized Officer
All surfacing shall be spread and compacted in accordance with the Road Specifications, 1000 and 1200 Sections.

ALIGNMENT

Roadway shall be constructed within posted or painted right-of-way boundaries. Minimum curve radius shall be sixty (60) feet. Road has been slope staked and L-Line locations marked.

Sta. 0+00: Junction with Road No. 28-12-13.2 at MP 0.210.

GRADE

Grade shall not exceed 10% favorable and 18% adverse.

Between Sta. 0+00 and 4+67: All excavated material shall be used as fill material in subgrade. Between Sta. 4+67 and 11+68, material that is not used in corresponding subgrade shall be end-hauled to waste area. Slopes between Sta. 5+00 to 6+10 require full bench construction.

TRUCK TURNAROUND

Construct a truck turnaround to the left at Sta. 10+49.

CONSTRUCTION DETAIL SHEET
ROAD NO. 28-12-13.5 (cont.)

LANDINGS

Construct end landing at Sta. 11+68.
Grade of landing shall not exceed 5%.

SOIL STABILIZATION

Apply seed, fertilizer, and mulch on waste area in accordance with Section 1800 of the Road Construction Specifications. Hydromulch all exposed cuts and fills along road in accordance with Section 1800 of the Road Construction Specifications.

CONSTRUCTION DETAIL SHEET
ROAD NO. 28-12-13.6

GENERAL

Purchaser shall construct Road No. 28-12-13.6 from Sta. 0+00 to Sta. 19+44 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. (16' subgrade w/ 2' ditch; 12' surfaced width).

TURNOUTS

None

WASTE AREA

A waste area shall be cleared and constructed between MP 0.592 of the 28+12+13.2 and Sta. 1+27 of the 28-12-13.6 to the left as marked. Approx. 3,304 CY material shall be end-hauled and wasted from excavation of the 28-12-13.6. All waste shall be smoothed and compacted in accordance with the Road Specifications, 200 and 300 Sections.

SUBGRADE

The subgrade shall be excavated and compacted in accordance with the existing Slope Staking and the Road Specifications, 200 and 300 Sections. Maximum Fill depth is 5.0ft and Maximum Cut depth is 10.2ft.

DRAINAGE FEATURES

Crowned at 2% with 2 ft. ditch to achieve drainage (double ditch through-cuts). Construct Ditchouts as needed and at the following locations:

Sta. 0+30:	Ditchout Left
Sta. 1+10:	Ditchout Right
Sta. 3+40:	Ditchout Left
Sta. 10+05:	Ditchout Right
Sta. 11+70:	Ditchout Right
Sta. 12+30:	Ditchout Right
Sta. 14+20:	Ditchout Right
Sta. 16+90:	Ditchout Right
Sta. 19+14:	Ditchout Right

Install Cross Drains at the following locations:

Sta. 5+96:	18"x 30' CPP w/ 10' Downspout and 5 CY Class 3 Riprap, conforming to Section 1400, as directed by the Authorized Officer @ end of Downspout. Install a culvert inlet marker.
Sta. 8+70:	18"x 36' CPP w/ 10' Downspout and 5 CY Riprap, conforming to Section 1400, as directed by the Authorized Officer @ end of Downspout. Install a culvert inlet marker.

SURFACING

Base: 8" lift of 3"-0" Crushed Base Rock, conforming to Section 1000, as directed by the Authorized Officer
Cap: 4" lift of 1-1/2"-0" Crushed Surfacing Rock, conforming to Section 1200, as directed by the Authorized Officer
All surfacing shall be spread and compacted in accordance with the Road Specifications, 1000 and 1200 Sections.

ALIGNMENT

Roadway shall be constructed within posted or painted right-of-way boundaries. Minimum curve radius shall be sixty (60) feet. Road has been slope staked and L-Line locations marked.
Sta. 0+00: Junction with Road No. 28-12-13.2 at MP 0.609.

CONSTRUCTION DETAIL SHEET
ROAD NO. 28-12-13.6 (cont.)

GRADE

Grade shall not exceed 17% favorable and 18% adverse.

Between Sta. 0+00 and 2+76: All excavated material shall be used as fill material in subgrade. Between Sta. 2+76 and 19+44, material that is not used in corresponding subgrade shall be end-hauled to waste area. Slopes between Sta. 7+00 to 9+71 require full bench construction. Fill material is not to be sidecasted over old scarp edge between Sta. 3+64 and Sta. 4+67.

TRUCK TURNAROUND

None.

LANDINGS

Construct roadside landing (30ft left side of road) at Sta. 2+76.
Construct roadside landing (30ft right side of road) at Sta. 11+60.
Construct end landing (60ft diameter) at Sta. 19+44.
Grade of landings shall not exceed 5%.

SOIL STABILIZATION

Apply seed, fertilizer, and mulch on waste area in accordance with Section 1800 of the Road Construction

Specifications. Hydromulch all exposed cuts and fills along road in accordance with Section 1800 of the Road Construction Specifications.

TIMELINES

All construction, maintenance, and hauling activities shall be restricted to August 6 – February 28 due to Marbled Murrelet Habitat.

CONSTRUCTION DETAIL SHEET
ROAD NO. 28-11-18.0 SEG. C

GENERAL

Purchaser shall construct Road No. 28-11-18.0 Segment C from Sta. 0+00 to Sta. 11+72 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. (14' subgrade w/ no ditch; no surfacing).

TURNOUTS

None.

SUBGRADE

The subgrade shall be excavated and compacted in accordance with the existing Slope Staking and the Road Specifications, 200 and 300 Sections. All excavated material shall be used as fill in the subgrade and compacted in accordance with the Road Specifications, 200 and 300 Sections. Maximum Fill depth is 12.0ft and Maximum Cut depth is 5.1ft.

DRAINAGE FEATURES

Outslope at 2% with no ditch to achieve drainage (except in through-cuts where ditch shall be constructed on outside edge of road).

SURFACING

None.

ALIGNMENT

Roadway shall be constructed within posted or painted right-of-way boundaries. Minimum curve radius shall be sixty (60) feet. Road has been slope staked and L-Line locations marked.

Sta. 0+00: Junction with Road No. 28-11-18.0 Segment B at MP .0.661. On Moore Mill & Lumber Co. Property.

Sta. 7+25 – Sta. 7+45: Construct junction with a fill slope of 4:1 on the right side to allow for swing road/existing landing access. Clear and grub areas of existing landing.

Sta. 7+87: New Construction along old skid road.

Sta. 8+42: Property Line/ Leaving Moore Mill & Lumber Co./Entering BLM.

Sta. 9+40: Construct flat area to the right for logs to be decked from Swing Road.

Sta. 10+62: Property Line/ Leaving BLM/Entering Moore Mill & Lumber Co.

GRADE

Grade shall not exceed 5% favorable and 19% adverse.

Between Sta. 0+00 and 1+26: All excavated material shall be used as fill material in subgrade. Between Sta. 1+26 and Sta. 6+80, material that is not used in corresponding subgrade shall be drifted ahead to large fill between Sta. 6+80 and Sta.9+07. All excavated material that is not used in corresponding subgrade between

Sta. 9+07 and Sta. 11+72 shall be drifted back to large fill between Sta. 6+80 and Sta. 9+07. Slopes between Sta. 3+69 to 4+80 require full bench construction.

TRUCK TURNAROUND

Sta. 11+72: Construct Truck Turnaround Left on the 28-11-19.2.

LANDINGS

None.

SOIL STABILIZATION

Hydromulch all exposed cuts and fills along road in accordance with Section 1800 of the Road Construction Specifications.

CONSTRUCTION DETAIL SHEET
ROAD NO. Spur 1A

GENERAL

Purchaser shall construct Spur 1A from Sta. 0+00 to Sta. 5+11 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. (16' subgrade w/ 2' ditch; 12' surfaced width).

TURNOUTS

None.

SUBGRADE

The subgrade shall be excavated and compacted in accordance with the Road Specifications, 200 and 300 Sections. All excavated material shall be used as fill in the subgrade and compacted in accordance with the Road Specifications, 200 and 300 Sections. Maximum Fill depth is 3.0ft and Maximum Cut depth is 3.0ft.

DRAINAGE FEATURES

Crowned at 2% with 2ft. ditch to achieve drainage (double ditch through-cuts). Construct Ditchouts as needed and at the following locations:

Sta. 1+25: Ditchout Right
Sta. 1+60: Ditchout Left
Sta. 3+40: Ditchout Left
Sta. 5+20: Ditchout Right and Left (back edge of landing)

Install Cross Drains at the following locations:

Sta. 0+14: 18"x50' CPP in existing ditchline of the 28-12-23.0.

SURFACING

Base: 8" lift of 3"-0" Crushed Base Rock, conforming to Section 1000, as directed by the Authorized Officer
Cap: 4" lift of 1-1/2"-0" Crushed Surfacing Rock, conforming to Section 1200, as directed by the Authorized Officer
All surfacing shall be spread and compacted in accordance with the Road Specifications, 1000 and 1200 Sections.

ALIGNMENT

Roadway shall be constructed within posted or painted right-of-way boundaries. Minimum curve radius shall be sixty (60) feet. Road has been slope staked and L-Line locations marked.

Sta. 0+00: Junction with Road No. 28-12-23.0 at MP 0.813.
Sta. 5+11: Back side of landing shall be excavated into ridge (leaving approx. 12 foot cut).

GRADE

Grade shall not exceed 15% favorable and 7% adverse.

TRUCK TURNAROUND

None.

LANDINGS

Construct roadside landing (30ft each side of road) at Sta. 2+64.
Construct end landing (60ft diameter) at Sta. 5+11.
Grade of landings shall not exceed 5%.

SOIL STABILIZATION

Apply seed, fertilizer, and mulch on exposed cuts and fills in accordance with Section 1800 of the Road Construction.

CONSTRUCTION DETAIL SHEET
ROAD NO. Spur 1B

GENERAL

Purchaser shall construct Spur 1B from Sta. 0+00 to Sta. 1+97 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. (16' subgrade w/ no ditch; 12' surfaced width).

TURNOUTS

None

SUBGRADE

The subgrade shall be excavated and compacted in accordance with the Road Specifications, 200 and 300 Sections. All excavated material shall be used as fill in the subgrade and compacted in accordance with the Road Specifications, 200 and 300 Sections. Maximum Fill depth is 3.0ft and Maximum Cut depth is 1.0ft.

DRAINAGE FEATURES

Outslope at 2% with no ditch to achieve drainage (except in through-cuts where ditch shall be constructed on outside edge of road).

Install Cross Drains at the following locations:

Sta. 0+21: 18"x 36' CPP in existing ditchline of the 28-12-13.3.

SURFACING

Base: 8" lift of 3"-0" Crushed Base Rock, conforming to Section 1000, as directed by the Authorized Officer
Cap: 4" lift of 1-1/2"-0" Crushed Surfacing Rock, conforming to Section 1200, as directed by the Authorized Officer
All surfacing shall be spread and compacted in accordance with the Road Specifications, 1000 and 1200 Sections.

ALIGNMENT

Roadway shall be constructed within posted or painted right-of-way boundaries. Minimum curve radius shall be sixty (60) feet. Road has been slope staked and L-Line locations marked.

Sta. 0+00: Junction with Road No. 28-12-13.3 at MP 0.156.

GRADE

Grade shall not exceed 5% favorable and 10% adverse.

TRUCK TURNAROUND

None.

LANDINGS

Construct end landing (60ft diameter) at Sta. 1+97.
Grade of landings shall not exceed 5%.

SOIL STABILIZATION

Apply seed, fertilizer, and mulch on exposed cuts and fills in accordance with Section 1800 of the Road Construction

CONSTRUCTION DETAIL SHEET
ROAD NO. SPUR 1C

GENERAL

Purchaser shall construct Spur 1C from Sta. 0+00 to Sta. 2+43 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. (16' subgrade w/ 2' ditch; 12' surfaced width).

TURNOUTS

None.

SUBGRADE

The subgrade shall be excavated and compacted in accordance with the Road Specifications, 200 and 300 Sections. All excavated material shall be used as fill in the subgrade and compacted in accordance with the Road Specifications, 200 and 300 Sections. Maximum Fill depth is 2.6ft and Maximum Cut depth is 2.3ft.

DRAINAGE FEATURES

Crowned at 2% with 2 ft. ditch to achieve drainage (double ditch through-cuts). Construct Ditchouts as needed and at the following locations:

Sta. 0+85: Ditchout Right
Sta. 1+80: Ditchout Right
Sta. 2+00: Ditchout Right

Install Cross Drains at the following locations:

Sta. 0+41: 18"x40' CPP in existing ditchline of the 28-12-23.0.

SURFACING

Base: 8" lift of 3"-0" Crushed Base Rock, conforming to Section 1000, as directed by the Authorized Officer
Cap: 4" lift of 1-1/2"-0" Crushed Surfacing Rock, conforming to Section 1200, as directed by the Authorized Officer
All surfacing shall be spread and compacted in accordance with the Road Specifications, 1000 and 1200 Sections.

ALIGNMENT

Roadway shall be constructed within posted or painted right-of-way boundaries. Minimum curve radius shall be sixty (60) feet. Road has been slope staked and L-Line locations marked.

Sta. 0+00: Junction with Road No. 28-12-23.0 at MP 1.151.

GRADE

Grade shall not exceed 16% favorable and 5% adverse.

TRUCK TURNAROUND

None.

LANDINGS

Construct roadside landing (20ft left and 40ft right of road centerline) at Sta. 1+50.
Construct end landing (60ft diameter) at Sta. 2+43.
Grade of landings shall not exceed 5%.

SOIL STABILIZATION

Apply seed, fertilizer, and mulch on exposed cuts and fills in accordance with Section 1800 of the Road Construction

CONSTRUCTION DETAIL SHEET
ROAD NO. SPUR 1D

GENERAL

Purchaser shall construct Spur 1D from Sta. 0+00 to Sta. 2+15 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. (16' subgrade w/no ditch; 12' surfaced width).

TURNOUTS

None

SUBGRADE

The subgrade shall be excavated and compacted in accordance with the Road Specifications, 200 and 300 Sections. All excavated material shall be used as fill in the subgrade and compacted in accordance with the Road Specifications, 200 and 300 Sections. Maximum Fill depth is 0.3ft and Maximum Cut depth is 1.8ft.

DRAINAGE FEATURES

Outslope at 2% with no ditch to achieve drainage (except in through-cuts where ditch shall be constructed on outside edge of road).

SURFACING

Base: 8" lift of 3"-0" Crushed Base Rock, conforming to Section 1000, as directed by the Authorized Officer
Cap: 4" lift of 1-1/2"-0" Crushed Surfacing Rock, conforming to Section 1200, as directed by the Authorized Officer

All surfacing shall be spread and compacted in accordance with the Road Specifications, 1000 and 1200 Sections.

ALIGNMENT

Roadway shall be constructed within posted or painted right-of-way boundaries. Minimum curve radius shall be sixty (60) feet. Road has been slope staked and L-Line locations marked.

Sta. 0+00: Junction with Road No. 28-12-13.2 at MP 0.383.

GRADE

Grade shall not exceed 5% favorable and 10% adverse.

TRUCK TURNAROUND

None.

LANDINGS

Construct end landing (60ft diameter) at Sta. 2+15.
Grade of landings shall not exceed 5%.

SOIL STABILIZATION

Apply seed, fertilizer, and mulch on exposed cuts and fills in accordance with Section 1800 of the Road Construction

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
700	AGGREGATE BASE COURSE (PIT-RUN ROCK)
900	AGGREGATE BASE COURSE (SCREENED ROCK)
1000	AGGREGATE BASE COURSE (CRUSHED ROCK)
1200	AGGREGATE SURFACE COURSE (CRUSHED ROCK)
1300	GEOTEXTILES
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 sidecasting material outside of the road prism.

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

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

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

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

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

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:

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

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

The weight of the tamping-roller unit shall be such as to exert a minimum pressure of 250 pounds per square inch on the ground area in contact with the tamping feet, and the roller shall be so designed that the weight may be increased to exert a pressure up to 500 pounds per square inch on the ground area in contact with the tamping feet. The ground pressure shall be determined by dividing the total weight of the roller unit, not including the weight of the tractor, by the total cross-sectional area of the tamping feet in one row of tamping feet parallel to the axis of the roller.

- 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 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 103b or 103f, as directed by the Authorized Officer, and in accordance with the following table:

Road No.	From Sta./M.P.	To Sta./M.P.
28-11-18.0 Seg. C	0+00	11+72
28-12-13.4	0+00	8+29
28-12-13.5	0+00	11+68
28-12-13.6	0+00	19+44
Spur 1A	0+00	5+11
Spur 1B	0+00	1+97
Spur 1C	0+00	2+43
Spur 1D	0+00	2+15

- 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, full 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 to 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.
28-11-18.0 Seq. A-B	0.000	0.661
28-11-19.2	0+00	2+79
28-12-13.0	0.00	0.496
28-12-13.1	0.00	0.440
28-12-13.2	0.00	0.675
28-12-13.3	0.00	0.309

- 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.
28-11-18.0 Seq. A-B	0.000	0.661
28-11-19.2	0+00	2+79
28-12-13.0	0.00	0.496
28-12-13.1	0.00	0.440
28-12-13.2	0.00	0.675
28-12-13.3	0.00	0.309

- 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 - 700
PITRUN ROCK MATERIAL

- 701 - This work shall consist of furnishing, hauling and placing one or more layers of pitrun rock material on roadbeds and landing(s) approved for placing pitrun materials in accordance with these specifications and conforming to the dimensions and typical cross sections shown on the plans.
- 702a - Pitrun rock materials used in this work may be obtained from source(s) selected by the Purchaser at his option, providing the materials furnished comply with these specifications and the source is approved in writing by the Authorized Officer prior to use.
- 703 - Pitrun rock materials shall consist of talus rock, bank run or river run gravels, partly decomposed granite or basalt, cinders, or other approved materials. The materials shall be reasonably free from vegetative matter or other deleterious material.
- 704 - Pitrun rock material shall consist of native materials of such a size and grading that it can be taken directly from the source and placed on the road without crushing or screening. The material shall contain only occasional oversize particles to be removed. The term "oversize" shall be construed to mean material greater than $((2/3)$ the compacted thickness of the layer in which it is placed) ((6) inches).
- 705 - Pitrun rock material shall be placed in layers of sufficient thickness to accommodate the material, except that the maximum thickness of any layer shall not exceed (6) inches. Where the total specified thickness is greater than (6) inches the material shall be placed in two or more layers of equal thickness.
- 706 - Oversize material that cannot be accommodated in the layer shall be removed at the source or on the road, and shall be disposed of (as shown on the plans) (or) (as directed by the Authorized Officer).
- 707 - When so indicated by the plans, filler or binder obtained from the source(s) shown on the plans shall be uniformly blended with pitrun rock material on the road.
- 708 - The roadbed as shaped and compacted under section(s) (300) (500) of these specifications shall be approved (in writing) by the Authorized Officer prior to placement of pitrun rock material. (Notification for final inspection prior to rocking shall be (72) hours prior to the inspection and shall be (10) days prior to start of surfacing operations.)
- 709 - Pitrun rock material shall be placed on roadbed, blade processed and spread to required dimensions.
- 710 - Pitrun rock material shall be compacted by routing construction and hauling equipment over the full width of each layer placed.
- 711 - Layers of pitrun rock material placed and shaped as specified shall be uniformly moistened or dried to the optimum moisture content for maximum density and compacted to full width by compacting equipment conforming to the requirements of Subsections(s) 103a, 103b, 103d, 103e, 103g, 103h, and 103i. Minimum compaction shall be [(1) hour of continuous compacting for each (250) cubic yards of pitrun rock material placed per layer] [(6) passes over each full-width layer], or fraction thereof.
- 712 - Pitrun rock material shall be surface bladed during the compaction operation to remove irregularities and to produce a smooth running surface.
- 713 - Pitrun rock material used to repair or reinforce soft, muddy, frozen, yielding, or rutted subgrades shall not be construed as surfacing required under this specification (unless approved in writing by the Authorized Officer prior to placement).

AGGREGATE BASE COURSE - 900
DRAIN ROCK MATERIAL

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

Table 903
DRAIN ROCK MATERIAL GRADATION REQUIREMENTS
Percentage by Weight Passing Square Mesh Sieves
(AASHTO T 27)

Sieve Designation	A
4 inch	-
3 inch	100
2 inch	95-100

- 904a - Drain rock material shall show a durability value of not less than 35 as determined by AASHTO T 210.
- 905 - The roadbed as shaped and compacted under section(s) (300) (and) (500) of these specifications, shall be approved (in writing) by the Authorized Officer prior to placement of drain rock materials. Notification for final inspection, prior to rocking, shall be (72) hours prior to that inspection and shall be (10) days prior to start of rock operations.
- 906 - Drain rock material shall be placed in layers not to exceed (6) inches in thickness. Where the required total thickness is more than (6) inches, the rock material shall be shaped and compacted in two or more layers of approximately equal thickness.
- 906a - Drain rock materials used to repair or reinforce a soft, muddy, frozen, yielding, or rutted subgrade(s) shall not be construed as surfacing under this specification.
- 907 - Drain rock shall be free from vegetative matter and other deleterious materials.
- 908 - Drain rock material shall be blade-processed and spread to required dimensions. Processing shall be performed in such a manner as to minimize aggregate segregation.
- 912 - Acceptance tests will be made at the source from samples taken of drain rock materials being produced. Test data obtained by BLM from testing screened rock materials shall be made available to the Purchaser.

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.

- 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
4-inch	-
3-inch	100
2-inch	90-95
1½-inch	-
1-inch	45-75
¾-inch	-
½-inch	-
3/8-inch	-
No. 4	15-45
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:

Sand Equivalent AASHTO T 176 Maximum	Percentage Passing No. 200 Sieve AASHTO T 27 Maximum
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.

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	A
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.
- 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.

GEOTEXTILES – 1300

- 1301 - This work shall consist of furnishing, hauling, and installing geotextile material at the locations and in accordance with these specifications and the lines, grades, dimensions, and typical cross sections shown on the plans or described in the Special Details.
- 1302 - Use long-chain, synthetic polymers, composed of at least 95 percent by mass of polyolefins or polyesters, to manufacture geotextile or the threads used to sew geotextile.

- 1303 - Furnish a commercial certification including the name of the manufacturer, product name, style number, chemical composition of the filaments or yarns, and other pertinent information to fully describe the geotextile.
- 1303a - Each roll of geotextile material shall be labeled to provide for identification of the material. Elevate and protect rolls with a waterproof cover if stored outdoors.
- 1303b - When using a geotextile for a permanent installation limit material exposure to ultraviolet radiation to less than 10 days. (Geotextile material deemed to have been overexposed to sunlight by the Authorized Officer shall be rejected.)
- 1304 - Where a geotextile brush barrier is shown on the plans, the geotextile material shall be laid over the upper-slope face of the barrier. The bottom of the geotextile material shall be trenched into the existing ground a minimum of 6 inches. The top of the geotextile material shall be tied, stapled, nailed, or otherwise securely fastened to the side or top of the brush barrier. Intermediate attachments of the geotextile material shall be by suitable ties, staples, or nails. A 12-inch overlap of geotextile material for vertical and horizontal piercing shall be maintained. Care must be exercised in securing the geotextile material to the brush barrier to avoid puncturing by protruding limbs.
- 1305 - Where a geotextile silt fence is shown on the plans, the geotextile material shall be laid against the fence on the upper slope face. The bottom of the geotextile material shall be trenched into the existing ground a minimum of 6 inches. The top of the geotextile material shall be tied, stapled, nailed, or otherwise securely fastened to the side or top of the silt fence. Intermediate attachments of the geotextile material shall be by suitable ties, staples, or nails. A 12-inch overlap of geotextile material for vertical and horizontal piercing shall be maintained. Care must be exercised in securing the geotextile material to the fence to avoid puncturing.
- 1306 - The geotextile material used to construct brush barriers and/or silt fences shall meet the following requirements:

Physical Requirements for Brush Barrier and Silt Fence

Property	Test Method ASTM	Units	Specifications		
			Type V-A	Type V-B ⁽²⁾	Type V-C ⁽³⁾
Grab Strength					
Machine Direction	D 4632	N	400	550	550
Cross Direction			400	450	450
Permittivity	D 4491	s ⁻¹	0.05	0.05	0.05
Apparent opening size	D 4751	mm	0.60 ⁽¹⁾	0.60 ⁽¹⁾	0.60 ⁽¹⁾
Ultraviolet stability	D 4355	%	70% after 500 hours of exposure		

1. Maximum average roll value.
2. Elongation at break ≥50 percent elongation (ASTM D 4632).
3. Elongation at break <50 percent elongation (ASTM D 4632).

- 1307 - Where subgrade reinforcement and/or material separation is required, clearing, grubbing, and excavation of the subgrade shall be completed prior to the placement of geotextile material. The subgrade shall be leveled and smoothed to remove lumps and depressions which exceed (6) inches in height and depth. Small pieces of woody debris shall be removed. Light vegetation, i.e., grasses, weeds, leaves, and other small woody debris, may be left in place.
- 1308 - The geotextile material shall be installed directly on the prepared surface. Place the geotextile smooth and free of tension, stress, or wrinkles. Fold or cut the geotextile to conform to curves. Overlap in the direction of construction. Overlap the geotextile a minimum of 2 feet at the ends and sides of adjoining sheets, or sew the geotextile joints according to manufacturer's recommendations. Do not place longitudinal overlaps below anticipated wheel loads. Hold the geotextile in place with pins, staples, or piles of cover material.

- 1309 - End-dump the cover material onto the geotextile from the edge of the geotextile or from previously placed cover material. Do not operate equipment directly on the geotextile. Spread the end-dumped pile of cover material maintaining a minimum lift thickness of (4) inches. Compact the cover material with rubber-tired or non-vibratory smooth drum rollers. Avoid sudden stops, starts, or turns of the construction equipment. Fill all ruts from construction equipment with additional cover material. Do not re-grade ruts with placement equipment.
- 1310 - Repair or replace all geotextile that is torn, punctured, or muddy. Remove the damaged area and place a patch of the same type of geotextile overlapping 3 feet beyond the damaged area.
- 1311 - Geotextile material used for subgrade reinforcement and/or material separation shall meet the following requirements:

Physical Requirements for Separation Geotextile

Property	Test Method ASTM	Units	Specifications ⁽¹⁾		
			Type II-A	Type II-B	Type II-C
Grab strength	D 4632	N	1400/900	1100/700	800/500
Sewn seam strength	D 4632	N	1260/810	990/630	720/450
Tear strength	D 4533	N	500/350	400 ⁽³⁾ /250	300/180
Puncture strength	D 4833	N	500/350	400/250	300/180
Burst strength	D 3786	kPa	3500/1700	2700/1300	2100/950
Permittivity	D 4491	s ⁻¹	0.02	0.02	0.02
Apparent opening size	D 4751	mm	0.60 ⁽²⁾	0.60 ⁽²⁾	0.60 ⁽²⁾
Ultraviolet stability	D 4355	%	50% after 500 hours of exposure		

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

Physical Requirements for Stabilization Geotextile

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

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

- 1312 - Where geotextile material is specified as filter wrap for underdrains it shall be inert to commonly encountered chemicals, mildew and rot resistant, resistant to ultraviolet light exposure, and insect and rodent resistant.
- 1313 - Trenches for underdrains shall be excavated to the dimensions and grades shown on the plans and adjusted to meet field conditions. Smooth the trench surfaces by removing all projections that may damage the geotextile. Minimum slope of trenches shall be one percent. The Authorized Officer shall have a minimum of 24 hours of notice in which to approve trenches prior to installation of the geotextile material, pipe, drain rock, or other backfill.

- 1314 - Geotextile material used as a filter shall be placed in a manner and at the locations shown on the plans. Place the long dimension of the geotextile parallel to the centerline of the trench. Position the geotextile, without stretching, in contact with the trench surface. Overlap the joints a minimum of 24 inches with the upstream geotextile placed over the downstream geotextile. Replace geotextile damaged during installation.
- 1315 - Geotextile materials used for subsurface drainage shall meet the following requirements:

Physical Requirements for Subsurface Drainage Geotextile

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

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

SLOPE PROTECTION – 1400

- 1401 - This work shall consist of furnishing, hauling, and placing stone materials (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:

<u>Equivalent Cubic Dimensions</u>	<u>Total Size Smaller Than Given</u>
34 inches	100
27 inches	80
22 inches	50
10 inches	10

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 waterbarring, 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 and disturbed areas 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.

- 1806 - The Purchaser shall apply the seed mixtures specified under Subsection 1805 to the corresponding seeding projects as shown on **Sheet No. 7**.
- 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 noninjurious 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 **6.2 acres** designated for treatment as shown on the plans and as specified under Subsection 1806, a mixture of water, grass seed, 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 hydro seeder 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. 6**.
- 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.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Version: 5.1.0.34
Updated: 6/30/2014

Summary of All Roads and Projects

T.S. Contract Name: Zumwalt CT Tract No: Sale Date: 10/2015

Prepared by: V. Stone/J. Menguita Ph: Print Date:

Construction: 62.79 sta

Improve: 0.00 sta Renov: 201.96 sta Decom: 0.00 sta Temp: 0.00 sta

200 Clearing and Grubbing: 7.2 acres	\$24,836.72
300 Excavation: 14,193 cy	\$56,327.74
Haul < 500 ft: 7,158 sta-yds	
Haul > 500 ft: 6,583 yd-mi	
400 Drainage:	\$29,930.32
Culvert: 0 lf DownSpout: 160 lf	
PolyPipe: 480 lf	
500 Renovation:	\$18,902.32
Blading 3.71 mi	
Slide Removal 10 cy	
700-1200 Surfacing:	\$223,683.76
Commercial Quarry Name: ROLFE Quarry:surface 6,095 lcy	
Commercial Quarry Name: ROLFE Quarry: cpp bd 219 lcy	
Commercial Quarry Name: ROLFE Quarry: Base 4,679 lcy	
Commercial Quarry Name: ROLFE Quarry: P-R 180 lcy	
Commercial Quarry Name: ROLFE Quarry: Drain 250 lcy	
1300 Geotextiles:	\$1,864.82
1400 Slope Protection:	\$4,661.19
Gradation Class 3: 30 cy	
Gradation Class 5: 130 cy	
1800 Soil Stabilization: 6.2 acres	\$7,541.66
Includes Small Quantity Factor of 1.36	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing: 9.0 acres	\$6,803.88
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$4,874.68 Surf. \$0.00.....	\$4,874.68
Quarry Development:	\$0.00

Total: 3,655 mbf = \$379,427.09

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities are loose cubic yards.

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Zumwalt CT Sale Date: 10/2015

Road Number: 28-11-18.0/a Road Name: Unit 1 road

Road Renovation: 0.21 mi 16 ft Subgrade 2 ft ditch 6/30/2014

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:	\$644.91
Blading 0.21 mi	
700-1200 Surfacing:	\$0.00
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.4 acres	\$401.52
Includes Small Quantity Factor of 1.36	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing: 0.5 acres	\$288.30
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$17.39 Surf. \$0.00.....	\$17.39
Quarry Development:	\$0.00

Total: \$1,352.12

Notes:

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

Road Construction Worksheet

Road Number: 28-11-18.0/a Road Name: Unit 1 road

Section 200 Clearing and Grubbing:

Subtotal: \$0.00

Section 300 Excavation:

Subtotal: \$0.00

Section 400 Drainage:

Subtotal: \$0.00

Section 500 Renovation:

Blading: $\$720.50/\text{mi} \times 0.21 \text{ mi} = \150.58

Compaction: $\$403.47/\text{mi} \times 0.21 \text{ mi} = \84.33

Clean Culverts: $\$334.17/\text{mi} \times 0.21 \text{ mi} = \69.84

Ditchline Re-establishment

Backhoe 2 hr x $\$76.21/\text{hr} = \152.42

Dump Truck 12 cy 2 hr x $\$93.87/\text{hr} = \187.74

Subtotal: \$644.91

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: roadside, waste areas

Dry Method with Mulch: $\$517.81/\text{acre} \times 0.40 \text{ acres} = \207.12

Includes Small Quantity Factor of 1.36

+ Seed Cost: $\$132.00/\text{acre} \times 0.40 \text{ acres} = \52.80

+ Fertilizer Cost: $\$34.00/\text{acre} \times 0.40 \text{ acres} = \13.60

+ Mulch Cost: $\$320.00/\text{acre} \times 0.40 \text{ acres} = \128.00

Subtotal: \$401.52

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

RoadSide Brushing Medium: $\$576.60/\text{acre} \times 0.50 \text{ acres} = \288.30

Subtotal: \$288.30

Section 2300 Engineering:

Subtotal: \$0.00

Section 2400 Minor Concrete:

Subtotal: \$0.00

Construction - 0.36% of total Costs = \$17.39

Surfacing - 0.00% by rock volume = \$0.00

Subtotal: \$17.39

Quarry Development:

Based on 0.00% of total rock volume

Subtotal: \$0.00

Total: \$1,352.12

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Zumwalt CT Sale Date: 10/2015

Road Number: 28-11-18.0/b Road Name: Unit 1 Road seg. b

Road Renovation: 0.45 mi 16 ft Subgrade 2 ft ditch 6/30/2014

200 Clearing and Grubbing: 0.2 acres	\$879.31
300 Excavation:	\$0.00
400 Drainage:	\$3,875.88
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 38 lf	
500 Renovation:	\$6,924.49
Blading 0.39 mi	
700-1200 Surfacing:	\$11,039.69
Quarry Name: ROLFE Quarry:surface 164 lcy	
Quarry Name: ROLFE Quarry: Base 164 lcy	
Quarry Name: ROLFE Quarry: P-R 80 lcy	
Quarry Name: ROLFE Quarry: Drain 100 lcy	
1300 Geotextiles:	\$671.22
1400 Slope Protection:	\$1,753.06
Gradation Class 5: 50 cy	
1800 Soil Stabilization: 0.5 acres	\$501.90
Includes Small Quantity Factor of 1.36	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing: 1.0 acres	\$1,153.20
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$349.14 Surf. \$0.00.....	\$349.14
Quarry Development:	\$0.00

Total: \$27,147.88

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 28-11-18.0/b Road Name: Unit 1 Road seg. b

Section 200 Clearing and Grubbing:

Clearing - Heavy (Clearing): Adjustment Factor (2.54)

Scatter (Slash): Adjustment Factor (0.94)

Total Adjustment Factor: $2.54 + 0 + 0.94 + 0 = 3.48$

Base Cost/Acre: $\$1,263.37 \times$ Adjustment Factor: $3.48 \times$ Total Acres: $0.2 = \$879.31$

Subtotal: \$879.31

Section 300 Excavation:

Subtotal: \$0.00

Section 400 Drainage:

Poly Pipe MM 0.477 24 inch 38 lf x $\$63.29/\text{lf} = \$2,405.02$

reattach downspouts/halfrounds

General Laborer 2 hr x $\$33.60/\text{hr} = \67.20

0.475 - 0.480: French Drain

Excavator - Large (2 CY) 4 hr x $\$128.90/\text{hr} = \515.60

General Laborer 4 hr x $\$33.60/\text{hr} = \134.40

Tamper - handheld 4 hr x $\$43.09/\text{hr} = \172.36

Trash Pump 10 hr x $\$38.13/\text{hr} = \381.30

General Laborer 4 hr x $\$33.60/\text{hr} = \134.40

Culvert Inlet Markers

Fence Posts 4 post x $\$8.00/\text{post} = \32.00

General Laborer 1 hr x $\$33.60/\text{hr} = \33.60

Subtotal: \$3,875.88

Section 500 Renovation:

Comment: Pull ditches, grade, and compact existing surfacing

Blading: $\$720.50/\text{mi} \times 0.39 \text{ mi} = \283.16

Compaction: $\$403.47/\text{mi} \times 0.39 \text{ mi} = \158.56

Clean Culverts: $\$334.17/\text{mi} \times 0.39 \text{ mi} = \131.33

sidecast PB (MM:0.545-0.576)

Excavator - Large (2 CY) 1.5 hr x $\$128.90/\text{hr} = \193.35

Dump Truck 12 cy 1.5 hr x $\$93.87/\text{hr} = \140.81

sidecast PB (MM:0.629-0.639)

Excavator - Large (2 CY) 1 hr x $\$128.90/\text{hr} = \128.90

Dump Truck 12 cy 1 hr x $\$93.87/\text{hr} = \93.87

widening (MM:0.355-0.370)

Excavator - Large (2 CY) 2.5 hr x $\$128.90/\text{hr} = \322.25

Dump Truck 12 cy 2.5 hr x $\$93.87/\text{hr} = \234.68

General Laborer 2.5 hr x $\$33.60/\text{hr} = \84.00

Dump Truck 12 cy 2.5 hr x $\$93.87/\text{hr} = \234.68

widening (0.447-0.481) fill

Excavator - Large (2 CY) 4 hr x $\$128.90/\text{hr} = \515.60

Dump Truck 12 cy 4 hr x $\$93.87/\text{hr} = \375.48

Dump Truck 12 cy 4 hr x $\$93.87/\text{hr} = \375.48

General Laborer 4 hr x $\$33.60/\text{hr} = \134.40

widening (0.553-0.661) PB areas

Excavator - Large (2 CY) 8 hr x $\$128.90/\text{hr} = \$1,031.20$

General Laborer 8 hr x $\$33.60/\text{hr} = \268.80

Dump Truck 12 cy 8 hr x $\$93.87/\text{hr} = \750.96

0.475 - 0.480: P-R Backfill

General Laborer 4 hr x $\$33.60/\text{hr} = \134.40

General Laborer 4 hr x $\$33.60/\text{hr} = \134.40

Excavator - Large (2 CY) 4 hr x $\$128.90/\text{hr} = \515.60

Tamper - handheld 4 hr x $\$43.09/\text{hr} = \172.36

Ditchline Re-establishment

Backhoe 3 hr x $\$76.21/\text{hr} = \228.63

Dump Truck 12 cy 3 hr x \$93.87/hr = \$281.61

Subtotal: \$6,924.49

Section 700-1200 Surfacing:

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 0.553 - 0.602: Spot Cap Rock for Widening areas

<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>
									23 lcy

Rock Volume = 23 lcy

Purchase Price / Royalty: \$12.50/lcy x 23 lcy = \$287.50

Processing: \$0.90/lcy x 23 lcy = \$20.70

Compaction: \$1.34/lcy x 23 lcy = \$30.82

Basic Rock Haul cost: \$0.74/lcy x 23 lcy = \$17.02

Rock Haul +15% grades: \$2.21/lcy-mi x 23 lcy x 1.35 mi= \$68.62

Rock Haul -15% grades: \$1.10/lcy-mi x 23 lcy x 1.56 mi= \$39.47

Rock Haul St& Co Roads: \$0.49/lcy-mi x 23 lcy x 4.00 mi= \$45.08

Basic Water Haul cost: \$0.60/lcy x 23 lcy = \$13.80

Water Haul +15% grades: \$0.28/lcy-mi x 23 lcy x 1.35 mi= \$8.69

Water Haul -15% grades: \$0.14/lcy-mi x 23 lcy x 1.56 mi= \$5.02

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 0.447 - 0.481: 4" Lift including curve widening

<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>
									47 lcy

Rock Volume = 47 lcy

Purchase Price / Royalty: \$12.50/lcy x 47 lcy = \$587.50

Processing: \$0.90/lcy x 47 lcy = \$42.30

Compaction: \$1.34/lcy x 47 lcy = \$62.98

Basic Rock Haul cost: \$0.74/lcy x 47 lcy = \$34.78

Rock Haul +15% grades: \$2.21/lcy-mi x 47 lcy x 1.74 mi= \$180.73

Rock Haul -15% grades: \$1.10/lcy-mi x 47 lcy x 1.55 mi= \$80.14

Rock Haul St& Co Roads: \$0.49/lcy-mi x 47 lcy x 4.00 mi= \$92.12

Basic Water Haul cost: \$0.60/lcy x 47 lcy = \$28.20

Water Haul +15% grades: \$0.28/lcy-mi x 47 lcy x 1.74 mi= \$22.90

Water Haul -15% grades: \$0.14/lcy-mi x 47 lcy x 1.55 mi= \$10.20

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 0.335 - 0.386: 4" Lift including curve widening

<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>
									94 lcy

Rock Volume = 94 lcy

Purchase Price / Royalty: \$12.50/lcy x 94 lcy = \$1,175.00

Processing: \$0.90/lcy x 94 lcy = \$84.60

Compaction: \$1.34/lcy x 94 lcy = \$125.96

Basic Rock Haul cost: \$0.74/lcy x 94 lcy = \$69.56

Rock Haul +15% grades: \$2.21/lcy-mi x 94 lcy x 1.30 mi= \$270.06

Rock Haul -15% grades: \$1.10/lcy-mi x 94 lcy x 1.83 mi= \$189.22

Rock Haul St& Co Roads: \$0.49/lcy-mi x 94 lcy x 4.00 mi= \$184.24

Basic Water Haul cost: \$0.60/lcy x 94 lcy = \$56.40

Water Haul +15% grades: \$0.28/lcy-mi x 94 lcy x 1.30 mi= \$34.22

Water Haul -15% grades: \$0.14/lcy-mi x 94 lcy x 1.83 mi= \$24.08

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 0.355 - 0.370: Base Widening Rock

<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>
									15 lcy

Rock Volume = 15 lcy

Purchase Price / Royalty: \$12.00/lcy x 15 lcy = \$180.00

Processing: \$0.90/lcy x 15 lcy = \$13.50

Compaction: \$1.34/lcy x 15 lcy = \$20.10

Basic Rock Haul cost: \$0.74/lcy x 15 lcy = \$11.10

Rock Haul +15% grades: \$2.21/lcy-mi x 15 lcy x 1.30 mi= \$43.10

Rock Haul -15% grades: \$1.10/lcy-mi x 15 lcy x 1.83 mi= \$30.20

Road Number: 28-11-18.0/b Unit 1 Road seg. b Continued

Rock Haul St& Co Roads: \$0.49/lcy-mi x 15 lcy x 4.00 mi= \$29.40
Basic Water Haul cost: \$0.60/lcy x 15 lcy = \$9.00
Water Haul +15% grades: \$0.28/lcy-mi x 15 lcy x 1.30 mi= \$5.46
Water Haul -15% grades: \$0.14/lcy-mi x 15 lcy x 1.83 mi= \$3.84

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 0.447 - 0.480: 9" Lift including curve widening

<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>
									104 lcy

Rock Volume = 104 lcy
Purchase Price / Royalty: \$12.00/lcy x 104 lcy = \$1,248.00
Processing: \$0.90/lcy x 104 lcy = \$93.60
Compaction: \$1.34/lcy x 104 lcy = \$139.36
Basic Rock Haul cost: \$0.74/lcy x 104 lcy = \$76.96
Rock Haul +15% grades: \$2.21/lcy-mi x 104 lcy x 1.74 mi= \$399.92
Rock Haul -15% grades: \$1.10/lcy-mi x 104 lcy x 1.55 mi= \$177.32
Rock Haul St& Co Roads: \$0.49/lcy-mi x 104 lcy x 4.00 mi= \$203.84
Basic Water Haul cost: \$0.60/lcy x 104 lcy = \$62.40
Water Haul +15% grades: \$0.28/lcy-mi x 104 lcy x 1.74 mi= \$50.67
Water Haul -15% grades: \$0.14/lcy-mi x 104 lcy x 1.55 mi= \$22.57

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 0.553 - 0.602: Spot Base Rock for Widening areas

<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>
									45 lcy

Rock Volume = 45 lcy
Purchase Price / Royalty: \$12.00/lcy x 45 lcy = \$540.00
Processing: \$0.90/lcy x 45 lcy = \$40.50
Compaction: \$1.34/lcy x 45 lcy = \$60.30
Basic Rock Haul cost: \$0.74/lcy x 45 lcy = \$33.30
Rock Haul +15% grades: \$2.21/lcy-mi x 45 lcy x 1.35 mi= \$134.26
Rock Haul -15% grades: \$1.10/lcy-mi x 45 lcy x 1.56 mi= \$77.22
Rock Haul St& Co Roads: \$0.49/lcy-mi x 45 lcy x 4.00 mi= \$88.20
Basic Water Haul cost: \$0.60/lcy x 45 lcy = \$27.00
Water Haul +15% grades: \$0.28/lcy-mi x 45 lcy x 1.35 mi= \$17.01
Water Haul -15% grades: \$0.14/lcy-mi x 45 lcy x 1.56 mi= \$9.83

Commercial Quarry Name: ROLFE Quarry: P-R

Comment: 0.475 - 0.480: Backfill Rock

<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: \$7.25/lcy x 80 lcy = \$580.00
Basic Rock Haul cost: \$0.74/lcy x 80 lcy = \$59.20
Rock Haul +15% grades: \$2.21/lcy-mi x 80 lcy x 1.74 mi= \$307.63
Rock Haul -15% grades: \$1.10/lcy-mi x 80 lcy x 1.55 mi= \$136.40
Rock Haul St& Co Roads: \$0.49/lcy-mi x 80 lcy x 4.00 mi= \$156.80
Basic Water Haul cost: \$0.60/lcy x 80 lcy = \$48.00
Water Haul +15% grades: \$0.28/lcy-mi x 80 lcy x 1.74 mi= \$38.98
Water Haul -15% grades: \$0.14/lcy-mi x 80 lcy x 1.55 mi= \$17.36

Commercial Quarry Name: ROLFE Quarry: Drain

Comment: 0.475 - 0.480: Drain Rock

<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
Basic Rock Haul cost: \$0.74/lcy x 100 lcy = \$74.00
Rock Haul +15% grades: \$2.21/lcy-mi x 100 lcy x 1.74 mi= \$384.54
Rock Haul -15% grades: \$1.10/lcy-mi x 100 lcy x 1.55 mi= \$170.50
Rock Haul St& Co Roads: \$0.49/lcy-mi x 100 lcy x 4.00 mi= \$196.00
Basic Water Haul cost: \$0.60/lcy x 100 lcy = \$60.00
Water Haul +15% grades: \$0.28/lcy-mi x 100 lcy x 1.74 mi= \$48.72
Water Haul -15% grades: \$0.14/lcy-mi x 100 lcy x 1.55 mi= \$21.70

Subtotal: \$11,039.69

Section 1300 Geotextiles:

French Drain1 (0.475-0.480)

High strength, Non-Woven 206 sy x \$2.48/sy = \$510.88

General Laborer 2 hr x \$33.60/hr = \$67.20

Foreman 2 hr x \$46.57/hr = \$93.14

Subtotal: \$671.22

Section 1400 Slope Protection:

Comment: Fill Repair: (MM 0.475-0.480)

Rock Source: ROLFE Quarry: RipRap

Purchase Price / Royalty: \$11.20/cy x 50cy = \$560.00

Furnish Class 5 type rock

Basic Rock Haul cost: \$1.35/cy x 50cy = \$67.50

Rock Haul +15% grades: \$2.69/cy-mi x 50cy x 1.74 mi= \$234.03

Rock Haul -15% grades: \$1.35/cy-mi x 50cy x 1.55 mi= \$104.63

Rock Haul St& Co Roads: \$0.60/cy-mi x 50cy x 4.00 mi= \$120.00

Placement of Buttress height < 20 ft: 50cy x (\$3.45/cy x 1.04) = \$179.40

RipRap Placement

Excavator - Large (2 CY) 3 hr x \$128.90/hr = \$386.70

General Laborer 3 hr x \$33.60/hr = \$100.80

Subtotal: \$1,753.06

Section 1800 Soil Stabilization:

Comment: Mulch fill fix area

Dry Method with Mulch: \$517.81/acre x 0.50 acres = \$258.90

Includes Small Quantity Factor of 1.36

+ Seed Cost: \$132.00/acre x 0.50 acres = \$66.00

+ Fertilizer Cost: \$34.00/acre x 0.50 acres = \$17.00

+ Mulch Cost: \$320.00/acre x 0.50 acres = \$160.00

Subtotal: \$501.90

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

RoadSide Brushing Heavy: \$1153.20/acre x 1.00 acres = \$1,153.20

Subtotal: \$1,153.20

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 - 7.16% of total Costs = \$349.14

Surfacing - 4.45% by rock volume = \$0.00

Subtotal: \$349.14

Total: \$27,147.88

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Zumwalt CT Sale Date: 10/2015

Road Number: 28-11-18.0/c Road Name: Unit 1 road seg.c

Road Construction: 0.22 mi 14 ft Subgrade 0 ft ditch 6/30/2014

200 Clearing and Grubbing: 0.8 acres	\$2,830.83
300 Excavation: 1,432 cy	\$5,086.92
Haul < 500 ft: 1,432 sta-yds	
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	\$711.66
Includes Small Quantity Factor of 1.36	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing: 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. \$112.42 Surf. \$0.00.....	\$112.42
Quarry Development:	\$0.00

Total: \$8,741.83

Notes:

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

Road Construction Worksheet

Road Number: 28-11-18.0/c Road Name: Unit 1 road seg.c

Section 200 Clearing and Grubbing:

Clearing - Medium (Clearing): Adjustment Factor (1.67)

31-45% (Avg Side Slopes): Adjustment Factor (0.2)

Scatter (Slash): Adjustment Factor (0.94)

20-40' (Avg Clearing Widths): Adjustment Factor (0.1)

Total Adjustment Factor: $1.67 + 0.2 + 0.94 + 0.1 = 2.91$

Base Cost/Acre: \$1,263.37 x Adjustment Factor: 2.91 x Total Acres: 0.77 = \$2,830.83
Subtotal: \$2,830.83

Section 300 Excavation:

Comment: 1,950 CY Fill material is hauled in from Segment B.

Excavation - Common: $\$1.93/\text{cy} \times 1,200 \text{ cy} = \$2,316.00$

Excavation - Rippable: $\$3.90/\text{cy} \times 232 \text{ cy} = \904.80

Embankment Placement & Compaction 306.f - Common: $\$0.26/\text{cy} \times 3,382 \text{ cy} = \879.32

Subgrade Compaction: 6 Sta/hr $\$22.42/\text{sta.} \times 11.7 \text{ sta} = \262.76

Slope Rounding: $\$0.29/\text{lf} \times 1,172 \text{ lf} = \339.88

End Hauling - 100 to 500 ft: $\$0.15/\text{sta-yd} \times 1,432 \text{ sta-yd} = \214.80

Blading with ditch: $\$14.45/\text{station} \times 11.72 \text{ stations} = \169.35

Comment: Swing road access construction at Sta. 7+25.

For clearing and grubbing areas of existing landing.

Excavator (2)hrs x $\$128.90/\text{hr} = \257.80

Compactor (1)hrs x $\$134.49/\text{hr} = \134.49

Subtotal: \$5,479.21

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: All disturbed areas to be hydromulched.

Hydro Mulch: $\$1779.14/\text{acre} \times 0.40 \text{ acres} = \711.66

Subtotal: \$711.66

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Subtotal: \$0.00

Section 2300 Engineering:

Subtotal: \$0.00

Mobilization:

Construction - 2.31% of total Costs = \$112.42

Surfacing - 0.00% by rock volume = \$0.00

Subtotal: \$112.42

Total: \$9,134.12

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Zumwalt CT Sale Date: 10/2015

Road Number: 28-11-19.2 Road Name:

Road Renovation: 0.05 mi 14 ft Subgrade 0 ft ditch 6/30/2014

200 Clearing and Grubbing: 0.2 acres	\$674.51
300 Excavation: 108 cy	\$430.05
Haul < 500 ft: 108 sta-yds	
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: 0.1 acres	\$177.91
Includes Small Quantity Factor of 1.36	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing: 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. \$16.71 Surf. \$0.00.....	\$16.71
Quarry Development:	\$0.00
Total:	\$1,299.19

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 28-11-19.2 Road Name:

Section 200 Clearing and Grubbing:

Clearing - Medium (Clearing): Adjustment Factor (1.67)

16-30% (Avg Side Slopes): Adjustment Factor (0.1)

Scatter (Slash): Adjustment Factor (0.94)

20-40' (Avg Clearing Widths): Adjustment Factor (0.1)

Total Adjustment Factor: $1.67 + 0.1 + 0.94 + 0.1 = 2.81$

Base Cost/Acre: \$1,263.37 x Adjustment Factor: 2.81 x Total Acres: 0.19 = \$674.51

Subtotal: \$674.51

Section 300 Excavation:

Comment: 70 CY drifted back to the 18.0 Seg. C Road.

Excavation - Common: $\$1.93/\text{cy} \times 108 \text{ cy} = \208.44

Embankment Placement & Compaction 306.f - Common: $\$0.26/\text{cy} \times 108 \text{ cy} = \28.08

Subgrade Compaction: 6 Sta/hr $\$22.42/\text{sta.} \times 2.8 \text{ sta} = \62.55

Slope Rounding: $\$0.29/\text{lf} \times 279 \text{ lf} = \80.91

End Hauling - 100 to 500 ft: $\$0.15/\text{sta-yd} \times 108 \text{ sta-yd} = \16.20

Blading without ditch: $\$12.14/\text{station} \times 2.79 \text{ stations} = \33.87

Subtotal: \$430.05

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: All disturbed soils to be hydromulched.

Hydro Mulch: $\$1779.14/\text{acre} \times 0.10 \text{ acres} = \177.91

Subtotal: \$177.91

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

Mobilization:

Construction - 0.34% of total Costs = \$16.71

Surfacing - 0.00% by rock volume = \$0.00

Subtotal: \$16.71

Quarry Development:

Based on 0.00% of total rock volume

Subtotal: \$0.00

Total: \$1,299.19

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Zumwalt CT Sale Date: 10/2015

Road Number: 28-12-13.0 Road Name:

Road Renovation: 0.50 mi 16 ft Subgrade 2 ft ditch 6/30/2014

200 Clearing and Grubbing: 0.2 acres	\$684.75
300 Excavation:	\$0.00
400 Drainage:	\$65.60
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$1,864.84
Blading 0.50 mi	
700-1200 Surfacing:	\$14,338.08
Quarry Name: ROLFE Quarry:surface 646 lcy	
Quarry Name: ROLFE Quarry: Base 90 lcy	
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$322.51
Gradation Class 3: 10 cy	
1800 Soil Stabilization: 0.4 acres	\$401.52
Includes Small Quantity Factor of 1.36	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing: 1.2 acres	\$807.24
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$240.82 Surf. \$0.00.....	\$240.82
Quarry Development:	\$0.00
Total:	\$18,725.35

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 28-12-13.0 Road Name:

Section 200 Clearing and Grubbing:

Clearing - Medium (Clearing): Adjustment Factor (1.67)

1-15% (Avg Side Slopes): Adjustment Factor (0)

Scatter (Slash): Adjustment Factor (0.94)

20-40' (Avg Clearing Widths): Adjustment Factor (0.1)

Total Adjustment Factor: $1.67 + 0 + 0.94 + 0.1 = 2.71$

Base Cost/Acre: \$1,263.37 x Adjustment Factor: 2.71 x Total Acres: 0.2 = \$684.75

Subtotal: \$684.75

Section 300 Excavation:

Subtotal: \$0.00

Section 400 Drainage:

Culvert Marker Installation

General Laborer 1 hr x \$33.60/hr = \$33.60

Fence Posts 4 post x \$8.00/post = \$32.00

Subtotal: \$65.60

Section 500 Renovation:

Blading: $\$720.50/\text{mi} \times 0.50 \text{ mi} = \357.37

Compaction: $\$403.47/\text{mi} \times 0.50 \text{ mi} = \200.12

Clean Culverts: $\$334.17/\text{mi} \times 0.50 \text{ mi} = \165.75

ditchline re-establishment

Backhoe 4 hr x \$76.21/hr = \$304.84

Dump Truck 12 cy 4 hr x \$93.87/hr = \$375.48

Waste Area Strike and Dress

Tractor: D8 with rippers 2 hr x \$230.64/hr = \$461.28

Subtotal: \$1,864.84

Section 700-1200 Surfacing:

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift: MM 0.000 - 0.417

<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>
									451 lcy

Rock Volume = 451 lcy

Purchase Price / Royalty: $\$12.50/\text{lcy} \times 451 \text{ lcy} = \$5,637.50$

Processing: $\$0.90/\text{lcy} \times 451 \text{ lcy} = \405.90

Compaction: $\$1.34/\text{lcy} \times 451 \text{ lcy} = \604.34

Basic Rock Haul cost: $\$0.74/\text{lcy} \times 451 \text{ lcy} = \333.74

Rock Haul +15% grades: $\$2.21/\text{lcy-mi} \times 451 \text{ lcy} \times 0.21 \text{ mi} = \208.31

Rock Haul -15% grades: $\$1.10/\text{lcy-mi} \times 451 \text{ lcy} \times 0.81 \text{ mi} = \399.36

Rock Haul St& Co Roads: $\$0.49/\text{lcy-mi} \times 451 \text{ lcy} \times 4.00 \text{ mi} = \883.96

Basic Water Haul cost: $\$0.60/\text{lcy} \times 451 \text{ lcy} = \270.60

Water Haul +15% grades: $\$0.28/\text{lcy-mi} \times 451 \text{ lcy} \times 0.21 \text{ mi} = \26.39

Water Haul -15% grades: $\$0.14/\text{lcy-mi} \times 451 \text{ lcy} \times 0.81 \text{ mi} = \50.83

Water Haul St&Co Roads: $\$0.08/\text{lcy-mi} \times 451 \text{ lcy} \times 1.00 \text{ mi} = \36.08

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 6" Lift: MM 0.417 - 0.496

<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>
									135 lcy

Rock Volume = 135 lcy

Purchase Price / Royalty: $\$12.50/\text{lcy} \times 135 \text{ lcy} = \$1,687.50$

Processing: $\$0.90/\text{lcy} \times 135 \text{ lcy} = \121.50

Compaction: $\$1.34/\text{lcy} \times 135 \text{ lcy} = \180.90

Basic Rock Haul cost: $\$0.74/\text{lcy} \times 135 \text{ lcy} = \99.90

Rock Haul +15% grades: $\$2.21/\text{lcy-mi} \times 135 \text{ lcy} \times 0.21 \text{ mi} = \62.36

Rock Haul -15% grades: $\$1.10/\text{lcy-mi} \times 135 \text{ lcy} \times 0.24 \text{ mi} = \36.23

Road Number: 28-12-13.0 Continued

Rock Haul St& Co Roads: \$0.49/lcy-mi x 135 lcy x 4.00 mi= \$264.60
Basic Water Haul cost: \$0.60/lcy x 135 lcy = \$81.00
Water Haul +15% grades: \$0.28/lcy-mi x 135 lcy x 0.21 mi= \$7.90
Water Haul -15% grades: \$0.14/lcy-mi x 135 lcy x 0.24 mi= \$4.61
Water Haul St&Co Roads: \$0.08/lcy-mi x 135 lcy x 1.00 mi= \$10.80

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift: Landing MM 0.496

<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>
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20 lcy

Rock Volume = 20 lcy
Purchase Price / Royalty: \$12.50/lcy x 20 lcy = \$250.00
Processing: \$0.90/lcy x 20 lcy = \$18.00
Compaction: \$1.34/lcy x 20 lcy = \$26.80
Basic Rock Haul cost: \$0.74/lcy x 20 lcy = \$14.80
Rock Haul +15% grades: \$2.21/lcy-mi x 20 lcy x 0.21 mi= \$9.24
Rock Haul -15% grades: \$1.10/lcy-mi x 20 lcy x 1.47 mi= \$32.30
Rock Haul St& Co Roads: \$0.49/lcy-mi x 20 lcy x 4.00 mi= \$39.20
Basic Water Haul cost: \$0.60/lcy x 20 lcy = \$12.00
Water Haul +15% grades: \$0.28/lcy-mi x 20 lcy x 0.21 mi= \$1.17
Water Haul -15% grades: \$0.14/lcy-mi x 20 lcy x 1.47 mi= \$4.11
Water Haul St&Co Roads: \$0.08/lcy-mi x 20 lcy x 1.00 mi= \$1.60

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: 3-turnouts

<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>
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30 lcy

Rock Volume = 30 lcy
Purchase Price / Royalty: \$12.50/lcy x 30 lcy = \$375.00
Processing: \$0.90/lcy x 30 lcy = \$27.00
Compaction: \$1.34/lcy x 30 lcy = \$40.20
Basic Rock Haul cost: \$0.74/lcy x 30 lcy = \$22.20
Rock Haul +15% grades: \$2.21/lcy-mi x 30 lcy x 0.21 mi= \$13.86
Rock Haul -15% grades: \$1.10/lcy-mi x 30 lcy x 0.81 mi= \$26.57
Rock Haul St& Co Roads: \$0.49/lcy-mi x 30 lcy x 4.00 mi= \$58.80
Basic Water Haul cost: \$0.60/lcy x 30 lcy = \$18.00
Water Haul +15% grades: \$0.28/lcy-mi x 30 lcy x 0.21 mi= \$1.76
Water Haul -15% grades: \$0.14/lcy-mi x 30 lcy x 0.81 mi= \$3.38
Water Haul St&Co Roads: \$0.08/lcy-mi x 30 lcy x 1.00 mi= \$2.40

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: Turnaround MM 0.011

<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>
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10 lcy

Rock Volume = 10 lcy
Purchase Price / Royalty: \$12.50/lcy x 10 lcy = \$125.00
Processing: \$0.90/lcy x 10 lcy = \$9.00
Compaction: \$1.34/lcy x 10 lcy = \$13.40
Basic Rock Haul cost: \$0.74/lcy x 10 lcy = \$7.40
Rock Haul +15% grades: \$2.21/lcy-mi x 10 lcy x 0.21 mi= \$4.62
Rock Haul -15% grades: \$1.10/lcy-mi x 10 lcy x 0.81 mi= \$8.86
Rock Haul St& Co Roads: \$0.49/lcy-mi x 10 lcy x 4.00 mi= \$19.60
Basic Water Haul cost: \$0.60/lcy x 10 lcy = \$6.00
Water Haul +15% grades: \$0.28/lcy-mi x 10 lcy x 0.21 mi= \$0.59
Water Haul -15% grades: \$0.14/lcy-mi x 10 lcy x 0.81 mi= \$1.13
Water Haul St&Co Roads: \$0.08/lcy-mi x 10 lcy x 1.00 mi= \$0.80

Commercial Quarry Name: ROLFE Quarry: Base

Comment: Spot/Leveling Rock: MM 0.345, 0.417

<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>
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30 lcy

Rock Volume = 30 lcy
Purchase Price / Royalty: \$12.00/lcy x 30 lcy = \$360.00
Processing: \$0.90/lcy x 30 lcy = \$27.00

Compaction: \$1.34/lcy x 30 lcy = \$40.20
 Basic Rock Haul cost: \$0.74/lcy x 30 lcy = \$22.20
 Rock Haul +15% grades: \$2.21/lcy-mi x 30 lcy x 0.21 mi= \$13.86
 Rock Haul -15% grades: \$1.10/lcy-mi x 30 lcy x 0.81 mi= \$26.57
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 30 lcy x 4.00 mi= \$58.80
 Basic Water Haul cost: \$0.60/lcy x 30 lcy = \$18.00
 Water Haul +15% grades: \$0.28/lcy-mi x 30 lcy x 0.21 mi= \$1.76
 Water Haul -15% grades: \$0.14/lcy-mi x 30 lcy x 0.81 mi= \$3.38
 Water Haul St&Co Roads: \$0.08/lcy-mi x 30 lcy x 1.00 mi= \$2.40

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Base: Roadside Landing MM 0.496

Length	TopW	BotW	Depth	CWid	#TOs	Width	F.W.L	Taper	Other
									40 lcy

Rock Volume = 40 lcy
 Purchase Price / Royalty: \$12.00/lcy x 40 lcy = \$480.00
 Processing: \$0.90/lcy x 40 lcy = \$36.00
 Compaction: \$1.34/lcy x 40 lcy = \$53.60
 Basic Rock Haul cost: \$0.74/lcy x 40 lcy = \$29.60
 Rock Haul +15% grades: \$2.21/lcy-mi x 40 lcy x 0.21 mi= \$18.48
 Rock Haul -15% grades: \$1.10/lcy-mi x 40 lcy x 1.47 mi= \$64.59
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 40 lcy x 4.00 mi= \$78.40
 Basic Water Haul cost: \$0.60/lcy x 40 lcy = \$24.00
 Water Haul +15% grades: \$0.28/lcy-mi x 40 lcy x 0.21 mi= \$2.34
 Water Haul -15% grades: \$0.14/lcy-mi x 40 lcy x 1.47 mi= \$8.22
 Water Haul St&Co Roads: \$0.08/lcy-mi x 40 lcy x 1.00 mi= \$3.20

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Base: Turnaround MM 0.011

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

Rock Volume = 20 lcy
 Purchase Price / Royalty: \$12.00/lcy x 20 lcy = \$240.00
 Processing: \$0.90/lcy x 20 lcy = \$18.00
 Compaction: \$1.34/lcy x 20 lcy = \$26.80
 Basic Rock Haul cost: \$0.74/lcy x 20 lcy = \$14.80
 Rock Haul +15% grades: \$2.21/lcy-mi x 20 lcy x 0.00 mi= \$0.00
 Rock Haul -15% grades: \$1.10/lcy-mi x 20 lcy x 0.16 mi= \$3.56
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 20 lcy x 4.00 mi= \$39.20
 Basic Water Haul cost: \$0.60/lcy x 20 lcy = \$12.00
 Water Haul +15% grades: \$0.28/lcy-mi x 20 lcy x 0.00 mi= \$0.00
 Water Haul -15% grades: \$0.14/lcy-mi x 20 lcy x 0.16 mi= \$0.45
 Water Haul St&Co Roads: \$0.08/lcy-mi x 20 lcy x 1.00 mi= \$1.60

Subtotal: \$14,338.08

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Comment: RipRap Dissipater Rock MM 0.090, 0.300

Rock Source: ROLFE Quarry: RipRap

Purchase Price / Royalty: \$11.20/cy x 10cy = \$112.00

Furnish Class 3 type rock

Basic Rock Haul cost: \$1.35/cy x 10cy = \$13.50

Rock Haul +15% grades: \$2.69/cy-mi x 10cy x 0.17 mi= \$4.65

Rock Haul -15% grades: \$1.35/cy-mi x 10cy x 0.77 mi= \$10.38

Rock Haul St& Co Roads: \$0.60/cy-mi x 10cy x 4.00 mi= \$24.00

Placement on Fill slopes: 10cy x (\$2.85/cy x 1.02) = \$29.07

RipRap Placement

Excavator - Large (2 CY) 1 hr x \$128.90/hr = \$128.90

Subtotal: \$322.51

Road Number: 28-12-13.0 Continued

Section 1800 Soil Stabilization:

Comment: roadside and waste areas

Dry Method with Mulch: $\$517.81/\text{acre} \times 0.40 \text{ acres} = \207.12

Includes Small Quantity Factor of 1.36

+ Seed Cost: $\$132.00/\text{acre} \times 0.40 \text{ acres} = \52.80

+ Fertilizer Cost: $\$34.00/\text{acre} \times 0.40 \text{ acres} = \13.60

+ Mulch Cost: $\$320.00/\text{acre} \times 0.40 \text{ acres} = \128.00

Subtotal: \$401.52

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Comment: some alder removal on Segment B

RoadSide Brushing Medium: $\$576.60/\text{acre} \times 1.00 \text{ acres} = \576.60

RoadSide Brushing Heavy: $\$1153.20/\text{acre} \times 0.20 \text{ acres} = \230.64

Subtotal: \$807.24

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 - 4.94% of total Costs = \$240.82

Surfacing - 6.44% by rock volume = \$0.00

Subtotal: \$240.82

Quarry Development:

Based on 6.44% of total rock volume

Subtotal: \$0.00

Total: \$18,725.35

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Zumwalt CT Sale Date: 10/2015

Road Number: 28-12-13.1 Road Name:

Road Renovation: 0.44 mi 16 ft Subgrade 2 ft ditch 6/30/2014

200 Clearing and Grubbing: 0.1 acres	\$267.83
300 Excavation:	\$0.00
400 Drainage:	\$3,715.56
Culvert: 0 lf	
DownSpout: 40 lf	
PolyPipe: 62 lf	
500 Renovation:	\$1,552.54
Blading 0.44 mi	
700-1200 Surfacing:	\$12,406.72
Quarry Name: ROLFE Quarry:surface 516 lcy	
Quarry Name: ROLFE Quarry: cpp bd 24 lcy	
Quarry Name: ROLFE Quarry: Base 60 lcy	
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.2 acres	\$200.76
Includes Small Quantity Factor of 1.36	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing: 1.1 acres	\$634.26
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$244.64 Surf. \$0.00.....	\$244.64
Quarry Development:	\$0.00
Total:	\$19,022.32

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 28-12-13.1 Road Name:

Section 200 Clearing and Grubbing:

Clearing - Light (Clearing): Adjustment Factor (0.93)

1-15% (Avg Side Slopes): Adjustment Factor (0)

Scatter (Slash): Adjustment Factor (0.94)

less than 20' (Avg Clearing Widths): Adjustment Factor (0.25)

Total Adjustment Factor: $0.93 + 0 + 0.94 + 0.25 = 2.12$

Base Cost/Acre: \$1,263.37 x Adjustment Factor: 2.12 x Total Acres: 0.1 = \$267.83

Subtotal: \$267.83

Section 300 Excavation:

Subtotal: \$0.00

Section 400 Drainage:

Full Round MM 0.033 18 inch 20 lf x \$21.73/lf = \$434.60

Full Round MM 0.286 18 inch 20 lf x \$21.73/lf = \$434.60

Poly Pipe MM 0.033 18 inch 30 lf x \$44.98/lf = \$1,349.40

Poly Pipe MM 0.286 18 inch 32 lf x \$44.98/lf = \$1,439.36

Install//replace culv. markers

fence posts 3 post x \$8.00/post = \$24.00

General Laborer 1 hr x \$33.60/hr = \$33.60

Subtotal: \$3,715.56

Section 500 Renovation:

Blading: \$720.50/mi x 0.44 mi = \$317.02

Compaction: \$403.47/mi x 0.44 mi = \$177.53

Clean Culverts: \$334.17/mi x 0.44 mi = \$147.03

Ditchline bunch/haul

Backhoe 4 hr x \$76.21/hr = \$304.84

Dump Truck 12 cy 4 hr x \$93.87/hr = \$375.48

Waste Area Strike and Dress

Tractor: D8 with rippers 1 hr x \$230.64/hr = \$230.64

Subtotal: \$1,552.54

Section 700-1200 Surfacing:

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" lift: MM 0.000 - 0.440

<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>
									476 lcy

Rock Volume = 476 lcy

Purchase Price / Royalty: \$12.50/lcy x 476 lcy = \$5,950.00

Processing: \$0.90/lcy x 476 lcy = \$428.40

Compaction: \$1.34/lcy x 476 lcy = \$637.84

Basic Rock Haul cost: \$0.74/lcy x 476 lcy = \$352.24

Rock Haul +15% grades: \$2.21/lcy-mi x 476 lcy x 0.31 mi= \$330.32

Rock Haul -15% grades: \$1.10/lcy-mi x 476 lcy x 1.49 mi= \$782.26

Rock Haul St& Co Roads: \$0.49/lcy-mi x 476 lcy x 4.00 mi= \$932.96

Basic Water Haul cost: \$0.60/lcy x 476 lcy = \$285.60

Water Haul +15% grades: \$0.28/lcy-mi x 476 lcy x 0.31 mi= \$41.85

Water Haul -15% grades: \$0.14/lcy-mi x 476 lcy x 1.49 mi= \$99.56

Water Haul St&Co Roads: \$0.08/lcy-mi x 476 lcy x 1.00 mi= \$38.08

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Cap: Turnaround MP 0.100

<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>
									10 lcy

Rock Volume = 10 lcy

Purchase Price / Royalty: \$12.50/lcy x 10 lcy = \$125.00

Processing: \$0.90/lcy x 10 lcy = \$9.00

Road Number: 28-12-13.1 Continued

Compaction: $\$1.34/\text{lcy} \times 10 \text{ lcy} = \13.40
Basic Rock Haul cost: $\$0.74/\text{lcy} \times 10 \text{ lcy} = \7.40
Rock Haul +15% grades: $\$2.21/\text{lcy-mi} \times 10 \text{ lcy} \times 0.31 \text{ mi} = \6.83
Rock Haul -15% grades: $\$1.10/\text{lcy-mi} \times 10 \text{ lcy} \times 1.36 \text{ mi} = \14.96
Rock Haul St& Co Roads: $\$0.49/\text{lcy-mi} \times 10 \text{ lcy} \times 4.00 \text{ mi} = \19.60
Basic Water Haul cost: $\$0.60/\text{lcy} \times 10 \text{ lcy} = \6.00
Water Haul +15% grades: $\$0.28/\text{lcy-mi} \times 10 \text{ lcy} \times 0.31 \text{ mi} = \0.87
Water Haul -15% grades: $\$0.14/\text{lcy-mi} \times 10 \text{ lcy} \times 1.36 \text{ mi} = \1.90
Water Haul St&Co Roads: $\$0.08/\text{lcy-mi} \times 10 \text{ lcy} \times 1.00 \text{ mi} = \0.80

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: 3- Turnouts

<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>
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30 lcy

Rock Volume = 30 lcy
Purchase Price / Royalty: $\$12.50/\text{lcy} \times 30 \text{ lcy} = \375.00
Processing: $\$0.90/\text{lcy} \times 30 \text{ lcy} = \27.00
Compaction: $\$1.34/\text{lcy} \times 30 \text{ lcy} = \40.20
Basic Rock Haul cost: $\$0.74/\text{lcy} \times 30 \text{ lcy} = \22.20
Rock Haul +15% grades: $\$2.21/\text{lcy-mi} \times 30 \text{ lcy} \times 0.31 \text{ mi} = \20.82
Rock Haul -15% grades: $\$1.10/\text{lcy-mi} \times 30 \text{ lcy} \times 1.49 \text{ mi} = \49.30
Rock Haul St& Co Roads: $\$0.49/\text{lcy-mi} \times 30 \text{ lcy} \times 4.00 \text{ mi} = \58.80
Basic Water Haul cost: $\$0.60/\text{lcy} \times 30 \text{ lcy} = \18.00
Water Haul +15% grades: $\$0.28/\text{lcy-mi} \times 30 \text{ lcy} \times 0.31 \text{ mi} = \2.64
Water Haul -15% grades: $\$0.14/\text{lcy-mi} \times 30 \text{ lcy} \times 1.49 \text{ mi} = \6.27
Water Haul St&Co Roads: $\$0.08/\text{lcy-mi} \times 30 \text{ lcy} \times 1.00 \text{ mi} = \2.40

Commercial Quarry Name: ROLFE Quarry: cpp bd

Comment: MM 0.033, 0.286

<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>
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24 lcy

Rock Volume = 24 lcy
Purchase Price / Royalty: $\$12.50/\text{lcy} \times 24 \text{ lcy} = \300.00
Basic Rock Haul cost: $\$0.74/\text{lcy} \times 24 \text{ lcy} = \17.76
Rock Haul +15% grades: $\$2.21/\text{lcy-mi} \times 24 \text{ lcy} \times 0.31 \text{ mi} = \16.65
Rock Haul -15% grades: $\$1.10/\text{lcy-mi} \times 24 \text{ lcy} \times 1.49 \text{ mi} = \39.44
Rock Haul St& Co Roads: $\$0.49/\text{lcy-mi} \times 24 \text{ lcy} \times 4.00 \text{ mi} = \47.04
Basic Water Haul cost: $\$0.60/\text{lcy} \times 24 \text{ lcy} = \14.40
Water Haul +15% grades: $\$0.28/\text{lcy-mi} \times 24 \text{ lcy} \times 0.31 \text{ mi} = \2.11
Water Haul -15% grades: $\$0.14/\text{lcy-mi} \times 24 \text{ lcy} \times 1.49 \text{ mi} = \5.02
Water Haul St&Co Roads: $\$0.08/\text{lcy-mi} \times 24 \text{ lcy} \times 1.00 \text{ mi} = \1.92

Commercial Quarry Name: ROLFE Quarry: Base

Comment: Spot/Leveling Rock

<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>
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20 lcy

Rock Volume = 20 lcy
Purchase Price / Royalty: $\$12.00/\text{lcy} \times 20 \text{ lcy} = \240.00
Processing: $\$0.90/\text{lcy} \times 20 \text{ lcy} = \18.00
Compaction: $\$1.34/\text{lcy} \times 20 \text{ lcy} = \26.80
Basic Rock Haul cost: $\$0.74/\text{lcy} \times 20 \text{ lcy} = \14.80
Rock Haul +15% grades: $\$2.21/\text{lcy-mi} \times 20 \text{ lcy} \times 0.31 \text{ mi} = \13.88
Rock Haul -15% grades: $\$1.10/\text{lcy-mi} \times 20 \text{ lcy} \times 1.49 \text{ mi} = \32.87
Rock Haul St& Co Roads: $\$0.49/\text{lcy-mi} \times 20 \text{ lcy} \times 4.00 \text{ mi} = \39.20
Basic Water Haul cost: $\$0.60/\text{lcy} \times 20 \text{ lcy} = \12.00
Water Haul +15% grades: $\$0.28/\text{lcy-mi} \times 20 \text{ lcy} \times 0.31 \text{ mi} = \1.76
Water Haul -15% grades: $\$0.14/\text{lcy-mi} \times 20 \text{ lcy} \times 1.49 \text{ mi} = \4.18
Water Haul St&Co Roads: $\$0.08/\text{lcy-mi} \times 20 \text{ lcy} \times 1.00 \text{ mi} = \1.60

Commercial Quarry Name: ROLFE Quarry: Base

Comment: MM 0.033, 0.286 Base over culvert

<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>
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20 lcy

Rock Volume = 20 lcy

Purchase Price / Royalty: \$12.00/lcy x 20 lcy = \$240.00
 Processing: \$0.90/lcy x 20 lcy = \$18.00
 Compaction: \$1.34/lcy x 20 lcy = \$26.80
 Basic Rock Haul cost: \$0.74/lcy x 20 lcy = \$14.80
 Rock Haul +15% grades: \$2.21/lcy-mi x 20 lcy x 0.31 mi= \$13.88
 Rock Haul -15% grades: \$1.10/lcy-mi x 20 lcy x 1.49 mi= \$32.87
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 20 lcy x 4.00 mi= \$39.20
 Basic Water Haul cost: \$0.60/lcy x 20 lcy = \$12.00
 Water Haul +15% grades: \$0.28/lcy-mi x 20 lcy x 0.31 mi= \$1.76
 Water Haul -15% grades: \$0.14/lcy-mi x 20 lcy x 1.49 mi= \$4.18
 Water Haul St&Co Roads: \$0.08/lcy-mi x 20 lcy x 1.00 mi= \$1.60

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Base: Turnaround MM 0.100

<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> 20 lcy
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Rock Volume = 20 lcy

Purchase Price / Royalty: \$12.00/lcy x 20 lcy = \$240.00
 Processing: \$0.90/lcy x 20 lcy = \$18.00
 Compaction: \$1.34/lcy x 20 lcy = \$26.80
 Basic Rock Haul cost: \$0.74/lcy x 20 lcy = \$14.80
 Rock Haul +15% grades: \$2.21/lcy-mi x 20 lcy x 0.31 mi= \$13.66
 Rock Haul -15% grades: \$1.10/lcy-mi x 20 lcy x 1.36 mi= \$30.01
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 20 lcy x 4.00 mi= \$39.20
 Basic Water Haul cost: \$0.60/lcy x 20 lcy = \$12.00
 Water Haul +15% grades: \$0.28/lcy-mi x 20 lcy x 0.31 mi= \$1.73
 Water Haul -15% grades: \$0.14/lcy-mi x 20 lcy x 1.36 mi= \$3.82
 Water Haul St&Co Roads: \$0.08/lcy-mi x 20 lcy x 1.00 mi= \$1.60
 Culvert Bedding Compaction
 Tamper - handheld 1 hr x \$43.09/hr = \$43.09

Subtotal: \$12,406.72

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Dry Method with Mulch: \$517.81/acre x 0.20 acres = \$103.56
 Includes Small Quantity Factor of 1.36
 + Seed Cost: \$132.00/acre x 0.20 acres = \$26.40
 + Fertilizer Cost: \$34.00/acre x 0.20 acres = \$6.80
 + Mulch Cost: \$320.00/acre x 0.20 acres = \$64.00

Subtotal: \$200.76

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

RoadSide Brushing Medium: \$576.60/acre x 1.10 acres = \$634.26

Subtotal: \$634.26

Mobilization:

Construction - 5.02% of total Costs = \$244.64
 Surfacing - 5.25% by rock volume = \$0.00

Subtotal: \$244.64

Quarry Development:

Based on 5.25% of total rock volume

Subtotal: \$0.00

Total: \$19,022.32

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Zumwalt CT Sale Date: 10/2015

Road Number: 28-12-13.2 Road Name:

Road Renovation: 0.68 mi 16 ft Subgrade 2 ft ditch 6/30/2014

200 Clearing and Grubbing: 0.8 acres	\$2,008.76
300 Excavation:	\$0.00
400 Drainage:	\$6,610.70
Culvert: 0 lf	
DownSpout: 30 lf	
PolyPipe: 116 lf	
500 Renovation:	\$3,235.11
Blading 0.68 mi	
700-1200 Surfacing:	\$34,601.70
Quarry Name: ROLFE Quarry:surface 1,195 lcy	
Quarry Name: ROLFE Quarry: cpp bd 89 lcy	
Quarry Name: ROLFE Quarry: Base 249 lcy	
Quarry Name: ROLFE Quarry: P-R 100 lcy	
Quarry Name: ROLFE Quarry: Drain 150 lcy	
1300 Geotextiles:	\$1,193.60
1400 Slope Protection:	\$2,473.56
Gradation Class 3: 10 cy	
Gradation Class 5: 80 cy	
1800 Soil Stabilization: 0.8 acres	\$803.05
Includes Small Quantity Factor of 1.36	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing: 1.6 acres	\$1,845.12
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$687.51 Surf. \$0.00.....	\$687.51
Quarry Development:	\$0.00
	Total: \$53,459.10

Notes:

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

Road Construction Worksheet

Road Number: 28-12-13.2 Road Name:

Section 200 Clearing and Grubbing:

Clearing - Light (Clearing): Adjustment Factor (0.93)

1-15% (Avg Side Slopes): Adjustment Factor (0)

Scatter (Slash): Adjustment Factor (0.94)

less than 20' (Avg Clearing Widths): Adjustment Factor (0.25)

Total Adjustment Factor: $0.93 + 0 + 0.94 + 0.25 = 2.12$

Base Cost/Acre: \$1,263.37 x Adjustment Factor: 2.12 x Total Acres: 0.75 = \$2,008.76
Subtotal: \$2,008.76

Section 300 Excavation:

Subtotal: \$0.00

Section 400 Drainage:

Full Round	MM 0.086	18 inch 10 lf x \$21.73/lf = \$217.30
Full Round	MM 0.428	18 inch 20 lf x \$21.73/lf = \$434.60
Poly Pipe	MM 0.053	24 inch 32 lf x \$63.29/lf = \$2,025.28
Poly Pipe	MM 0.428	18 inch 44 lf x \$44.98/lf = \$1,979.12
Poly Pipe	MM 0.626	18 inch 40 lf x \$44.98/lf = \$1,799.20

Culvert Inlet Markers

Fence Posts 11 post x \$8.00/post = \$88.00

General Laborer 2 hr x \$33.60/hr = \$67.20

Subtotal: \$6,610.70

Section 500 Renovation:

Blading: \$720.50/mi x 0.68 mi = \$486.34

Compaction: \$403.47/mi x 0.68 mi = \$272.34

Clean Culverts: \$334.17/mi x 0.68 mi = \$225.56

Ditchline Bunching/hauling

Backhoe 6 hr x \$76.21/hr = \$457.26

Dump Truck 12 cy 6 hr x \$93.87/hr = \$563.22

Waste Areas strike and dress

Tractor: D8 with rippers 2 hr x \$230.64/hr = \$461.28

French Drain Excavation: 0.281

Excavator - Large (2 CY) 3 hr x \$128.90/hr = \$386.70

Dump Truck 12 cy 3 hr x \$93.87/hr = \$281.61

General Laborer 3 hr x \$33.60/hr = \$100.80

Subtotal: \$3,235.11

Section 700-1200 Surfacing:

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Cap: Turnaround MM 0.210

<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>
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10 lcy

Rock Volume = 10 lcy

Purchase Price / Royalty: \$12.50/lcy x 10 lcy = \$125.00

Processing: \$0.90/lcy x 10 lcy = \$9.00

Compaction: \$1.34/lcy x 10 lcy = \$13.40

Basic Rock Haul cost: \$0.74/lcy x 10 lcy = \$7.40

Rock Haul +15% grades: \$2.21/lcy-mi x 10 lcy x 0.00 mi= \$0.00

Rock Haul -15% grades: \$1.10/lcy-mi x 10 lcy x 1.23 mi= \$13.54

Rock Haul St& Co Roads: \$0.49/lcy-mi x 10 lcy x 4.00 mi= \$19.60

Basic Water Haul cost: \$0.60/lcy x 10 lcy = \$6.00

Water Haul +15% grades: \$0.28/lcy-mi x 10 lcy x 0.00 mi= \$0.00

Water Haul -15% grades: \$0.14/lcy-mi x 10 lcy x 1.23 mi= \$1.72

Water Haul St&Co Roads: \$0.08/lcy-mi x 10 lcy x 1.00 mi= \$0.80

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Cap: 0.568 - 0.628

<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: \$12.50/lcy x 60 lcy = \$750.00

Processing: \$0.90/lcy x 60 lcy = \$54.00

Compaction: \$1.34/lcy x 60 lcy = \$80.40

Basic Rock Haul cost: \$0.74/lcy x 60 lcy = \$44.40

Rock Haul -15% grades: \$1.10/lcy-mi x 60 lcy x 1.62 mi= \$106.85

Rock Haul St& Co Roads: \$0.49/lcy-mi x 60 lcy x 4.00 mi= \$117.60

Basic Water Haul cost: \$0.60/lcy x 60 lcy = \$36.00

Water Haul -15% grades: \$0.14/lcy-mi x 60 lcy x 1.62 mi= \$13.60

Water Haul St&Co Roads: \$0.08/lcy-mi x 60 lcy x 1.00 mi= \$4.80

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 6" Lift: 0.000 - 0.568

<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>
									972 lcy

Rock Volume = 972 lcy

Purchase Price / Royalty: \$12.50/lcy x 972 lcy = \$12,150.00

Processing: \$0.90/lcy x 972 lcy = \$874.80

Compaction: \$1.34/lcy x 972 lcy = \$1,302.48

Basic Rock Haul cost: \$0.74/lcy x 972 lcy = \$719.28

Rock Haul -15% grades: \$1.10/lcy-mi x 972 lcy x 1.31 mi= \$1,395.31

Rock Haul St& Co Roads: \$0.49/lcy-mi x 972 lcy x 4.00 mi= \$1,905.12

Basic Water Haul cost: \$0.60/lcy x 972 lcy = \$583.20

Water Haul -15% grades: \$0.14/lcy-mi x 972 lcy x 1.31 mi= \$177.58

Water Haul St&Co Roads: \$0.08/lcy-mi x 972 lcy x 1.00 mi= \$77.76

Commercial Quarry Name: ROLFE Quarry:surface

Comment: Junction Rock: 0.000

<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>
									15 lcy

Rock Volume = 15 lcy

Purchase Price / Royalty: \$12.50/lcy x 15 lcy = \$187.50

Processing: \$0.90/lcy x 15 lcy = \$13.50

Compaction: \$1.34/lcy x 15 lcy = \$20.10

Basic Rock Haul cost: \$0.74/lcy x 15 lcy = \$11.10

Rock Haul -15% grades: \$1.10/lcy-mi x 15 lcy x 1.02 mi= \$16.85

Rock Haul St& Co Roads: \$0.49/lcy-mi x 15 lcy x 4.00 mi= \$29.40

Basic Water Haul cost: \$0.60/lcy x 15 lcy = \$9.00

Water Haul -15% grades: \$0.14/lcy-mi x 15 lcy x 1.02 mi= \$2.14

Water Haul St&Co Roads: \$0.08/lcy-mi x 15 lcy x 1.00 mi= \$1.20

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 6" Lift Cap: 4-turnouts

<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: \$12.50/lcy x 60 lcy = \$750.00

Processing: \$0.90/lcy x 60 lcy = \$54.00

Compaction: \$1.34/lcy x 60 lcy = \$80.40

Basic Rock Haul cost: \$0.74/lcy x 60 lcy = \$44.40

Rock Haul -15% grades: \$1.10/lcy-mi x 60 lcy x 1.31 mi= \$86.13

Rock Haul St& Co Roads: \$0.49/lcy-mi x 60 lcy x 4.00 mi= \$117.60

Basic Water Haul cost: \$0.60/lcy x 60 lcy = \$36.00

Water Haul -15% grades: \$0.14/lcy-mi x 60 lcy x 1.31 mi= \$10.96

Water Haul St&Co Roads: \$0.08/lcy-mi x 60 lcy x 1.00 mi= \$4.80

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 6" Lift Cap: 0.626 - 0.675

<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>
									78 lcy

Rock Volume = 78 lcy

Purchase Price / Royalty: \$12.50/lcy x 78 lcy = \$975.00

Processing: \$0.90/lcy x 78 lcy = \$70.20
 Compaction: \$1.34/lcy x 78 lcy = \$104.52
 Basic Rock Haul cost: \$0.74/lcy x 78 lcy = \$57.72
 Rock Haul -15% grades: \$1.10/lcy-mi x 78 lcy x 1.62 mi= \$139.08
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 78 lcy x 4.00 mi= \$152.88
 Basic Water Haul cost: \$0.60/lcy x 78 lcy = \$46.80
 Water Haul -15% grades: \$0.14/lcy-mi x 78 lcy x 1.62 mi= \$17.70
 Water Haul St&Co Roads: \$0.08/lcy-mi x 78 lcy x 1.00 mi= \$6.24

Commercial Quarry Name: ROLFE Quarry: cpp bd

Comment: Culvert Bedding/Backfill: MM 0.053, 0.428, 0.628

<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>
									89 lcy

Rock Volume = 89 lcy
 Purchase Price / Royalty: \$12.50/lcy x 89 lcy = \$1,112.50
 Basic Rock Haul cost: \$0.74/lcy x 89 lcy = \$65.86
 Rock Haul +15% grades: \$2.21/lcy-mi x 89 lcy x 0.00 mi= \$0.00
 Rock Haul -15% grades: \$1.10/lcy-mi x 89 lcy x 1.55 mi= \$151.65
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 89 lcy x 4.00 mi= \$174.44
 Basic Water Haul cost: \$0.60/lcy x 89 lcy = \$53.40
 Water Haul +15% grades: \$0.28/lcy-mi x 89 lcy x 0.00 mi= \$0.00
 Water Haul -15% grades: \$0.14/lcy-mi x 89 lcy x 1.55 mi= \$19.30
 Water Haul St&Co Roads: \$0.08/lcy-mi x 89 lcy x 1.00 mi= \$7.12

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Base: Turnaround MM 0.210

<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>
									20 lcy

Rock Volume = 20 lcy
 Purchase Price / Royalty: \$12.00/lcy x 20 lcy = \$240.00
 Processing: \$0.90/lcy x 20 lcy = \$18.00
 Compaction: \$1.34/lcy x 20 lcy = \$26.80
 Basic Rock Haul cost: \$0.74/lcy x 20 lcy = \$14.80
 Rock Haul +15% grades: \$2.21/lcy-mi x 20 lcy x 0.00 mi= \$0.00
 Rock Haul -15% grades: \$1.10/lcy-mi x 20 lcy x 1.23 mi= \$27.08
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 20 lcy x 4.00 mi= \$39.20
 Basic Water Haul cost: \$0.60/lcy x 20 lcy = \$12.00
 Water Haul +15% grades: \$0.28/lcy-mi x 20 lcy x 0.00 mi= \$0.00
 Water Haul -15% grades: \$0.14/lcy-mi x 20 lcy x 1.23 mi= \$3.45
 Water Haul St&Co Roads: \$0.08/lcy-mi x 20 lcy x 1.00 mi= \$1.60

Commercial Quarry Name: ROLFE Quarry: Base

Comment: Spot/Base Rock

<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>
									10 lcy

Rock Volume = 10 lcy
 Purchase Price / Royalty: \$12.00/lcy x 10 lcy = \$120.00
 Processing: \$0.90/lcy x 10 lcy = \$9.00
 Compaction: \$1.34/lcy x 10 lcy = \$13.40
 Basic Rock Haul cost: \$0.74/lcy x 10 lcy = \$7.40
 Rock Haul +15% grades: \$2.21/lcy-mi x 10 lcy x 0.00 mi= \$0.00
 Rock Haul -15% grades: \$1.10/lcy-mi x 10 lcy x 1.28 mi= \$14.03
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 10 lcy x 4.00 mi= \$19.60
 Basic Water Haul cost: \$0.60/lcy x 10 lcy = \$6.00
 Water Haul +15% grades: \$0.28/lcy-mi x 10 lcy x 0.00 mi= \$0.00
 Water Haul -15% grades: \$0.14/lcy-mi x 10 lcy x 1.28 mi= \$1.79
 Water Haul St&Co Roads: \$0.08/lcy-mi x 10 lcy x 1.00 mi= \$0.80

Commercial Quarry Name: ROLFE Quarry: Base

Comment: MM 0.053, 0.428, 0.628: Base Over Culverts

<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: \$12.00/lcy x 60 lcy = \$720.00

Road Number: 28-12-13.2 Continued

Processing: \$0.90/lcy x 60 lcy = \$54.00
Compaction: \$1.34/lcy x 60 lcy = \$80.40
Basic Rock Haul cost: \$0.74/lcy x 60 lcy = \$44.40
Rock Haul +15% grades: \$2.21/lcy-mi x 60 lcy x 0.00 mi= \$0.00
Rock Haul -15% grades: \$1.10/lcy-mi x 60 lcy x 1.65 mi= \$108.83
Rock Haul St& Co Roads: \$0.49/lcy-mi x 60 lcy x 4.00 mi= \$117.60
Basic Water Haul cost: \$0.60/lcy x 60 lcy = \$36.00
Water Haul +15% grades: \$0.28/lcy-mi x 60 lcy x 0.00 mi= \$0.00
Water Haul -15% grades: \$0.14/lcy-mi x 60 lcy x 1.55 mi= \$13.01
Water Haul St&Co Roads: \$0.08/lcy-mi x 60 lcy x 1.00 mi= \$4.80

Commercial Quarry Name: ROLFE Quarry: Base
Comment: 8" Lift: MM 0.568 - 0.628

<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>
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139 lcy

Rock Volume = 139 lcy
Purchase Price / Royalty: \$12.00/lcy x 139 lcy = \$1,668.00
Processing: \$0.90/lcy x 139 lcy = \$125.10
Compaction: \$1.34/lcy x 139 lcy = \$186.26
Basic Rock Haul cost: \$0.74/lcy x 139 lcy = \$102.86
Rock Haul +15% grades: \$2.21/lcy-mi x 139 lcy x 0.00 mi= \$0.00
Rock Haul -15% grades: \$1.10/lcy-mi x 139 lcy x 1.62 mi= \$247.55
Rock Haul St& Co Roads: \$0.49/lcy-mi x 139 lcy x 4.00 mi= \$272.44
Basic Water Haul cost: \$0.60/lcy x 139 lcy = \$83.40
Water Haul +15% grades: \$0.28/lcy-mi x 139 lcy x 0.00 mi= \$0.00
Water Haul -15% grades: \$0.14/lcy-mi x 139 lcy x 1.62 mi= \$31.51
Water Haul St&Co Roads: \$0.08/lcy-mi x 139 lcy x 1.00 mi= \$11.12

Commercial Quarry Name: ROLFE Quarry: Base
Comment: Spot/Base Rock MM 0.311 - 0.330

<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>
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20 lcy

Rock Volume = 20 lcy
Purchase Price / Royalty: \$12.00/lcy x 20 lcy = \$240.00
Processing: \$0.90/lcy x 20 lcy = \$18.00
Compaction: \$1.34/lcy x 20 lcy = \$26.80
Basic Rock Haul cost: \$0.74/lcy x 20 lcy = \$14.80
Rock Haul -15% grades: \$1.10/lcy-mi x 20 lcy x 1.34 mi= \$29.52
Rock Haul St& Co Roads: \$0.49/lcy-mi x 20 lcy x 4.00 mi= \$39.20
Basic Water Haul cost: \$0.60/lcy x 20 lcy = \$12.00
Water Haul -15% grades: \$0.14/lcy-mi x 20 lcy x 1.34 mi= \$3.76
Water Haul St&Co Roads: \$0.08/lcy-mi x 20 lcy x 1.00 mi= \$1.60

Commercial Quarry Name: ROLFE Quarry: P-R
Comment: French Drain Backfill/Base: 0.281 - 0.288

<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>
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100 lcy

Rock Volume = 100 lcy
Purchase Price / Royalty: \$7.25/lcy x 100 lcy = \$725.00
Basic Rock Haul cost: \$0.74/lcy x 100 lcy = \$74.00
Rock Haul -15% grades: \$1.10/lcy-mi x 100 lcy x 1.31 mi= \$143.66
Rock Haul St& Co Roads: \$0.49/lcy-mi x 100 lcy x 4.00 mi= \$196.00
Basic Water Haul cost: \$0.60/lcy x 100 lcy = \$60.00
Water Haul -15% grades: \$0.14/lcy-mi x 100 lcy x 1.31 mi= \$18.28
Water Haul St&Co Roads: \$0.08/lcy-mi x 100 lcy x 1.00 mi= \$8.00

Commercial Quarry Name: ROLFE Quarry: Drain
Comment: French Drain: 0.281 - 0.288

<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>
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150 lcy

Rock Volume = 150 lcy
Purchase Price / Royalty: \$10.00/lcy x 150 lcy = \$1,500.00
Basic Rock Haul cost: \$0.74/lcy x 150 lcy = \$111.00
Rock Haul -15% grades: \$1.10/lcy-mi x 150 lcy x 1.31 mi= \$215.49

Rock Haul St& Co Roads: $\$0.49/\text{lcy-mi} \times 150 \text{ lcy} \times 4.00 \text{ mi} = \294.00
Basic Water Haul cost: $\$0.60/\text{lcy} \times 150 \text{ lcy} = \90.00
Water Haul -15% grades: $\$0.14/\text{lcy-mi} \times 150 \text{ lcy} \times 1.31 \text{ mi} = \27.43
Water Haul St&Co Roads: $\$0.08/\text{lcy-mi} \times 150 \text{ lcy} \times 1.00 \text{ mi} = \12.00
drain rock placement
Backhoe 3 hr x $\$76.21/\text{hr} = \228.63
General Laborer 3 hr x $\$33.60/\text{hr} = \100.80
Tampers - handheld 3 hr x $\$43.09/\text{hr} = \129.27
French Drain Pit-Run Backfill
Tractor & Sheepsfoot roller 2 hr x $\$180.74/\text{hr} = \361.48
Backhoe 2 hr x $\$76.21/\text{hr} = \152.42
General Laborer 2 hr x $\$33.60/\text{hr} = \67.20

Subtotal: \$34,601.70

Section 1300 Geotextiles:

French Drain: MM 0.281 - 0.288
High strength, Non-Woven 400 sy x $\$2.48/\text{sy} = \992.00
General Laborer 6 hr x $\$33.60/\text{hr} = \201.60

Subtotal: \$1,193.60

Section 1400 Slope Protection:

Comment: French Drain Buttress/Fill Slope Stabilization: MM 0.284
Rock Source: ROLFE Quarry: RipRap
Purchase Price / Royalty: $\$11.20/\text{cy} \times 80\text{cy} = \896.00
Furnish Class 5 type rock
Basic Rock Haul cost: $\$1.35/\text{cy} \times 80\text{cy} = \108.00
Rock Haul -15% grades: $\$1.35/\text{cy-mi} \times 80\text{cy} \times 1.31 \text{ mi} = \141.05
Rock Haul St& Co Roads: $\$0.60/\text{cy-mi} \times 80\text{cy} \times 4.00 \text{ mi} = \192.00
Placement of Buttress height < 20 ft: $80\text{cy} \times (\$3.45/\text{cy} \times 1.04) = \287.04

Comment: Culvert outlet Energy Dissipater: MM 0.428, 0.626

Rock Source: ROLFE Quarry: RipRap
Purchase Price / Royalty: $\$11.20/\text{cy} \times 10\text{cy} = \112.00
Furnish Class 3 type rock
Basic Rock Haul cost: $\$1.35/\text{cy} \times 10\text{cy} = \13.50
Rock Haul -15% grades: $\$1.35/\text{cy-mi} \times 10\text{cy} \times 1.55 \text{ mi} = \20.90
Rock Haul St& Co Roads: $\$0.60/\text{cy-mi} \times 10\text{cy} \times 4.00 \text{ mi} = \24.00
Placement on Fill slopes: $10\text{cy} \times (\$2.85/\text{cy} \times 1.02) = \29.07
RipRap Placement
Excavator - Large (2 CY) 4 hr x $\$128.90/\text{hr} = \515.60
General Laborer 4 hr x $\$33.60/\text{hr} = \134.40

Subtotal: \$2,473.56

Section 1800 Soil Stabilization:

Comment: roadsides, waste areas, culvert installations, french drain
Dry Method with Mulch: $\$517.81/\text{acre} \times 0.80 \text{ acres} = \414.25
Includes Small Quantity Factor of 1.36
+ Seed Cost: $\$132.00/\text{acre} \times 0.80 \text{ acres} = \105.60
+ Fertilizer Cost: $\$34.00/\text{acre} \times 0.80 \text{ acres} = \27.20
+ Mulch Cost: $\$320.00/\text{acre} \times 0.80 \text{ acres} = \256.00

Subtotal: \$803.05

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Comment: Some cutting of alders may be required
RoadSide Brushing Heavy: $\$1153.20/\text{acre} \times 1.60 \text{ acres} = \$1,845.12$

Subtotal: \$1,845.12

Road Number: 28-12-13.2 Continued

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 - 14.10% of total Costs = \$687.51

Surfacing - 15.61% by rock volume = \$0.00

Subtotal: \$687.51

Quarry Development:

Based on 15.61% of total rock volume

Subtotal: \$0.00

Total: \$53,459.10

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Zumwalt CT Sale Date: 10/2015

Road Number: 28-12-13.3 Road Name:

Road Renovation: 0.31 mi 16 ft Subgrade 2 ft ditch 6/30/2014

200 Clearing and Grubbing: 0.1 acres	\$361.32
300 Excavation:	\$0.00
400 Drainage:	\$57.60
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$790.73
Blading 0.31 mi	
700-1200 Surfacing:	\$10,798.60
Quarry Name: ROLFE Quarry:surface 397 lcy	
Quarry Name: ROLFE Quarry: Base 125 lcy	
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.3 acres	\$301.14
Includes Small Quantity Factor of 1.36	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing: 0.7 acres	\$403.62
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$165.63 Surf. \$0.00.....	\$165.63
Quarry Development:	\$0.00

Total: \$12,878.64

Notes:

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

Road Construction Worksheet

Road Number: 28-12-13.3 Road Name:

Section 200 Clearing and Grubbing:

Clearing - Medium (Clearing): Adjustment Factor (1.67)

1-15% (Avg Side Slopes): Adjustment Factor (0)

Scatter (Slash): Adjustment Factor (0.94)

less than 20' (Avg Clearing Widths): Adjustment Factor (0.25)

Total Adjustment Factor: $1.67 + 0 + 0.94 + 0.25 = 2.86$

Base Cost/Acre: \$1,263.37 x Adjustment Factor: 2.86 x Total Acres: 0.1 = \$361.32

Subtotal: \$361.32

Section 300 Excavation:

Subtotal: \$0.00

Section 400 Drainage:

Install Culvert Inlet Markers

Fence Posts 3 post x \$8.00/post = \$24.00

General Laborer 1 hr x \$33.60/hr = \$33.60

Subtotal: \$57.60

Section 500 Renovation:

Blading: $\$720.50/\text{mi} \times 0.31 \text{ mi} = \222.63

Compaction: $\$403.47/\text{mi} \times 0.31 \text{ mi} = \124.67

Clean Culverts: $\$334.17/\text{mi} \times 0.31 \text{ mi} = \103.26

Ditchline Re-establishment

Backhoe 2 hr x \$76.21/hr = \$152.42

Dump Truck 12 cy 2 hr x \$93.87/hr = \$187.74

Subtotal: \$790.73

Section 700-1200 Surfacing:

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: Turnaround Sta. 0.141

<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>
									10 lcy

Rock Volume = 10 lcy

Purchase Price / Royalty: $\$12.50/\text{lcy} \times 10 \text{ lcy} = \125.00

Processing: $\$0.90/\text{lcy} \times 10 \text{ lcy} = \9.00

Compaction: $\$1.34/\text{lcy} \times 10 \text{ lcy} = \13.40

Basic Rock Haul cost: $\$0.74/\text{lcy} \times 10 \text{ lcy} = \7.40

Rock Haul +15% grades: $\$2.21/\text{lcy-mi} \times 10 \text{ lcy} \times 0.27 \text{ mi} = \5.99

Rock Haul -15% grades: $\$1.10/\text{lcy-mi} \times 10 \text{ lcy} \times 1.56 \text{ mi} = \17.19

Rock Haul St& Co Roads: $\$0.49/\text{lcy-mi} \times 10 \text{ lcy} \times 4.00 \text{ mi} = \19.60

Basic Water Haul cost: $\$0.60/\text{lcy} \times 10 \text{ lcy} = \6.00

Water Haul +15% grades: $\$0.28/\text{lcy-mi} \times 10 \text{ lcy} \times 0.27 \text{ mi} = \0.76

Water Haul -15% grades: $\$0.14/\text{lcy-mi} \times 10 \text{ lcy} \times 1.56 \text{ mi} = \2.19

Water Haul St&Co Roads: $\$0.08/\text{lcy-mi} \times 10 \text{ lcy} \times 1.00 \text{ mi} = \0.80

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: 1-60'diameter landing

<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>
									52 lcy

Rock Volume = 52 lcy

Purchase Price / Royalty: $\$12.50/\text{lcy} \times 52 \text{ lcy} = \650.00

Processing: $\$0.90/\text{lcy} \times 52 \text{ lcy} = \46.80

Compaction: $\$1.34/\text{lcy} \times 52 \text{ lcy} = \69.68

Basic Rock Haul cost: $\$0.74/\text{lcy} \times 52 \text{ lcy} = \38.48

Rock Haul +15% grades: $\$2.21/\text{lcy-mi} \times 52 \text{ lcy} \times 0.27 \text{ mi} = \31.14

Rock Haul -15% grades: $\$1.10/\text{lcy-mi} \times 52 \text{ lcy} \times 1.73 \text{ mi} = \99.01

Rock Haul St& Co Roads: $\$0.49/\text{lcy-mi} \times 52 \text{ lcy} \times 4.00 \text{ mi} = \101.92

Basic Water Haul cost: $\$0.60/\text{lcy} \times 52 \text{ lcy} = \31.20

Water Haul +15% grades: \$0.28/lcy-mi x 52 lcy x 0.27 mi= \$3.95
 Water Haul -15% grades: \$0.14/lcy-mi x 52 lcy x 1.73 mi= \$12.60
 Water Haul St&Co Roads: \$0.08/lcy-mi x 52 lcy x 1.00 mi= \$4.16

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 6" Lift Cap: 0.000 - 0.309

<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>
									335 lcy

Rock Volume = 335 lcy
 Purchase Price / Royalty: \$12.50/lcy x 335 lcy = \$4,187.50
 Processing: \$0.90/lcy x 335 lcy = \$301.50
 Compaction: \$1.34/lcy x 335 lcy = \$448.90
 Basic Rock Haul cost: \$0.74/lcy x 335 lcy = \$247.90
 Rock Haul +15% grades: \$2.21/lcy-mi x 335 lcy x 0.27 mi= \$200.63
 Rock Haul -15% grades: \$1.10/lcy-mi x 335 lcy x 1.58 mi= \$581.12
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 335 lcy x 4.00 mi= \$656.60
 Basic Water Haul cost: \$0.60/lcy x 335 lcy = \$201.00
 Water Haul +15% grades: \$0.28/lcy-mi x 335 lcy x 0.27 mi= \$25.42
 Water Haul -15% grades: \$0.14/lcy-mi x 335 lcy x 1.58 mi= \$73.96
 Water Haul St&Co Roads: \$0.08/lcy-mi x 335 lcy x 1.00 mi= \$26.80

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: Turnaround MM 0.141

<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>
									20 lcy

Rock Volume = 20 lcy
 Purchase Price / Royalty: \$12.00/lcy x 20 lcy = \$240.00
 Processing: \$0.90/lcy x 20 lcy = \$18.00
 Compaction: \$1.34/lcy x 20 lcy = \$26.80
 Basic Rock Haul cost: \$0.74/lcy x 20 lcy = \$14.80
 Rock Haul +15% grades: \$2.21/lcy-mi x 20 lcy x 0.27 mi= \$11.98
 Rock Haul -15% grades: \$1.10/lcy-mi x 20 lcy x 1.56 mi= \$34.39
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 20 lcy x 4.00 mi= \$39.20
 Basic Water Haul cost: \$0.60/lcy x 20 lcy = \$12.00
 Water Haul +15% grades: \$0.28/lcy-mi x 20 lcy x 0.27 mi= \$1.52
 Water Haul -15% grades: \$0.14/lcy-mi x 20 lcy x 1.56 mi= \$4.38
 Water Haul St&Co Roads: \$0.08/lcy-mi x 20 lcy x 1.00 mi= \$1.60

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: 1-60'diameter landing

<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>
									105 lcy

Rock Volume = 105 lcy
 Purchase Price / Royalty: \$12.00/lcy x 105 lcy = \$1,260.00
 Processing: \$0.90/lcy x 105 lcy = \$94.50
 Compaction: \$1.34/lcy x 105 lcy = \$140.70
 Basic Rock Haul cost: \$0.74/lcy x 105 lcy = \$77.70
 Rock Haul +15% grades: \$2.21/lcy-mi x 105 lcy x 0.27 mi= \$62.89
 Rock Haul -15% grades: \$1.10/lcy-mi x 105 lcy x 1.73 mi= \$199.93
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 105 lcy x 4.00 mi= \$205.80
 Basic Water Haul cost: \$0.60/lcy x 105 lcy = \$63.00
 Water Haul +15% grades: \$0.28/lcy-mi x 105 lcy x 0.27 mi= \$7.97
 Water Haul -15% grades: \$0.14/lcy-mi x 105 lcy x 1.73 mi= \$25.45
 Water Haul St&Co Roads: \$0.08/lcy-mi x 105 lcy x 1.00 mi= \$8.40

Subtotal: \$10,798.60

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Comment: roadside, waste areas

Dry Method with Mulch: $\$517.81/\text{acre} \times 0.30 \text{ acres} = \155.34

Includes Small Quantity Factor of 1.36

+ Seed Cost: $\$132.00/\text{acre} \times 0.30 \text{ acres} = \39.60

+ 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: \$301.14

Section 1900 Cattleguards:

Subtotal: \$0.00

Section 2100 Roadside Brushing:

Comment: some alder removal needed

RoadSide Brushing Medium: $\$576.60/\text{acre} \times 0.70 \text{ acres} = \403.62

Subtotal: \$403.62

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 - 3.40% of total Costs = \$165.63

Surfacing - 4.57% by rock volume = \$0.00

Subtotal: \$165.63

Quarry Development:

Based on 4.57% of total rock volume

Subtotal: \$0.00

Total: \$12,878.64

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Zumwalt CT Sale Date: 10/2015

Road Number: 28-12-13.4 Road Name:

Road Construction: 0.16 mi 16 ft Subgrade 2 ft ditch 6/30/2014

200 Clearing and Grubbing: 0.7 acres	\$2,307.55
300 Excavation: 1,285 cy	\$4,814.11
Haul < 500 ft: 775 sta-yds	
Haul > 500 ft: 510 yd-mi	
400 Drainage:	\$0.00
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$0.00
700-1200 Surfacing:	\$17,358.17
Quarry Name: ROLFE Quarry:surface 285 lcy	
Quarry Name: ROLFE Quarry: Base 624 lcy	
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.2 acres	\$200.76
Includes Small Quantity Factor of 1.36	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing: 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. \$321.54 Surf. \$0.00.....	\$321.54
Quarry Development:	\$0.00

Total: \$25,002.12

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 28-12-13.4 Road Name:

Section 200 Clearing and Grubbing:

Clearing - Medium (Clearing): Adjustment Factor (1.67)

16-30% (Avg Side Slopes): Adjustment Factor (0.1)

Scatter (Slash): Adjustment Factor (0.94)

20-40' (Avg Clearing Widths): Adjustment Factor (0.1)

Total Adjustment Factor: $1.67 + 0.1 + 0.94 + 0.1 = 2.81$

Base Cost/Acre: \$1,263.37 x Adjustment Factor: 2.81 x Total Acres: 0.65 = \$2,307.55

Subtotal: \$2,307.55

Section 300 Excavation:

Comment: All material used in the subgrade.

Excavation - Common: $\$1.93/\text{cy} \times 1,285 \text{ cy} = \$2,480.05$

Embankment Placement & Compaction 306.f - Common: $\$0.26/\text{cy} \times 1,285 \text{ cy} = \334.10

Subgrade Compaction: 6 Sta/hr $\$22.42/\text{sta.} \times 7.8 \text{ sta} = \174.20

Slope Rounding: $\$0.29/\text{lf} \times 777 \text{ lf} = \225.33

End Hauling - 100 to 500 ft: $\$0.15/\text{sta-yd} \times 775 \text{ sta-yd} = \116.25

End Hauling > 500 ft and 10 mph: $\$2.69/\text{yd-mi} \times 510 \text{ yd-mi} = \$1,371.90$

Blading with ditch: $\$14.45/\text{station} \times 7.77 \text{ stations} = \112.28

Subtotal: \$4,814.11

Section 400 Drainage:

Subtotal: \$0.00

Section 500 Renovation:

Subtotal: \$0.00

Section 700-1200 Surfacing:

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: 0+00 - 8+29

<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>
									171 lcy

Rock Volume = 171 lcy

Purchase Price / Royalty: $\$12.50/\text{lcy} \times 171 \text{ lcy} = \$2,137.50$

Processing: $\$0.90/\text{lcy} \times 171 \text{ lcy} = \153.90

Compaction: $\$1.34/\text{lcy} \times 171 \text{ lcy} = \229.14

Basic Rock Haul cost: $\$0.74/\text{lcy} \times 171 \text{ lcy} = \126.54

Rock Haul +15% grades: $\$2.21/\text{lcy-mi} \times 171 \text{ lcy} \times 0.08 \text{ mi} = \29.85

Rock Haul -15% grades: $\$1.10/\text{lcy-mi} \times 171 \text{ lcy} \times 1.33 \text{ mi} = \250.55

Rock Haul St& Co Roads: $\$0.49/\text{lcy-mi} \times 171 \text{ lcy} \times 4.00 \text{ mi} = \335.16

Basic Water Haul cost: $\$0.60/\text{lcy} \times 171 \text{ lcy} = \102.60

Water Haul +15% grades: $\$0.28/\text{lcy-mi} \times 171 \text{ lcy} \times 0.08 \text{ mi} = \3.78

Water Haul -15% grades: $\$0.14/\text{lcy-mi} \times 171 \text{ lcy} \times 1.33 \text{ mi} = \31.89

Water Haul St&Co Roads: $\$0.08/\text{lcy-mi} \times 171 \text{ lcy} \times 1.00 \text{ mi} = \13.68

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Cap: Junction: 0+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>
									10 lcy

Rock Volume = 10 lcy

Purchase Price / Royalty: $\$12.50/\text{lcy} \times 10 \text{ lcy} = \125.00

Processing: $\$0.90/\text{lcy} \times 10 \text{ lcy} = \9.00

Compaction: $\$1.34/\text{lcy} \times 10 \text{ lcy} = \13.40

Basic Rock Haul cost: $\$0.74/\text{lcy} \times 10 \text{ lcy} = \7.40

Rock Haul -15% grades: $\$1.10/\text{lcy-mi} \times 10 \text{ lcy} \times 0.33 \text{ mi} = \3.65

Rock Haul St& Co Roads: $\$0.49/\text{lcy-mi} \times 10 \text{ lcy} \times 4.00 \text{ mi} = \19.60

Basic Water Haul cost: $\$0.60/\text{lcy} \times 10 \text{ lcy} = \6.00

Water Haul -15% grades: $\$0.14/\text{lcy-mi} \times 10 \text{ lcy} \times 0.33 \text{ mi} = \0.46

Water Haul St&Co Roads: $\$0.08/\text{lcy-mi} \times 10 \text{ lcy} \times 1.00 \text{ mi} = \0.80

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Cap: 2-60'diameter landings

<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>
									104 lcy

Rock Volume = 104 lcy

Purchase Price / Royalty: \$12.50/lcy x 104 lcy = \$1,300.00

Processing: \$0.90/lcy x 104 lcy = \$93.60

Compaction: \$1.34/lcy x 104 lcy = \$139.36

Basic Rock Haul cost: \$0.74/lcy x 104 lcy = \$76.96

Rock Haul +15% grades: \$2.21/lcy-mi x 104 lcy x 0.08 mi= \$18.16

Rock Haul -15% grades: \$1.10/lcy-mi x 104 lcy x 1.33 mi= \$152.38

Rock Haul St& Co Roads: \$0.49/lcy-mi x 104 lcy x 4.00 mi= \$203.84

Basic Water Haul cost: \$0.60/lcy x 104 lcy = \$62.40

Water Haul +15% grades: \$0.28/lcy-mi x 104 lcy x 0.08 mi= \$2.30

Water Haul -15% grades: \$0.14/lcy-mi x 104 lcy x 1.33 mi= \$19.39

Water Haul St&Co Roads: \$0.08/lcy-mi x 104 lcy x 1.00 mi= \$8.32

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: 0+00 - 8+29

<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>
									394 lcy

Rock Volume = 394 lcy

Purchase Price / Royalty: \$12.00/lcy x 394 lcy = \$4,728.00

Processing: \$0.90/lcy x 394 lcy = \$354.60

Compaction: \$1.34/lcy x 394 lcy = \$527.96

Basic Rock Haul cost: \$0.74/lcy x 394 lcy = \$291.56

Rock Haul +15% grades: \$2.21/lcy-mi x 394 lcy x 0.08 mi= \$68.79

Rock Haul -15% grades: \$1.10/lcy-mi x 394 lcy x 0.33 mi= \$143.89

Rock Haul St& Co Roads: \$0.49/lcy-mi x 394 lcy x 4.00 mi= \$772.24

Basic Water Haul cost: \$0.60/lcy x 394 lcy = \$236.40

Water Haul +15% grades: \$0.28/lcy-mi x 394 lcy x 0.08 mi= \$8.72

Water Haul -15% grades: \$0.14/lcy-mi x 394 lcy x 1.33 mi= \$73.47

Water Haul St&Co Roads: \$0.08/lcy-mi x 394 lcy x 1.00 mi= \$31.52

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Base: Junction 0+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>
									20 lcy

Rock Volume = 20 lcy

Purchase Price / Royalty: \$12.00/lcy x 20 lcy = \$240.00

Processing: \$0.90/lcy x 20 lcy = \$18.00

Compaction: \$1.34/lcy x 20 lcy = \$26.80

Basic Rock Haul cost: \$0.74/lcy x 20 lcy = \$14.80

Rock Haul -15% grades: \$1.10/lcy-mi x 20 lcy x 1.33 mi= \$29.30

Rock Haul St& Co Roads: \$0.49/lcy-mi x 20 lcy x 4.00 mi= \$39.20

Basic Water Haul cost: \$0.60/lcy x 20 lcy = \$12.00

Water Haul -15% grades: \$0.14/lcy-mi x 20 lcy x 1.33 mi= \$3.73

Water Haul St&Co Roads: \$0.08/lcy-mi x 20 lcy x 1.00 mi= \$1.60

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: 2-60' diameter landings

<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>
									210 lcy

Rock Volume = 210 lcy

Purchase Price / Royalty: \$12.00/lcy x 210 lcy = \$2,520.00

Processing: \$0.90/lcy x 210 lcy = \$189.00

Compaction: \$1.34/lcy x 210 lcy = \$281.40

Basic Rock Haul cost: \$0.74/lcy x 210 lcy = \$155.40

Rock Haul +15% grades: \$2.21/lcy-mi x 210 lcy x 0.08 mi= \$36.66

Rock Haul -15% grades: \$1.10/lcy-mi x 210 lcy x 1.33 mi= \$307.69

Rock Haul St& Co Roads: \$0.49/lcy-mi x 210 lcy x 4.00 mi= \$411.60

Basic Water Haul cost: \$0.60/lcy x 210 lcy = \$126.00

Water Haul +15% grades: \$0.28/lcy-mi x 210 lcy x 0.08 mi= \$4.65

Road Number: 28-12-13.4 Continued

Water Haul -15% grades: $\$0.14/\text{lcy-mi} \times 210 \text{ lcy} \times 0.33 \text{ mi} = \9.76

Water Haul St&Co Roads: $\$0.08/\text{lcy-mi} \times 210 \text{ lcy} \times 1.00 \text{ mi} = \16.80

Subtotal: \$17,358.17

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Comment: All areas hand seeded, fertilized, and mulched.

Dry Method with Mulch: $\$517.81/\text{acre} \times 0.20 \text{ acres} = \103.56

Includes Small Quantity Factor of 1.36

+ Seed Cost: $\$132.00/\text{acre} \times 0.20 \text{ acres} = \26.40

+ Fertilizer Cost: $\$34.00/\text{acre} \times 0.20 \text{ acres} = \6.80

+ Mulch Cost: $\$320.00/\text{acre} \times 0.20 \text{ acres} = \64.00

Subtotal: \$200.76

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 - 6.60% of total Costs = \$321.54

Surfacing - 7.96% by rock volume = \$0.00

Subtotal: \$321.54

Quarry Development:

Based on 7.96% of total rock volume

Subtotal: \$0.00

Total: \$25,002.12

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Zumwalt CT Sale Date: 10/2015

Road Number: 28-12-13.5 Road Name:

Road Construction: 0.22 mi 16 ft Subgrade 2 ft ditch 6/30/2014

200 Clearing and Grubbing: 1.0 acres	\$3,492.59
300 Excavation: 4,306 cy	\$17,959.24
Haul < 500 ft: 1,087 sta-yds	
Haul > 500 ft: 2,768 yd-mi	
400 Drainage:	\$0.00
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$0.00
700-1200 Surfacing:	\$19,270.61
Quarry Name: ROLFE Quarry:surface 325 lcy	
Quarry Name: ROLFE Quarry: Base 726 lcy	
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.8 acres	\$1,190.71
Includes Small Quantity Factor of 1.36	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing: 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. \$546.05 Surf. \$0.00.....	\$546.05
Quarry Development:	\$0.00

Total: \$42,459.19

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 28-12-13.5 Road Name:

Section 200 Clearing and Grubbing:

Clearing - Medium (Clearing): Adjustment Factor (1.67)

31-45% (Avg Side Slopes): Adjustment Factor (0.2)

Scatter (Slash): Adjustment Factor (0.94)

20-40' (Avg Clearing Widths): Adjustment Factor (0.1)

Total Adjustment Factor: $1.67 + 0.2 + 0.94 + 0.1 = 2.91$

Base Cost/Acre: \$1,263.37 x Adjustment Factor: 2.91 x Total Acres: 0.95 = \$3,492.59

Subtotal: \$3,492.59

Section 300 Excavation:

Excavation - Common: $\$1.93/\text{cy} \times 4,100 \text{ cy} = \$7,913.00$

Excavation - Rippable: $\$3.90/\text{cy} \times 206 \text{ cy} = \803.40

Embankment Placement & Compaction 306.f - Common: $\$0.26/\text{cy} \times 451 \text{ cy} = \117.26

Subgrade Compaction: 6 Sta/hr $\$22.42/\text{sta.} \times 12.5 \text{ sta} = \280.70

Slope Rounding: $\$0.29/\text{lf} \times 1,252 \text{ lf} = \363.08

End Hauling - 100 to 500 ft: $\$0.15/\text{sta-yd} \times 1,087 \text{ sta-yd} = \163.05

End Hauling > 500 ft and 10 mph: $\$2.69/\text{yd-mi} \times 2,768 \text{ yd-mi} = \$7,445.92$

Blading with ditch: $\$14.45/\text{station} \times 12.52 \text{ stations} = \180.91

Waste Area Strike and Dress

Tractor: D8 with rippers 3 hr x $\$230.64/\text{hr} = \691.92

Subtotal: \$17,959.24

Section 400 Drainage:

Subtotal: \$0.00

Section 500 Renovation:

Subtotal: \$0.00

Section 700-1200 Surfacing:

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: 0+00 - 11+68

<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>
									240 lcy

Rock Volume = 240 lcy

Purchase Price / Royalty: $\$12.50/\text{lcy} \times 240 \text{ lcy} = \$3,000.00$

Processing: $\$0.90/\text{lcy} \times 240 \text{ lcy} = \216.00

Compaction: $\$1.34/\text{lcy} \times 240 \text{ lcy} = \321.60

Basic Rock Haul cost: $\$0.74/\text{lcy} \times 240 \text{ lcy} = \177.60

Rock Haul +15% grades: $\$2.21/\text{lcy-mi} \times 240 \text{ lcy} \times 0.11 \text{ mi} = \58.87

Rock Haul -15% grades: $\$1.10/\text{lcy-mi} \times 240 \text{ lcy} \times 0.21 \text{ mi} = \55.44

Rock Haul St& Co Roads: $\$0.49/\text{lcy-mi} \times 240 \text{ lcy} \times 4.00 \text{ mi} = \470.40

Basic Water Haul cost: $\$0.60/\text{lcy} \times 240 \text{ lcy} = \144.00

Water Haul +15% grades: $\$0.28/\text{lcy-mi} \times 240 \text{ lcy} \times 0.11 \text{ mi} = \7.46

Water Haul -15% grades: $\$0.14/\text{lcy-mi} \times 240 \text{ lcy} \times 0.21 \text{ mi} = \7.06

Water Haul St&Co Roads: $\$0.08/\text{lcy-mi} \times 240 \text{ lcy} \times 1.00 \text{ mi} = \19.20

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: Junction 0+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>
									10 lcy

Rock Volume = 10 lcy

Purchase Price / Royalty: $\$12.50/\text{lcy} \times 10 \text{ lcy} = \125.00

Processing: $\$0.90/\text{lcy} \times 10 \text{ lcy} = \9.00

Compaction: $\$1.34/\text{lcy} \times 10 \text{ lcy} = \13.40

Basic Rock Haul cost: $\$0.74/\text{lcy} \times 10 \text{ lcy} = \7.40

Rock Haul +15% grades: $\$2.21/\text{lcy-mi} \times 10 \text{ lcy} \times 0.11 \text{ mi} = \2.45

Rock Haul -15% grades: $\$1.10/\text{lcy-mi} \times 10 \text{ lcy} \times 0.21 \text{ mi} = \2.31

Rock Haul St& Co Roads: $\$0.49/\text{lcy-mi} \times 10 \text{ lcy} \times 4.00 \text{ mi} = \19.60

Basic Water Haul cost: \$0.60/lcy x 10 lcy = \$6.00
 Water Haul +15% grades: \$0.28/lcy-mi x 10 lcy x 0.11 mi= \$0.31
 Water Haul -15% grades: \$0.14/lcy-mi x 10 lcy x 0.21 mi= \$0.29
 Water Haul St&Co Roads: \$0.08/lcy-mi x 10 lcy x 1.00 mi= \$0.80

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: 1-60' Diameter Landing

<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>
									52 lcy

Rock Volume = 52 lcy
 Purchase Price / Royalty: \$12.50/lcy x 52 lcy = \$650.00
 Processing: \$0.90/lcy x 52 lcy = \$46.80
 Compaction: \$1.34/lcy x 52 lcy = \$69.68
 Basic Rock Haul cost: \$0.74/lcy x 52 lcy = \$38.48
 Rock Haul +15% grades: \$2.21/lcy-mi x 52 lcy x 0.12 mi= \$13.91
 Rock Haul -15% grades: \$1.10/lcy-mi x 52 lcy x 0.21 mi= \$12.01
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 52 lcy x 4.00 mi= \$101.92
 Basic Water Haul cost: \$0.60/lcy x 52 lcy = \$31.20
 Water Haul +15% grades: \$0.28/lcy-mi x 52 lcy x 0.22 mi= \$3.22
 Water Haul -15% grades: \$0.14/lcy-mi x 52 lcy x 0.21 mi= \$1.53
 Water Haul St&Co Roads: \$0.08/lcy-mi x 52 lcy x 1.00 mi= \$4.16

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: Turnaround 10+47

<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>
									10 lcy

Rock Volume = 10 lcy
 Purchase Price / Royalty: \$12.50/lcy x 10 lcy = \$125.00
 Processing: \$0.90/lcy x 10 lcy = \$9.00
 Compaction: \$1.34/lcy x 10 lcy = \$13.40
 Basic Rock Haul cost: \$0.74/lcy x 10 lcy = \$7.40
 Rock Haul +15% grades: \$2.21/lcy-mi x 10 lcy x 0.20 mi= \$4.38
 Rock Haul -15% grades: \$1.10/lcy-mi x 10 lcy x 0.22 mi= \$2.42
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 10 lcy x 4.00 mi= \$19.60
 Basic Water Haul cost: \$0.60/lcy x 10 lcy = \$6.00
 Water Haul +15% grades: \$0.28/lcy-mi x 10 lcy x 0.20 mi= \$0.55
 Water Haul -15% grades: \$0.14/lcy-mi x 10 lcy x 0.22 mi= \$0.31
 Water Haul St&Co Roads: \$0.08/lcy-mi x 10 lcy x 1.00 mi= \$0.80

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: Turnout Sta. 1+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>
									13 lcy

Rock Volume = 13 lcy
 Purchase Price / Royalty: \$12.50/lcy x 13 lcy = \$162.50
 Processing: \$0.90/lcy x 13 lcy = \$11.70
 Compaction: \$1.34/lcy x 13 lcy = \$17.42
 Basic Rock Haul cost: \$0.74/lcy x 13 lcy = \$9.62
 Rock Haul +15% grades: \$2.21/lcy-mi x 13 lcy x 0.04 mi= \$1.03
 Rock Haul -15% grades: \$1.10/lcy-mi x 13 lcy x 0.21 mi= \$3.00
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 13 lcy x 4.00 mi= \$25.48
 Basic Water Haul cost: \$0.60/lcy x 13 lcy = \$7.80
 Water Haul +15% grades: \$0.28/lcy-mi x 13 lcy x 0.04 mi= \$0.13
 Water Haul -15% grades: \$0.14/lcy-mi x 13 lcy x 0.21 mi= \$0.38
 Water Haul St&Co Roads: \$0.08/lcy-mi x 13 lcy x 1.00 mi= \$1.04

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: 0+00 - 11+68

<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>
									555 lcy

Rock Volume = 555 lcy
 Purchase Price / Royalty: \$12.00/lcy x 555 lcy = \$6,660.00
 Processing: \$0.90/lcy x 555 lcy = \$499.50
 Compaction: \$1.34/lcy x 555 lcy = \$743.70

Basic Rock Haul cost: $\$0.74/\text{lcy} \times 555 \text{ lcy} = \410.70
 Rock Haul +15% grades: $\$2.21/\text{lcy-mi} \times 555 \text{ lcy} \times 0.11 \text{ mi} = \136.15
 Rock Haul -15% grades: $\$1.10/\text{lcy-mi} \times 555 \text{ lcy} \times 0.21 \text{ mi} = \128.21
 Rock Haul St& Co Roads: $\$0.49/\text{lcy-mi} \times 555 \text{ lcy} \times 4.00 \text{ mi} = \$1,087.80$
 Basic Water Haul cost: $\$0.60/\text{lcy} \times 555 \text{ lcy} = \333.00
 Water Haul +15% grades: $\$0.28/\text{lcy-mi} \times 555 \text{ lcy} \times 0.11 \text{ mi} = \17.25
 Water Haul -15% grades: $\$0.14/\text{lcy-mi} \times 555 \text{ lcy} \times 0.21 \text{ mi} = \16.32
 Water Haul St&Co Roads: $\$0.08/\text{lcy-mi} \times 555 \text{ lcy} \times 1.00 \text{ mi} = \44.40

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: Junction Sta. 0+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>
									20 lcy

Rock Volume = 20 lcy
 Purchase Price / Royalty: $\$12.00/\text{lcy} \times 20 \text{ lcy} = \240.00
 Processing: $\$0.90/\text{lcy} \times 20 \text{ lcy} = \18.00
 Compaction: $\$1.34/\text{lcy} \times 20 \text{ lcy} = \26.80
 Basic Rock Haul cost: $\$0.74/\text{lcy} \times 20 \text{ lcy} = \14.80
 Rock Haul -15% grades: $\$1.10/\text{lcy-mi} \times 20 \text{ lcy} \times 0.21 \text{ mi} = \4.62
 Rock Haul St& Co Roads: $\$0.49/\text{lcy-mi} \times 20 \text{ lcy} \times 4.00 \text{ mi} = \39.20
 Basic Water Haul cost: $\$0.60/\text{lcy} \times 20 \text{ lcy} = \12.00
 Water Haul -15% grades: $\$0.14/\text{lcy-mi} \times 20 \text{ lcy} \times 0.21 \text{ mi} = \0.59
 Water Haul St&Co Roads: $\$0.08/\text{lcy-mi} \times 20 \text{ lcy} \times 1.00 \text{ mi} = \1.60

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: Turnout Sta. 1+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>
									26 lcy

Rock Volume = 26 lcy
 Purchase Price / Royalty: $\$12.00/\text{lcy} \times 26 \text{ lcy} = \312.00
 Processing: $\$0.90/\text{lcy} \times 26 \text{ lcy} = \23.40
 Compaction: $\$1.34/\text{lcy} \times 26 \text{ lcy} = \34.84
 Basic Rock Haul cost: $\$0.74/\text{lcy} \times 26 \text{ lcy} = \19.24
 Rock Haul +15% grades: $\$2.21/\text{lcy-mi} \times 26 \text{ lcy} \times 0.04 \text{ mi} = \2.07
 Rock Haul -15% grades: $\$1.10/\text{lcy-mi} \times 26 \text{ lcy} \times 0.21 \text{ mi} = \6.01
 Rock Haul St& Co Roads: $\$0.49/\text{lcy-mi} \times 26 \text{ lcy} \times 4.00 \text{ mi} = \50.96
 Basic Water Haul cost: $\$0.60/\text{lcy} \times 26 \text{ lcy} = \15.60
 Water Haul +15% grades: $\$0.28/\text{lcy-mi} \times 26 \text{ lcy} \times 0.04 \text{ mi} = \0.26
 Water Haul -15% grades: $\$0.14/\text{lcy-mi} \times 26 \text{ lcy} \times 0.21 \text{ mi} = \0.76
 Water Haul St&Co Roads: $\$0.08/\text{lcy-mi} \times 26 \text{ lcy} \times 1.00 \text{ mi} = \2.08

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: Turnaround Sta. 10+47

<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>
									20 lcy

Rock Volume = 20 lcy
 Purchase Price / Royalty: $\$12.00/\text{lcy} \times 20 \text{ lcy} = \240.00
 Processing: $\$0.90/\text{lcy} \times 20 \text{ lcy} = \18.00
 Compaction: $\$1.34/\text{lcy} \times 20 \text{ lcy} = \26.80
 Basic Rock Haul cost: $\$0.74/\text{lcy} \times 20 \text{ lcy} = \14.80
 Rock Haul +15% grades: $\$2.21/\text{lcy-mi} \times 20 \text{ lcy} \times 0.20 \text{ mi} = \8.75
 Rock Haul -15% grades: $\$1.10/\text{lcy-mi} \times 20 \text{ lcy} \times 0.21 \text{ mi} = \4.62
 Rock Haul St& Co Roads: $\$0.49/\text{lcy-mi} \times 20 \text{ lcy} \times 4.00 \text{ mi} = \39.20
 Basic Water Haul cost: $\$0.60/\text{lcy} \times 20 \text{ lcy} = \12.00
 Water Haul +15% grades: $\$0.28/\text{lcy-mi} \times 20 \text{ lcy} \times 0.20 \text{ mi} = \1.11
 Water Haul -15% grades: $\$0.14/\text{lcy-mi} \times 20 \text{ lcy} \times 0.21 \text{ mi} = \0.59
 Water Haul St&Co Roads: $\$0.08/\text{lcy-mi} \times 20 \text{ lcy} \times 1.00 \text{ mi} = \1.60

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: 1-60' diameter Landing Sta. 11+68

<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>
									105 lcy

Rock Volume = 105 lcy
 Purchase Price / Royalty: $\$12.00/\text{lcy} \times 105 \text{ lcy} = \$1,260.00$

Processing: \$0.90/lcy x 105 lcy = \$94.50	
Compaction: \$1.34/lcy x 105 lcy = \$140.70	
Basic Rock Haul cost: \$0.74/lcy x 105 lcy = \$77.70	
Rock Haul +15% grades: \$2.21/lcy-mi x 105 lcy x 0.22 mi= \$51.28	
Rock Haul -15% grades: \$1.10/lcy-mi x 105 lcy x 0.21 mi= \$24.26	
Rock Haul St& Co Roads: \$0.49/lcy-mi x 105 lcy x 4.00 mi= \$205.80	
Basic Water Haul cost: \$0.60/lcy x 105 lcy = \$63.00	
Water Haul +15% grades: \$0.28/lcy-mi x 105 lcy x 0.22 mi= \$6.50	
Water Haul -15% grades: \$0.14/lcy-mi x 105 lcy x 0.21 mi= \$3.09	
Water Haul St&Co Roads: \$0.08/lcy-mi x 105 lcy x 1.00 mi= \$8.40	
	Subtotal: \$19,270.61
Section 1300 Geotextiles:	
	Subtotal: \$0.00
Section 1400 Slope Protection:	
	Subtotal: \$0.00
Section 1800 Soil Stabilization:	
Comment: HydroMulch disturbed cuts and fills. Dry Method WA.	
Dry Method with Mulch: \$517.81/acre x 0.30 acres = \$155.34	
Includes Small Quantity Factor of 1.36	
+ Seed Cost: \$132.00/acre x 0.30 acres = \$39.60	
+ Fertilizer Cost: \$34.00/acre x 0.30 acres = \$10.20	
+ Mulch Cost: \$320.00/acre x 0.30 acres = \$96.00	
Hydro Mulch: \$1779.14/acre x 0.50 acres = \$889.57	
	Subtotal: \$1,190.71
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 - 11.20% of total Costs = \$546.05	
Surfacing - 9.20% by rock volume = \$0.00	
	Subtotal: \$546.05
Quarry Development:	
Based on 9.20% of total rock volume	
	Subtotal: \$0.00
	Total: \$42,459.19

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Zumwalt CT Sale Date: 10/2015

Road Number: 28-12-13.6 Road Name:

Road Construction: 0.37 mi 16 ft Subgrade 2 ft ditch 6/30/2014

200 Clearing and Grubbing: 1.5 acres	\$5,514.61
300 Excavation: 5,330 cy	\$22,824.20
Haul < 500 ft: 2,024 sta-yds	
Haul > 500 ft: 3,305 yd-mi	
400 Drainage:	\$3,359.28
Culvert: 0 lf	
DownSpout: 20 lf	
PolyPipe: 66 lf	
500 Renovation:	\$0.00
700-1200 Surfacing:	\$34,352.79
Quarry Name: ROLFE Quarry:surface 513 lcy	
Quarry Name: ROLFE Quarry: cpp bd 24 lcy	
Quarry Name: ROLFE Quarry: Base 1,152 lcy	
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$112.07
Gradation Class 3: 10 cy	
1800 Soil Stabilization: 1.0 acres	\$1,546.54
Includes Small Quantity Factor of 1.36	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing: 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. \$882.12 Surf. \$0.00.....	\$882.12
Quarry Development:	\$0.00

Total: \$68,591.62

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 28-12-13.6 Road Name:

Section 200 Clearing and Grubbing:

Clearing - Medium (Clearing): Adjustment Factor (1.67)
31-45% (Avg Side Slopes): Adjustment Factor (0.2)
Scatter (Slash): Adjustment Factor (0.94)
20-40' (Avg Clearing Widths): Adjustment Factor (0.1)
Total Adjustment Factor: $1.67 + 0.2 + 0.94 + 0.1 = 2.91$
Base Cost/Acre: \$1,263.37 x Adjustment Factor: 2.91 x Total Acres: 1.50 = \$5,514.61
Subtotal: \$5,514.61

Section 300 Excavation:

Excavation - Common: $\$1.93/\text{cy} \times 5,000 \text{ cy} = \$9,650.00$
Excavation - Rippable: $\$3.90/\text{cy} \times 330 \text{ cy} = \$1,287.00$
Embankment Placement & Compaction 306.f - Common: $\$0.26/\text{cy} \times 2,772 \text{ cy} = \720.72
Subgrade Compaction: 6 Sta/hr $\$22.42/\text{sta.} \times 19.4 \text{ sta} = \435.84
Slope Rounding: $\$0.29/\text{lf} \times 1,944 \text{ lf} = \563.76
End Hauling - 100 to 500 ft: $\$0.15/\text{sta-yd} \times 2,024 \text{ sta-yd} = \303.60
End Hauling > 500 ft and 10 mph: $\$2.69/\text{yd-mi} \times 3,305 \text{ yd-mi} = \$8,890.45$
Blading with ditch: $\$14.45/\text{station} \times 19.44 \text{ stations} = \280.91
Waste Area Strike and Dress
Tractor: D8 with rippers 3 hr x $\$230.64/\text{hr} = \691.92
Subtotal: \$22,824.20

Section 400 Drainage:

Full Round - Poly Sta. 5+96 18 inch 10 lf x $\$17.05/\text{lf} = \170.50
Full Round - Poly Sta. 8+70 18 inch 10 lf x $\$17.05/\text{lf} = \170.50
Poly Pipe Sta. 5+96 18 inch 30 lf x $\$44.98/\text{lf} = \$1,349.40$
Poly Pipe Sta. 8+70 18 inch 36 lf x $\$44.98/\text{lf} = \$1,619.28$
Culvert Inlet markers
Fence Posts 2 post x $\$8.00/\text{post} = \16.00
General Laborer 1 hr x $\$33.60/\text{hr} = \33.60
Subtotal: \$3,359.28

Section 500 Renovation:

Subtotal: \$0.00

Section 700-1200 Surfacing:

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: 0+00 - 19+44

<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>
									399 lcy

Rock Volume = 399 lcy
Purchase Price / Royalty: $\$12.50/\text{lcy} \times 399 \text{ lcy} = \$4,987.50$
Processing: $\$0.90/\text{lcy} \times 399 \text{ lcy} = \359.10
Compaction: $\$1.34/\text{lcy} \times 399 \text{ lcy} = \534.66
Basic Rock Haul cost: $\$0.74/\text{lcy} \times 399 \text{ lcy} = \295.26
Rock Haul +15% grades: $\$2.21/\text{lcy-mi} \times 399 \text{ lcy} \times 0.18 \text{ mi} = \162.25
Rock Haul -15% grades: $\$1.10/\text{lcy-mi} \times 399 \text{ lcy} \times 1.63 \text{ mi} = \715.41
Rock Haul St& Co Roads: $\$0.49/\text{lcy-mi} \times 399 \text{ lcy} \times 4.00 \text{ mi} = \782.04
Basic Water Haul cost: $\$0.60/\text{lcy} \times 399 \text{ lcy} = \239.40
Water Haul +15% grades: $\$0.28/\text{lcy-mi} \times 399 \text{ lcy} \times 0.18 \text{ mi} = \20.56
Water Haul -15% grades: $\$0.14/\text{lcy-mi} \times 399 \text{ lcy} \times 1.63 \text{ mi} = \91.05
Water Haul St&Co Roads: $\$0.08/\text{lcy-mi} \times 399 \text{ lcy} \times 1.00 \text{ mi} = \31.92

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: Junction Sta. 0+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>
									10 lcy

Rock Volume = 10 lcy

Purchase Price / Royalty: \$12.50/lcy x 10 lcy = \$125.00
 Processing: \$0.90/lcy x 10 lcy = \$9.00
 Compaction: \$1.34/lcy x 10 lcy = \$13.40
 Basic Rock Haul cost: \$0.74/lcy x 10 lcy = \$7.40
 Rock Haul -15% grades: \$1.10/lcy-mi x 10 lcy x 1.63 mi= \$17.93
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 10 lcy x 4.00 mi= \$19.60
 Basic Water Haul cost: \$0.60/lcy x 10 lcy = \$6.00
 Water Haul -15% grades: \$0.14/lcy-mi x 10 lcy x 1.63 mi= \$2.28
 Water Haul St&Co Roads: \$0.08/lcy-mi x 10 lcy x 1.00 mi= \$0.80

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: 1- 60' Diameter Landing Sta. 19+44

<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>
									52 lcy

Rock Volume = 52 lcy
 Purchase Price / Royalty: \$12.50/lcy x 52 lcy = \$650.00
 Processing: \$0.90/lcy x 52 lcy = \$46.80
 Compaction: \$1.34/lcy x 52 lcy = \$69.68
 Basic Rock Haul cost: \$0.74/lcy x 52 lcy = \$38.48
 Rock Haul +15% grades: \$2.21/lcy-mi x 52 lcy x 0.37 mi= \$42.29
 Rock Haul -15% grades: \$1.10/lcy-mi x 52 lcy x 1.63 mi= \$93.24
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 52 lcy x 4.00 mi= \$101.92
 Basic Water Haul cost: \$0.60/lcy x 52 lcy = \$31.20
 Water Haul +15% grades: \$0.28/lcy-mi x 52 lcy x 0.37 mi= \$5.36
 Water Haul -15% grades: \$0.14/lcy-mi x 52 lcy x 1.63 mi= \$11.87
 Water Haul St&Co Roads: \$0.08/lcy-mi x 52 lcy x 1.00 mi= \$4.16

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: 2- Roadside Landings Sta. 2+75, 11+65

<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>
									52 lcy

Rock Volume = 52 lcy
 Purchase Price / Royalty: \$12.50/lcy x 52 lcy = \$650.00
 Processing: \$0.90/lcy x 52 lcy = \$46.80
 Compaction: \$1.34/lcy x 52 lcy = \$69.68
 Basic Rock Haul cost: \$0.74/lcy x 52 lcy = \$38.48
 Rock Haul +15% grades: \$2.21/lcy-mi x 52 lcy x 0.14 mi= \$15.63
 Rock Haul -15% grades: \$1.10/lcy-mi x 52 lcy x 1.63 mi= \$93.24
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 52 lcy x 4.00 mi= \$101.92
 Basic Water Haul cost: \$0.60/lcy x 52 lcy = \$31.20
 Water Haul +15% grades: \$0.28/lcy-mi x 52 lcy x 0.14 mi= \$1.98
 Water Haul -15% grades: \$0.14/lcy-mi x 52 lcy x 1.63 mi= \$11.87
 Water Haul St&Co Roads: \$0.08/lcy-mi x 52 lcy x 1.00 mi= \$4.16

Commercial Quarry Name: ROLFE Quarry: cpp bd

Comment: Culvert Bedding/Backfill: Sta. 5+96, 8+70

<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>
									24 lcy

Rock Volume = 24 lcy
 Purchase Price / Royalty: \$12.50/lcy x 24 lcy = \$300.00
 Basic Rock Haul cost: \$0.74/lcy x 24 lcy = \$17.76
 Rock Haul +15% grades: \$2.21/lcy-mi x 24 lcy x 0.14 mi= \$7.37
 Rock Haul -15% grades: \$1.10/lcy-mi x 24 lcy x 1.63 mi= \$43.03
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 24 lcy x 4.00 mi= \$47.04
 Basic Water Haul cost: \$0.60/lcy x 24 lcy = \$14.40
 Water Haul +15% grades: \$0.28/lcy-mi x 24 lcy x 0.14 mi= \$0.93
 Water Haul -15% grades: \$0.14/lcy-mi x 24 lcy x 1.63 mi= \$5.48
 Water Haul St&Co Roads: \$0.08/lcy-mi x 24 lcy x 1.00 mi= \$1.92

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: Sta. 0+00 - 19+44

<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>
									923 lcy

Rock Volume = 923 lcy

Purchase Price / Royalty: \$12.00/lcy x 923 lcy = \$11,076.00
 Processing: \$0.90/lcy x 923 lcy = \$830.70
 Compaction: \$1.34/lcy x 923 lcy = \$1,236.82
 Basic Rock Haul cost: \$0.74/lcy x 923 lcy = \$683.02
 Rock Haul +15% grades: \$2.21/lcy-mi x 923 lcy x 0.18 mi= \$375.33
 Rock Haul -15% grades: \$1.10/lcy-mi x 923 lcy x 1.63 mi= \$1,654.94
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 923 lcy x 4.00 mi= \$1,809.08
 Basic Water Haul cost: \$0.60/lcy x 923 lcy = \$553.80
 Water Haul +15% grades: \$0.28/lcy-mi x 923 lcy x 0.18 mi= \$47.55
 Water Haul -15% grades: \$0.14/lcy-mi x 923 lcy x 1.63 mi= \$210.63
 Water Haul St&Co Roads: \$0.08/lcy-mi x 923 lcy x 1.00 mi= \$73.84

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: Junction Sta. 0+00

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

Rock Volume = 20 lcy

Purchase Price / Royalty: \$12.00/lcy x 20 lcy = \$240.00
 Processing: \$0.90/lcy x 20 lcy = \$18.00
 Compaction: \$1.34/lcy x 20 lcy = \$26.80
 Basic Rock Haul cost: \$0.74/lcy x 20 lcy = \$14.80
 Rock Haul -15% grades: \$1.10/lcy-mi x 20 lcy x 1.63 mi= \$35.86
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 20 lcy x 4.00 mi= \$39.20
 Basic Water Haul cost: \$0.60/lcy x 20 lcy = \$12.00
 Water Haul -15% grades: \$0.14/lcy-mi x 20 lcy x 1.63 mi= \$4.56
 Water Haul St&Co Roads: \$0.08/lcy-mi x 20 lcy x 1.00 mi= \$1.60

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: 1-60' diameter landing Sta. 19+44

Length	TopW	BotW	Depth	CWid	#TOs	Width	F.W.L	Taper	Other
									105 lcy

Rock Volume = 105 lcy

Purchase Price / Royalty: \$12.00/lcy x 105 lcy = \$1,260.00
 Processing: \$0.90/lcy x 105 lcy = \$94.50
 Compaction: \$1.34/lcy x 105 lcy = \$140.70
 Basic Rock Haul cost: \$0.74/lcy x 105 lcy = \$77.70
 Rock Haul +15% grades: \$2.21/lcy-mi x 105 lcy x 0.37 mi= \$85.39
 Rock Haul -15% grades: \$1.10/lcy-mi x 105 lcy x 1.63 mi= \$188.27
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 105 lcy x 4.00 mi= \$205.80
 Basic Water Haul cost: \$0.60/lcy x 105 lcy = \$63.00
 Water Haul +15% grades: \$0.28/lcy-mi x 105 lcy x 0.37 mi= \$10.82
 Water Haul -15% grades: \$0.14/lcy-mi x 105 lcy x 1.63 mi= \$23.96
 Water Haul St&Co Roads: \$0.08/lcy-mi x 105 lcy x 1.00 mi= \$8.40

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: 2- Roadside Landings Sta. 2+75, 11+65

Length	TopW	BotW	Depth	CWid	#TOs	Width	F.W.L	Taper	Other
									104 lcy

Rock Volume = 104 lcy

Purchase Price / Royalty: \$12.00/lcy x 104 lcy = \$1,248.00
 Processing: \$0.90/lcy x 104 lcy = \$93.60
 Compaction: \$1.34/lcy x 104 lcy = \$139.36
 Basic Rock Haul cost: \$0.74/lcy x 104 lcy = \$76.96
 Rock Haul +15% grades: \$2.21/lcy-mi x 104 lcy x 0.14 mi= \$31.26
 Rock Haul -15% grades: \$1.10/lcy-mi x 104 lcy x 1.63 mi= \$186.47
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 104 lcy x 4.00 mi= \$203.84
 Basic Water Haul cost: \$0.60/lcy x 104 lcy = \$62.40
 Water Haul +15% grades: \$0.28/lcy-mi x 104 lcy x 0.14 mi= \$3.96
 Water Haul -15% grades: \$0.14/lcy-mi x 104 lcy x 1.63 mi= \$23.73
 Water Haul St&Co Roads: \$0.08/lcy-mi x 104 lcy x 1.00 mi= \$8.32

culvert bedding compaction

General Laborer 2 hr x \$33.60/hr = \$67.20

Tamper - handheld 2 hr x \$43.09/hr = \$86.18

	Subtotal: \$34,352.79
Section 1300 Geotextiles:	
	Subtotal: \$0.00
Section 1400 Slope Protection:	
Comment: Culvert Energy Dissipater	
Rock Source: ROLFE Quarry: RipRap	
Purchase Price / Royalty: \$8.30/cy x 10cy = \$83.00	
Furnish Class 3 type rock	
Placement on Fill slopes: 10cy x (\$2.85/cy x 1.02) = \$29.07	
	Subtotal: \$112.07
Section 1800 Soil Stabilization:	
Comment: All disturbed areas (cuts and fills) hydromulched. WA hand.	
Dry Method with Mulch: \$517.81/acre x 0.30 acres = \$155.34	
Includes Small Quantity Factor of 1.36	
+ Seed Cost: \$132.00/acre x 0.30 acres = \$39.60	
+ Fertilizer Cost: \$34.00/acre x 0.30 acres = \$10.20	
+ Mulch Cost: \$320.00/acre x 0.30 acres = \$96.00	
Hydro Mulch: \$1779.14/acre x 0.70 acres = \$1,245.40	
	Subtotal: \$1,546.54
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 - 18.10% of total Costs = \$882.12	
Surfacing - 14.79% by rock volume = \$0.00	
	Subtotal: \$882.12
Quarry Development:	
Based on 14.79% of total rock volume	
	Subtotal: \$0.00
	Total: \$68,591.62

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Zumwalt CT Sale Date: 10/2015

Road Number: 28-12-23.0 Road Name:

Road Renovation: 1.19 mi 16 ft Subgrade 2 ft ditch 6/30/2014

200 Clearing and Grubbing: 0.8 acres	\$2,103.51
300 Excavation:	\$0.00
400 Drainage:	\$7,982.72
Culvert: 0 lf	
DownSpout: 20 lf	
PolyPipe: 122 lf	
500 Renovation:	\$3,889.69
Blading 1.19 mi	
Slide Removal 10 cy	
700-1200 Surfacing:	\$33,599.76
Quarry Name: ROLFE Quarry:surface 1,463 lcy	
Quarry Name: ROLFE Quarry: cpp bd 82 lcy	
Quarry Name: ROLFE Quarry: Base 223 lcy	
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.6 acres	\$602.28
Includes Small Quantity Factor of 1.36	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing: 2.9 acres	\$1,672.14
2300 Engineering: 0.00 sta.	\$0.00
2400 Minor Concrete:	\$0.00
2500 Gabions:	\$0.00
8000 Miscellaneous:	\$0.00
Mobilization: Const. \$649.45 Surf. \$0.00.....	\$649.45
Quarry Development:	\$0.00
Total:	\$50,499.56

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: 28-12-23.0 Road Name:

Section 200 Clearing and Grubbing:

Clearing - Light (Clearing): Adjustment Factor (0.93)

16-30% (Avg Side Slopes): Adjustment Factor (0.1)

Scatter (Slash): Adjustment Factor (0.94)

less than 20' (Avg Clearing Widths): Adjustment Factor (0.25)

Total Adjustment Factor: $0.93 + 0.1 + 0.94 + 0.25 = 2.22$

Base Cost/Acre: \$1,263.37 x Adjustment Factor: 2.22 x Total Acres: 0.75 = \$2,103.51
Subtotal: \$2,103.51

Section 300 Excavation:

Subtotal: \$0.00

Section 400 Drainage:

Full Round - Poly MM 0.938 24 inch 20 lf x \$28.42/lf = \$568.40
Poly Pipe MM 0.838 18 inch 34 lf x \$44.98/lf = \$1,529.32
Poly Pipe MM 0.879 24 inch 46 lf x \$63.29/lf = \$2,911.34
Poly Pipe MM 0.938 24 inch 42 lf x \$63.29/lf = \$2,658.18

Culvert Marker installations

General Laborer 2 hr x \$33.60/hr = \$67.20

fence posts 8 post x \$8.00/post = \$64.00

Old culvert removal from BLM

General Laborer 2 hr x \$33.60/hr = \$67.20

Flatbed truck -1 Ton 2 hr x \$54.54/hr = \$109.08

Subtotal: \$7,974.72

Section 500 Renovation:

Slide Removal 10 cy

Front End Loader \$107.45/hr x 1.00 hr = \$107.45

Dump Truck: \$93.87/hr x 1.00 hr = \$93.87

Blading: \$720.50/mi x 1.19 mi = \$858.12

Compaction: \$403.47/mi x 1.19 mi = \$480.53

Clean Culverts: \$334.17/mi x 1.19 mi = \$398.00

Ditchline bunching and hauling

Backhoe 8 hr x \$76.21/hr = \$609.68

Dump Truck 12 cy 8 hr x \$93.87/hr = \$750.96

Waste areas Strike and Dress

Tractor: D8 with rippers 2 hr x \$230.64/hr = \$461.28

Sediment Catch Basin MM 0.110

Backhoe 1 hr x \$76.21/hr = \$76.21

straw bale 2 each x \$10.00/each = \$20.00

General Laborer 1 hr x \$33.60/hr = \$33.60

Subtotal: \$3,889.69

Section 700-1200 Surfacing:

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" lift: MM 0.000 - 1.191

Length	TopW	BotW	Depth	CWid	#TOs	Width	F.W.L	Taper	Other
									1291 lcy

Rock Volume = 1,291 lcy

Purchase Price / Royalty: \$12.50/lcy x 1,291 lcy = \$16,137.50

Processing: \$0.90/lcy x 1,291 lcy = \$1,161.90

Compaction: \$1.34/lcy x 1,291 lcy = \$1,729.94

Basic Rock Haul cost: \$0.74/lcy x 1,291 lcy = \$955.34

Rock Haul -15% grades: \$1.10/lcy-mi x 1,291 lcy x 0.60 mi= \$846.38

Rock Haul St& Co Roads: \$0.49/lcy-mi x 1,291 lcy x 4.00 mi= \$2,530.36

Basic Water Haul cost: \$0.60/lcy x 1,291 lcy = \$774.60

Water Haul -15% grades: \$0.14/lcy-mi x 1,291 lcy x 0.60 mi= \$107.72

Water Haul St&Co Roads: \$0.08/lcy-mi x 1,291 lcy x 1.00 mi= \$103.28

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: 8- Turnouts

<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: \$12.50/lcy x 80 lcy = \$1,000.00

Processing: \$0.90/lcy x 80 lcy = \$72.00

Compaction: \$1.34/lcy x 80 lcy = \$107.20

Basic Rock Haul cost: \$0.74/lcy x 80 lcy = \$59.20

Rock Haul -15% grades: \$1.10/lcy-mi x 80 lcy x 1.60 mi= \$140.45

Rock Haul St& Co Roads: \$0.49/lcy-mi x 80 lcy x 4.00 mi= \$156.80

Basic Water Haul cost: \$0.60/lcy x 80 lcy = \$48.00

Water Haul -15% grades: \$0.14/lcy-mi x 80 lcy x 0.60 mi= \$6.68

Water Haul St&Co Roads: \$0.08/lcy-mi x 80 lcy x 1.00 mi= \$6.40

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: 4- Junctions: MM 0.000, 0.108, 0.813, 1.151

<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>
									40 lcy

Rock Volume = 40 lcy

Purchase Price / Royalty: \$12.50/lcy x 40 lcy = \$500.00

Processing: \$0.90/lcy x 40 lcy = \$36.00

Compaction: \$1.34/lcy x 40 lcy = \$53.60

Basic Rock Haul cost: \$0.74/lcy x 40 lcy = \$29.60

Rock Haul -15% grades: \$1.10/lcy-mi x 40 lcy x 0.60 mi= \$26.22

Rock Haul St& Co Roads: \$0.49/lcy-mi x 40 lcy x 4.00 mi= \$78.40

Basic Water Haul cost: \$0.60/lcy x 40 lcy = \$24.00

Water Haul -15% grades: \$0.14/lcy-mi x 40 lcy x 0.60 mi= \$3.34

Water Haul St&Co Roads: \$0.08/lcy-mi x 40 lcy x 1.00 mi= \$3.20

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: 1- 60' diameter landing MM 1.191

<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>
									52 lcy

Rock Volume = 52 lcy

Purchase Price / Royalty: \$12.50/lcy x 52 lcy = \$650.00

Processing: \$0.90/lcy x 52 lcy = \$46.80

Compaction: \$1.34/lcy x 52 lcy = \$69.68

Basic Rock Haul cost: \$0.74/lcy x 52 lcy = \$38.48

Rock Haul -15% grades: \$1.10/lcy-mi x 52 lcy x 1.19 mi= \$68.13

Rock Haul St& Co Roads: \$0.49/lcy-mi x 52 lcy x 4.00 mi= \$101.92

Basic Water Haul cost: \$0.60/lcy x 52 lcy = \$31.20

Water Haul -15% grades: \$0.14/lcy-mi x 52 lcy x 1.19 mi= \$8.67

Water Haul St&Co Roads: \$0.08/lcy-mi x 52 lcy x 1.00 mi= \$4.16

Commercial Quarry Name: ROLFE Quarry: cpp bd

Comment: Culvert bedding/backfill: MM 0.838, 0.879, 0.938

<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>
									82 lcy

Rock Volume = 82 lcy

Purchase Price / Royalty: \$12.50/lcy x 82 lcy = \$1,025.00

Basic Rock Haul cost: \$0.74/lcy x 82 lcy = \$60.68

Rock Haul -15% grades: \$1.10/lcy-mi x 82 lcy x 0.89 mi= \$80.10

Rock Haul St& Co Roads: \$0.49/lcy-mi x 82 lcy x 4.00 mi= \$160.72

Basic Water Haul cost: \$0.60/lcy x 82 lcy = \$49.20

Water Haul -15% grades: \$0.14/lcy-mi x 82 lcy x 0.89 mi= \$10.19

Water Haul St&Co Roads: \$0.08/lcy-mi x 82 lcy x 1.00 mi= \$6.56

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" lift Base: MM 1.180 - 1.191

<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>
									28 lcy

Rock Volume = 28 lcy

Purchase Price / Royalty: \$12.00/lcy x 28 lcy = \$336.00
 Processing: \$0.90/lcy x 28 lcy = \$25.20
 Compaction: \$1.34/lcy x 28 lcy = \$37.52
 Basic Rock Haul cost: \$0.74/lcy x 28 lcy = \$20.72
 Rock Haul -15% grades: \$1.10/lcy-mi x 28 lcy x 1.19 mi= \$36.53
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 28 lcy x 4.00 mi= \$54.88
 Basic Water Haul cost: \$0.60/lcy x 28 lcy = \$16.80
 Water Haul -15% grades: \$0.14/lcy-mi x 28 lcy x 1.19 mi= \$4.65
 Water Haul St&Co Roads: \$0.08/lcy-mi x 28 lcy x 1.00 mi= \$2.24

Commercial Quarry Name: ROLFE Quarry: Base

Comment: Spot/Backfill over Culvert installs: MM 0.838, 0.879, 0.938

<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: \$12.00/lcy x 50 lcy = \$600.00
 Processing: \$0.90/lcy x 50 lcy = \$45.00
 Compaction: \$1.34/lcy x 50 lcy = \$67.00
 Basic Rock Haul cost: \$0.74/lcy x 50 lcy = \$37.00
 Rock Haul -15% grades: \$1.10/lcy-mi x 50 lcy x 0.89 mi= \$48.84
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 50 lcy x 4.00 mi= \$98.00
 Basic Water Haul cost: \$0.60/lcy x 50 lcy = \$30.00
 Water Haul -15% grades: \$0.14/lcy-mi x 50 lcy x 0.89 mi= \$6.22
 Water Haul St&Co Roads: \$0.08/lcy-mi x 50 lcy x 1.00 mi= \$4.00

Commercial Quarry Name: ROLFE Quarry: Base

Comment: Spot/Leveling Rock MM 0.879

<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>
									20 lcy

Rock Volume = 20 lcy
 Purchase Price / Royalty: \$12.00/lcy x 20 lcy = \$240.00
 Processing: \$0.90/lcy x 20 lcy = \$18.00
 Compaction: \$1.34/lcy x 20 lcy = \$26.80
 Basic Rock Haul cost: \$0.74/lcy x 20 lcy = \$14.80
 Rock Haul -15% grades: \$1.10/lcy-mi x 20 lcy x 0.88 mi= \$19.34
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 20 lcy x 4.00 mi= \$39.20
 Basic Water Haul cost: \$0.60/lcy x 20 lcy = \$12.00
 Water Haul -15% grades: \$0.14/lcy-mi x 20 lcy x 0.88 mi= \$2.46
 Water Haul St&Co Roads: \$0.08/lcy-mi x 20 lcy x 1.00 mi= \$1.60

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: Junction 1.180

<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>
									20 lcy

Rock Volume = 20 lcy
 Purchase Price / Royalty: \$12.00/lcy x 20 lcy = \$240.00
 Processing: \$0.90/lcy x 20 lcy = \$18.00
 Compaction: \$1.34/lcy x 20 lcy = \$26.80
 Basic Rock Haul cost: \$0.74/lcy x 20 lcy = \$14.80
 Rock Haul -15% grades: \$1.10/lcy-mi x 20 lcy x 1.18 mi= \$25.96
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 20 lcy x 4.00 mi= \$39.20
 Basic Water Haul cost: \$0.60/lcy x 20 lcy = \$12.00
 Water Haul -15% grades: \$0.14/lcy-mi x 20 lcy x 1.18 mi= \$3.30
 Water Haul St&Co Roads: \$0.08/lcy-mi x 20 lcy x 1.00 mi= \$1.60

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: 1- 60' diameter landing MM 1.191

<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>
									105 lcy

Rock Volume = 105 lcy
 Purchase Price / Royalty: \$12.00/lcy x 105 lcy = \$1,260.00
 Processing: \$0.90/lcy x 105 lcy = \$94.50
 Compaction: \$1.34/lcy x 105 lcy = \$140.70
 Basic Rock Haul cost: \$0.74/lcy x 105 lcy = \$77.70

Rock Haul -15% grades: \$1.10/lcy-mi x 105 lcy x 1.19 mi= \$137.56	
Rock Haul St& Co Roads: \$0.49/lcy-mi x 105 lcy x 4.00 mi= \$205.80	
Basic Water Haul cost: \$0.60/lcy x 105 lcy = \$63.00	
Water Haul -15% grades: \$0.14/lcy-mi x 105 lcy x 1.19 mi= \$17.51	
Water Haul St&Co Roads: \$0.08/lcy-mi x 105 lcy x 1.00 mi= \$8.40	
Culvert Bedding Compaction	
Tamper - handheld 6 hr x \$43.09/hr = \$258.54	
	Subtotal: \$33,599.76
Section 1300 Geotextiles:	
	Subtotal: \$0.00
Section 1400 Slope Protection:	
	Subtotal: \$0.00
Section 1800 Soil Stabilization:	
Dry Method with Mulch: \$517.81/acre x 0.60 acres = \$310.68	
Includes Small Quantity Factor of 1.36	
+ Seed Cost: \$132.00/acre x 0.60 acres = \$79.20	
+ Fertilizer Cost: \$34.00/acre x 0.60 acres = \$20.40	
+ Mulch Cost: \$320.00/acre x 0.60 acres = \$192.00	
	Subtotal: \$602.28
Section 1900 Cattleguards:	
	Subtotal: \$0.00
Section 2100 Roadside Brushing:	
RoadSide Brushing Medium: \$576.60/acre x 2.90 acres = \$1,672.14	
	Subtotal: \$1,672.14
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 - 13.32% of total Costs = \$649.45	
Surfacing - 15.48% by rock volume = \$0.00	
	Subtotal: \$649.45
Quarry Development:	
Based on 15.48% of total rock volume	
	Subtotal: \$0.00
	Total: \$50,491.56

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Zumwalt CT Sale Date: 10/2015

Road Number: Spur 1A Road Name:

Road Construction: 0.10 mi 16 ft Subgrade 0 ft ditch 6/30/2014

200 Clearing and Grubbing: 0.5 acres	\$1,775.03
300 Excavation: 970 cy	\$2,606.40
Haul < 500 ft: 970 sta-yds	
400 Drainage:	\$852.50
Culvert: 0 lf	
DownSpout: 50 lf	
PolyPipe: 0 lf	
500 Renovation:	\$0.00
700-1200 Surfacing:	\$13,039.56
Quarry Name: ROLFE Quarry:surface 219 lcy	
Quarry Name: ROLFE Quarry: Base 473 lcy	
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.2 acres	\$200.76
Includes Small Quantity Factor of 1.36	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing: 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. \$240.68 Surf. \$0.00.....	\$240.68
Quarry Development:	\$0.00

Total: \$18,714.94

Notes:

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

Road Construction Worksheet

Road Number: Spur 1A Road Name:

Section 200 Clearing and Grubbing:

Clearing - Medium (Clearing): Adjustment Factor (1.67)

16-30% (Avg Side Slopes): Adjustment Factor (0.1)

Scatter (Slash): Adjustment Factor (0.94)

20-40' (Avg Clearing Widths): Adjustment Factor (0.1)

Total Adjustment Factor: $1.67 + 0.1 + 0.94 + 0.1 = 2.81$

Base Cost/Acre: \$1,263.37 x Adjustment Factor: 2.81 x Total Acres: 0.50 = \$1,775.03

Subtotal: \$1,775.03

Section 300 Excavation:

Excavation - Common: $\$1.93/\text{cy} \times 970 \text{ cy} = \$1,872.10$

Embankment Placement & Compaction 306.f - Common: $\$0.26/\text{cy} \times 970 \text{ cy} = \252.20

Subgrade Compaction: 6 Sta/hr $\$22.42/\text{sta.} \times 5.1 \text{ sta} = \114.57

Slope Rounding: $\$0.29/\text{lf} \times 511 \text{ lf} = \148.19

End Hauling - 100 to 500 ft: $\$0.15/\text{sta-yd} \times 970 \text{ sta-yd} = \145.50

Blading with ditch: $\$14.45/\text{station} \times 5.11 \text{ stations} = \73.84

Subtotal: \$2,606.40

Section 400 Drainage:

Full Round - Poly Sta. 0+14 18 inch 50 lf x $\$17.05/\text{lf} = \852.50

Subtotal: \$852.50

Section 500 Renovation:

Subtotal: \$0.00

Section 700-1200 Surfacing:

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: Sta. 0+00 - 5+11

<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>
									105 lcy

Rock Volume = 105 lcy

Purchase Price / Royalty: $\$12.50/\text{lcy} \times 105 \text{ lcy} = \$1,312.50$

Processing: $\$0.90/\text{lcy} \times 105 \text{ lcy} = \94.50

Compaction: $\$1.34/\text{lcy} \times 105 \text{ lcy} = \140.70

Basic Rock Haul cost: $\$0.74/\text{lcy} \times 105 \text{ lcy} = \77.70

Rock Haul -15% grades: $\$1.10/\text{lcy-mi} \times 105 \text{ lcy} \times 0.86 \text{ mi} = \99.45

Rock Haul St& Co Roads: $\$0.49/\text{lcy-mi} \times 105 \text{ lcy} \times 4.00 \text{ mi} = \205.80

Basic Water Haul cost: $\$0.60/\text{lcy} \times 105 \text{ lcy} = \63.00

Water Haul -15% grades: $\$0.14/\text{lcy-mi} \times 105 \text{ lcy} \times 0.86 \text{ mi} = \12.66

Water Haul St&Co Roads: $\$0.08/\text{lcy-mi} \times 105 \text{ lcy} \times 1.00 \text{ mi} = \8.40

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: Junction Sta. 0+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>
									10 lcy

Rock Volume = 10 lcy

Purchase Price / Royalty: $\$12.50/\text{lcy} \times 10 \text{ lcy} = \125.00

Processing: $\$0.90/\text{lcy} \times 10 \text{ lcy} = \9.00

Compaction: $\$1.34/\text{lcy} \times 10 \text{ lcy} = \13.40

Basic Rock Haul cost: $\$0.74/\text{lcy} \times 10 \text{ lcy} = \7.40

Rock Haul -15% grades: $\$1.10/\text{lcy-mi} \times 10 \text{ lcy} \times 0.81 \text{ mi} = \8.94

Rock Haul St& Co Roads: $\$0.49/\text{lcy-mi} \times 10 \text{ lcy} \times 4.00 \text{ mi} = \19.60

Basic Water Haul cost: $\$0.60/\text{lcy} \times 10 \text{ lcy} = \6.00

Water Haul -15% grades: $\$0.14/\text{lcy-mi} \times 10 \text{ lcy} \times 0.81 \text{ mi} = \1.14

Water Haul St&Co Roads: $\$0.08/\text{lcy-mi} \times 10 \text{ lcy} \times 1.00 \text{ mi} = \0.80

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: 2- 60' diameter landing Sta. 5+11

<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>
									104 lcy

Rock Volume = 104 lcy
 Purchase Price / Royalty: \$12.50/lcy x 104 lcy = \$1,300.00
 Processing: \$0.90/lcy x 104 lcy = \$93.60
 Compaction: \$1.34/lcy x 104 lcy = \$139.36
 Basic Rock Haul cost: \$0.74/lcy x 104 lcy = \$76.96
 Rock Haul -15% grades: \$1.10/lcy-mi x 104 lcy x 0.86 mi= \$98.50
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 104 lcy x 4.00 mi= \$203.84
 Basic Water Haul cost: \$0.60/lcy x 104 lcy = \$62.40
 Water Haul -15% grades: \$0.14/lcy-mi x 104 lcy x 0.86 mi= \$12.54
 Water Haul St&Co Roads: \$0.08/lcy-mi x 104 lcy x 1.00 mi= \$8.32

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: Sta. 0+00 - 5+11

<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>
									243 lcy

Rock Volume = 243 lcy
 Purchase Price / Royalty: \$12.00/lcy x 243 lcy = \$2,916.00
 Processing: \$0.90/lcy x 243 lcy = \$218.70
 Compaction: \$1.34/lcy x 243 lcy = \$325.62
 Basic Rock Haul cost: \$0.74/lcy x 243 lcy = \$179.82
 Rock Haul -15% grades: \$1.10/lcy-mi x 243 lcy x 0.86 mi= \$230.15
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 243 lcy x 4.00 mi= \$476.28
 Basic Water Haul cost: \$0.60/lcy x 243 lcy = \$145.80
 Water Haul -15% grades: \$0.14/lcy-mi x 243 lcy x 0.86 mi= \$29.29
 Water Haul St&Co Roads: \$0.08/lcy-mi x 243 lcy x 1.00 mi= \$19.44

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: Junction Sta. 0+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>
									20 lcy

Rock Volume = 20 lcy
 Purchase Price / Royalty: \$12.00/lcy x 20 lcy = \$240.00
 Processing: \$0.90/lcy x 20 lcy = \$18.00
 Compaction: \$1.34/lcy x 20 lcy = \$26.80
 Basic Rock Haul cost: \$0.74/lcy x 20 lcy = \$14.80
 Rock Haul -15% grades: \$1.10/lcy-mi x 20 lcy x 0.81 mi= \$17.89
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 20 lcy x 4.00 mi= \$39.20
 Basic Water Haul cost: \$0.60/lcy x 20 lcy = \$12.00
 Water Haul -15% grades: \$0.14/lcy-mi x 20 lcy x 0.81 mi= \$2.28
 Water Haul St&Co Roads: \$0.08/lcy-mi x 20 lcy x 1.00 mi= \$1.60

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: 2- 60'diameter landings

<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>
									210 lcy

Rock Volume = 210 lcy
 Purchase Price / Royalty: \$12.00/lcy x 210 lcy = \$2,520.00
 Processing: \$0.90/lcy x 210 lcy = \$189.00
 Compaction: \$1.34/lcy x 210 lcy = \$281.40
 Basic Rock Haul cost: \$0.74/lcy x 210 lcy = \$155.40
 Rock Haul -15% grades: \$1.10/lcy-mi x 210 lcy x 0.86 mi= \$198.89
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 210 lcy x 4.00 mi= \$411.60
 Basic Water Haul cost: \$0.60/lcy x 210 lcy = \$126.00
 Water Haul -15% grades: \$0.14/lcy-mi x 210 lcy x 0.86 mi= \$25.31
 Water Haul St&Co Roads: \$0.08/lcy-mi x 210 lcy x 1.00 mi= \$16.80

Subtotal: \$13,039.56

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Section 1800 Soil Stabilization:

Comment: Dry Method all disturbed soil.

Dry Method with Mulch: $\$517.81/\text{acre} \times 0.20 \text{ acres} = \103.56

Includes Small Quantity Factor of 1.36

+ Seed Cost: $\$132.00/\text{acre} \times 0.20 \text{ acres} = \26.40

+ Fertilizer Cost: $\$34.00/\text{acre} \times 0.20 \text{ acres} = \6.80

+ Mulch Cost: $\$320.00/\text{acre} \times 0.20 \text{ acres} = \64.00

Subtotal: \$200.76

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 - 4.94% of total Costs = \$240.68

Surfacing - 6.06% by rock volume = \$0.00

Subtotal: \$240.68

Quarry Development:

Based on 6.06% of total rock volume

Subtotal: \$0.00

Total: \$18,714.94

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Zumwalt CT Sale Date: 10/2015

Road Number: Spur 1B Road Name:

Road Construction: 0.04 mi 16 ft Subgrade 2 ft ditch 6/30/2014

200 Clearing and Grubbing: 0.2 acres	\$568.01
300 Excavation: 134 cy	\$443.32
Haul < 500 ft: 134 sta-yds	
400 Drainage:	\$1,619.28
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 36 lf	
500 Renovation:	\$0.00
700-1200 Surfacing:	\$6,504.30
Quarry Name: ROLFE Quarry:surface 102 lcy	
Quarry Name: ROLFE Quarry: Base 219 lcy	
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.1 acres	\$100.38
Includes Small Quantity Factor of 1.36	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing: 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. \$120.32 Surf. \$0.00.....	\$120.32
Quarry Development:	\$0.00

Total: \$9,355.62

Notes:

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

Road Construction Worksheet

Road Number: Spur 1B Road Name:

Section 200 Clearing and Grubbing:

Clearing - Medium (Clearing): Adjustment Factor (1.67)

16-30% (Avg Side Slopes): Adjustment Factor (0.1)

Scatter (Slash): Adjustment Factor (0.94)

20-40' (Avg Clearing Widths): Adjustment Factor (0.1)

Total Adjustment Factor: $1.67 + 0.1 + 0.94 + 0.1 = 2.81$

Base Cost/Acre: \$1,263.37 x Adjustment Factor: 2.81 x Total Acres: 0.16 = \$568.01

Subtotal: \$568.01

Section 300 Excavation:

Excavation - Common: $\$1.93/\text{cy} \times 134 \text{ cy} = \258.62

Embankment Placement & Compaction 306.f - Common: $\$0.26/\text{cy} \times 134 \text{ cy} = \34.84

Subgrade Compaction: 6 Sta/hr $\$22.42/\text{sta.} \times 2.0 \text{ sta} = \44.17

Slope Rounding: $\$0.29/\text{lf} \times 197 \text{ lf} = \57.13

End Hauling - 100 to 500 ft: $\$0.15/\text{sta-yd} \times 134 \text{ sta-yd} = \20.10

Blading with ditch: $\$14.45/\text{station} \times 1.97 \text{ stations} = \28.47

Subtotal: \$443.32

Section 400 Drainage:

Poly Pipe Sta. 0+21 18 inch 36 lf x $\$44.98/\text{lf} = \$1,619.28$

Subtotal: \$1,619.28

Section 500 Renovation:

Subtotal: \$0.00

Section 700-1200 Surfacing:

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: Sta. 0+00 - 1+97

Length	TopW	BotW	Depth	CWid	#Tos	Width	F.W.L	Taper	Other
									40 lcy

Rock Volume = 40 lcy

Purchase Price / Royalty: $\$12.50/\text{lcy} \times 40 \text{ lcy} = \500.00

Processing: $\$0.90/\text{lcy} \times 40 \text{ lcy} = \36.00

Compaction: $\$1.34/\text{lcy} \times 40 \text{ lcy} = \53.60

Basic Rock Haul cost: $\$0.74/\text{lcy} \times 40 \text{ lcy} = \29.60

Rock Haul +15% grades: $\$2.21/\text{lcy-mi} \times 40 \text{ lcy} \times 0.27 \text{ mi} = \23.96

Rock Haul -15% grades: $\$1.10/\text{lcy-mi} \times 40 \text{ lcy} \times 1.45 \text{ mi} = \63.93

Rock Haul St& Co Roads: $\$0.49/\text{lcy-mi} \times 40 \text{ lcy} \times 4.00 \text{ mi} = \78.40

Basic Water Haul cost: $\$0.60/\text{lcy} \times 40 \text{ lcy} = \24.00

Water Haul +15% grades: $\$0.28/\text{lcy-mi} \times 40 \text{ lcy} \times 0.27 \text{ mi} = \3.04

Water Haul -15% grades: $\$0.14/\text{lcy-mi} \times 40 \text{ lcy} \times 1.45 \text{ mi} = \8.14

Water Haul St&Co Roads: $\$0.08/\text{lcy-mi} \times 40 \text{ lcy} \times 1.00 \text{ mi} = \3.20

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: Junction Sta. 0+00

Length	TopW	BotW	Depth	CWid	#Tos	Width	F.W.L	Taper	Other
									10 lcy

Rock Volume = 10 lcy

Purchase Price / Royalty: $\$12.50/\text{lcy} \times 10 \text{ lcy} = \125.00

Processing: $\$0.90/\text{lcy} \times 10 \text{ lcy} = \9.00

Compaction: $\$1.34/\text{lcy} \times 10 \text{ lcy} = \13.40

Basic Rock Haul cost: $\$0.74/\text{lcy} \times 10 \text{ lcy} = \7.40

Rock Haul +15% grades: $\$2.21/\text{lcy-mi} \times 10 \text{ lcy} \times 0.27 \text{ mi} = \5.99

Rock Haul -15% grades: $\$1.10/\text{lcy-mi} \times 10 \text{ lcy} \times 1.42 \text{ mi} = \15.58

Rock Haul St& Co Roads: $\$0.49/\text{lcy-mi} \times 10 \text{ lcy} \times 4.00 \text{ mi} = \19.60

Basic Water Haul cost: $\$0.60/\text{lcy} \times 10 \text{ lcy} = \6.00

Water Haul +15% grades: $\$0.28/\text{lcy-mi} \times 10 \text{ lcy} \times 0.27 \text{ mi} = \0.76

Water Haul -15% grades: $\$0.14/\text{lcy-mi} \times 10 \text{ lcy} \times 1.42 \text{ mi} = \1.98

Water Haul St&Co Roads: \$0.08/lcy-mi x 10 lcy x 1.00 mi= \$0.80

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: 1-60' diameter landing Sta. 1+97

<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>
									52 lcy

Rock Volume = 52 lcy

Purchase Price / Royalty: \$12.50/lcy x 52 lcy = \$650.00

Processing: \$0.90/lcy x 52 lcy = \$46.80

Compaction: \$1.34/lcy x 52 lcy = \$69.68

Basic Rock Haul cost: \$0.74/lcy x 52 lcy = \$38.48

Rock Haul +15% grades: \$2.21/lcy-mi x 52 lcy x 0.27 mi= \$31.14

Rock Haul -15% grades: \$1.10/lcy-mi x 52 lcy x 1.47 mi= \$84.20

Rock Haul St& Co Roads: \$0.49/lcy-mi x 52 lcy x 4.00 mi= \$101.92

Basic Water Haul cost: \$0.60/lcy x 52 lcy = \$31.20

Water Haul +15% grades: \$0.28/lcy-mi x 52 lcy x 0.27 mi= \$3.95

Water Haul -15% grades: \$0.14/lcy-mi x 52 lcy x 1.47 mi= \$10.72

Water Haul St&Co Roads: \$0.08/lcy-mi x 52 lcy x 1.00 mi= \$4.16

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: Sta. 0+00 - 1+97

<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>
									94 lcy

Rock Volume = 94 lcy

Purchase Price / Royalty: \$12.00/lcy x 94 lcy = \$1,128.00

Processing: \$0.90/lcy x 94 lcy = \$84.60

Compaction: \$1.34/lcy x 94 lcy = \$125.96

Basic Rock Haul cost: \$0.74/lcy x 94 lcy = \$69.56

Rock Haul +15% grades: \$2.21/lcy-mi x 94 lcy x 0.27 mi= \$56.30

Rock Haul -15% grades: \$1.10/lcy-mi x 94 lcy x 1.45 mi= \$150.24

Rock Haul St& Co Roads: \$0.49/lcy-mi x 94 lcy x 4.00 mi= \$184.24

Basic Water Haul cost: \$0.60/lcy x 94 lcy = \$56.40

Water Haul +15% grades: \$0.28/lcy-mi x 94 lcy x 0.27 mi= \$7.13

Water Haul -15% grades: \$0.14/lcy-mi x 94 lcy x 1.45 mi= \$19.12

Water Haul St&Co Roads: \$0.08/lcy-mi x 94 lcy x 1.00 mi= \$7.52

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: Junction Sta. 0+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>
									20 lcy

Rock Volume = 20 lcy

Purchase Price / Royalty: \$12.00/lcy x 20 lcy = \$240.00

Processing: \$0.90/lcy x 20 lcy = \$18.00

Compaction: \$1.34/lcy x 20 lcy = \$26.80

Basic Rock Haul cost: \$0.74/lcy x 20 lcy = \$14.80

Rock Haul +15% grades: \$2.21/lcy-mi x 20 lcy x 0.27 mi= \$11.98

Rock Haul -15% grades: \$1.10/lcy-mi x 20 lcy x 1.42 mi= \$31.15

Rock Haul St& Co Roads: \$0.49/lcy-mi x 20 lcy x 4.00 mi= \$39.20

Basic Water Haul cost: \$0.60/lcy x 20 lcy = \$12.00

Water Haul +15% grades: \$0.28/lcy-mi x 20 lcy x 0.27 mi= \$1.52

Water Haul -15% grades: \$0.14/lcy-mi x 20 lcy x 1.42 mi= \$3.96

Water Haul St&Co Roads: \$0.08/lcy-mi x 20 lcy x 1.00 mi= \$1.60

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: 1-60'diameter landing Sta. 1+97

<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>
									105 lcy

Rock Volume = 105 lcy

Purchase Price / Royalty: \$12.00/lcy x 105 lcy = \$1,260.00

Processing: \$0.90/lcy x 105 lcy = \$94.50

Compaction: \$1.34/lcy x 105 lcy = \$140.70

Basic Rock Haul cost: \$0.74/lcy x 105 lcy = \$77.70

Rock Haul +15% grades: \$2.21/lcy-mi x 105 lcy x 0.27 mi= \$62.89

Rock Haul -15% grades: \$1.10/lcy-mi x 105 lcy x 1.47 mi= \$170.02

Road Number: Spur 1B Continued

Rock Haul St& Co Roads: \$0.49/lcy-mi x 105 lcy x 4.00 mi= \$205.80	
Basic Water Haul cost: \$0.60/lcy x 105 lcy = \$63.00	
Water Haul +15% grades: \$0.28/lcy-mi x 105 lcy x 0.27 mi= \$7.97	
Water Haul -15% grades: \$0.14/lcy-mi x 105 lcy x 1.47 mi= \$21.64	
Water Haul St&Co Roads: \$0.08/lcy-mi x 105 lcy x 1.00 mi= \$8.40	
	Subtotal: \$6,504.30
Section 1300 Geotextiles:	
	Subtotal: \$0.00
Section 1400 Slope Protection:	
	Subtotal: \$0.00
Section 1800 Soil Stabilization:	
Comment: Dry Method all disturbed soil.	
Dry Method with Mulch: \$517.81/acre x 0.10 acres = \$51.78	
Includes Small Quantity Factor of 1.36	
+ Seed Cost: \$132.00/acre x 0.10 acres = \$13.20	
+ Fertilizer Cost: \$34.00/acre x 0.10 acres = \$3.40	
+ Mulch Cost: \$320.00/acre x 0.10 acres = \$32.00	
	Subtotal: \$100.38
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 - 2.47% of total Costs = \$120.32	
Surfacing - 2.81% by rock volume = \$0.00	
	Subtotal: \$120.32
Quarry Development:	
Based on 2.81% of total rock volume	
	Subtotal: \$0.00
	Total: \$9,355.62

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Zumwalt CT Sale Date: 10/2015

Road Number: Spur 1C Road Name:

Road Construction: 0.05 mi 16 ft Subgrade 2 ft ditch 6/30/2014

200 Clearing and Grubbing: 0.3 acres	\$923.02
300 Excavation: 513 cy	\$1,360.48
Haul < 500 ft: 513 sta-yds	
400 Drainage:	\$1,799.20
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 40 lf	
500 Renovation:	\$0.00
700-1200 Surfacing:	\$9,842.79
Quarry Name: ROLFE Quarry:surface 164 lcy	
Quarry Name: ROLFE Quarry: Base 346 lcy	
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.1 acres	\$100.38
Includes Small Quantity Factor of 1.36	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing: 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. \$182.73 Surf. \$0.00.....	\$182.73
Quarry Development:	\$0.00

Total: \$14,208.61

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities shown are loose cubic yards.

Road Construction Worksheet

Road Number: Spur 1C Road Name:

Section 200 Clearing and Grubbing:

Clearing - Medium (Clearing): Adjustment Factor (1.67)

16-30% (Avg Side Slopes): Adjustment Factor (0.1)

Scatter (Slash): Adjustment Factor (0.94)

20-40' (Avg Clearing Widths): Adjustment Factor (0.1)

Total Adjustment Factor: $1.67 + 0.1 + 0.94 + 0.1 = 2.81$

Base Cost/Acre: \$1,263.37 x Adjustment Factor: 2.81 x Total Acres: 0.26 = \$923.02

Subtotal: \$923.02

Section 300 Excavation:

Excavation - Common: $\$1.93/\text{cy} \times 513 \text{ cy} = \990.09

Embankment Placement & Compaction 306.f - Common: $\$0.26/\text{cy} \times 513 \text{ cy} = \133.38

Subgrade Compaction: 6 Sta/hr $\$22.42/\text{sta.} \times 2.4 \text{ sta} = \54.48

Slope Rounding: $\$0.29/\text{lf} \times 243 \text{ lf} = \70.47

End Hauling - 100 to 500 ft: $\$0.15/\text{sta-yd} \times 513 \text{ sta-yd} = \76.95

Blading with ditch: $\$14.45/\text{station} \times 2.43 \text{ stations} = \35.11

Subtotal: \$1,360.48

Section 400 Drainage:

Poly Pipe Sta. 0+41 18 inch 40 lf x $\$44.98/\text{lf} = \$1,799.20$

Subtotal: \$1,799.20

Section 500 Renovation:

Subtotal: \$0.00

Section 700-1200 Surfacing:

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: Sta. 0+00 - 2+43

Length	TopW	BotW	Depth	CWid	#Tos	Width	F.W.L	Taper	Other
									50 lcy

Rock Volume = 50 lcy

Purchase Price / Royalty: $\$12.50/\text{lcy} \times 50 \text{ lcy} = \625.00

Processing: $\$0.90/\text{lcy} \times 50 \text{ lcy} = \45.00

Compaction: $\$1.34/\text{lcy} \times 50 \text{ lcy} = \67.00

Basic Rock Haul cost: $\$0.74/\text{lcy} \times 50 \text{ lcy} = \37.00

Rock Haul +15% grades: $\$2.21/\text{lcy-mi} \times 50 \text{ lcy} \times 0.03 \text{ mi} = \2.76

Rock Haul -15% grades: $\$1.10/\text{lcy-mi} \times 50 \text{ lcy} \times 1.18 \text{ mi} = \64.68

Rock Haul St& Co Roads: $\$0.49/\text{lcy-mi} \times 50 \text{ lcy} \times 4.00 \text{ mi} = \98.00

Basic Water Haul cost: $\$0.60/\text{lcy} \times 50 \text{ lcy} = \30.00

Water Haul +15% grades: $\$0.28/\text{lcy-mi} \times 50 \text{ lcy} \times 0.03 \text{ mi} = \0.35

Water Haul -15% grades: $\$0.14/\text{lcy-mi} \times 50 \text{ lcy} \times 1.18 \text{ mi} = \8.23

Water Haul St&Co Roads: $\$0.08/\text{lcy-mi} \times 50 \text{ lcy} \times 1.00 \text{ mi} = \4.00

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: Junction Sta. 0+00

Length	TopW	BotW	Depth	CWid	#Tos	Width	F.W.L	Taper	Other
									10 lcy

Rock Volume = 10 lcy

Purchase Price / Royalty: $\$12.50/\text{lcy} \times 10 \text{ lcy} = \125.00

Processing: $\$0.90/\text{lcy} \times 10 \text{ lcy} = \9.00

Compaction: $\$1.34/\text{lcy} \times 10 \text{ lcy} = \13.40

Basic Rock Haul cost: $\$0.74/\text{lcy} \times 10 \text{ lcy} = \7.40

Rock Haul +15% grades: $\$2.21/\text{lcy-mi} \times 10 \text{ lcy} \times 0.03 \text{ mi} = \0.55

Rock Haul -15% grades: $\$1.10/\text{lcy-mi} \times 10 \text{ lcy} \times 1.15 \text{ mi} = \12.68

Rock Haul St& Co Roads: $\$0.49/\text{lcy-mi} \times 10 \text{ lcy} \times 4.00 \text{ mi} = \19.60

Basic Water Haul cost: $\$0.60/\text{lcy} \times 10 \text{ lcy} = \6.00

Water Haul +15% grades: $\$0.28/\text{lcy-mi} \times 10 \text{ lcy} \times 0.03 \text{ mi} = \0.07

Water Haul -15% grades: $\$0.14/\text{lcy-mi} \times 10 \text{ lcy} \times 1.15 \text{ mi} = \1.61

Water Haul St&Co Roads: \$0.08/lcy-mi x 10 lcy x 1.00 mi= \$0.80

Commercial Quarry Name: ROLFE Quarry:surface

Comment: 4" Lift Cap: 2-60'diameter landings Sta. 1+50, 2+43

<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>
									104 lcy

Rock Volume = 104 lcy

Purchase Price / Royalty: \$12.50/lcy x 104 lcy = \$1,300.00

Processing: \$0.90/lcy x 104 lcy = \$93.60

Compaction: \$1.34/lcy x 104 lcy = \$139.36

Basic Rock Haul cost: \$0.74/lcy x 104 lcy = \$76.96

Rock Haul +15% grades: \$2.21/lcy-mi x 104 lcy x 0.03 mi= \$5.75

Rock Haul -15% grades: \$1.10/lcy-mi x 104 lcy x 1.18 mi= \$134.53

Rock Haul St& Co Roads: \$0.49/lcy-mi x 104 lcy x 4.00 mi= \$203.84

Basic Water Haul cost: \$0.60/lcy x 104 lcy = \$62.40

Water Haul +15% grades: \$0.28/lcy-mi x 104 lcy x 0.03 mi= \$0.73

Water Haul -15% grades: \$0.14/lcy-mi x 104 lcy x 1.18 mi= \$17.12

Water Haul St&Co Roads: \$0.08/lcy-mi x 104 lcy x 1.00 mi= \$8.32

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: Sta. 0+00 - 2+43

<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>
									116 lcy

Rock Volume = 116 lcy

Purchase Price / Royalty: \$12.00/lcy x 116 lcy = \$1,392.00

Processing: \$0.90/lcy x 116 lcy = \$104.40

Compaction: \$1.34/lcy x 116 lcy = \$155.44

Basic Rock Haul cost: \$0.74/lcy x 116 lcy = \$85.84

Rock Haul +15% grades: \$2.21/lcy-mi x 116 lcy x 0.03 mi= \$6.41

Rock Haul -15% grades: \$1.10/lcy-mi x 116 lcy x 1.18 mi= \$150.06

Rock Haul St& Co Roads: \$0.49/lcy-mi x 116 lcy x 4.00 mi= \$227.36

Basic Water Haul cost: \$0.60/lcy x 116 lcy = \$69.60

Water Haul +15% grades: \$0.28/lcy-mi x 116 lcy x 0.03 mi= \$0.81

Water Haul -15% grades: \$0.14/lcy-mi x 116 lcy x 1.18 mi= \$19.10

Water Haul St&Co Roads: \$0.08/lcy-mi x 116 lcy x 1.00 mi= \$9.28

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: Junction Sta. 0+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>
									20 lcy

Rock Volume = 20 lcy

Purchase Price / Royalty: \$12.00/lcy x 20 lcy = \$240.00

Processing: \$0.90/lcy x 20 lcy = \$18.00

Compaction: \$1.34/lcy x 20 lcy = \$26.80

Basic Rock Haul cost: \$0.74/lcy x 20 lcy = \$14.80

Rock Haul +15% grades: \$2.21/lcy-mi x 20 lcy x 0.03 mi= \$1.11

Rock Haul -15% grades: \$1.10/lcy-mi x 20 lcy x 1.15 mi= \$25.37

Rock Haul St& Co Roads: \$0.49/lcy-mi x 20 lcy x 4.00 mi= \$39.20

Basic Water Haul cost: \$0.60/lcy x 20 lcy = \$12.00

Water Haul +15% grades: \$0.28/lcy-mi x 20 lcy x 0.03 mi= \$0.14

Water Haul -15% grades: \$0.14/lcy-mi x 20 lcy x 1.15 mi= \$3.23

Water Haul St&Co Roads: \$0.08/lcy-mi x 20 lcy x 1.00 mi= \$1.60

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: 2-60' diameter landings Sta. 1+50, 2+43

<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>
									210 lcy

Rock Volume = 210 lcy

Purchase Price / Royalty: \$12.00/lcy x 210 lcy = \$2,520.00

Processing: \$0.90/lcy x 210 lcy = \$189.00

Compaction: \$1.34/lcy x 210 lcy = \$281.40

Basic Rock Haul cost: \$0.74/lcy x 210 lcy = \$155.40

Rock Haul +15% grades: \$2.21/lcy-mi x 210 lcy x 0.03 mi= \$11.60

Rock Haul -15% grades: \$1.10/lcy-mi x 210 lcy x 1.18 mi= \$271.66

Road Number: Spur 1C Continued

Rock Haul St& Co Roads: \$0.49/lcy-mi x 210 lcy x 4.00 mi= \$411.60	
Basic Water Haul cost: \$0.60/lcy x 210 lcy = \$126.00	
Water Haul +15% grades: \$0.28/lcy-mi x 210 lcy x 0.03 mi= \$1.47	
Water Haul -15% grades: \$0.14/lcy-mi x 210 lcy x 1.18 mi= \$34.57	
Water Haul St&Co Roads: \$0.08/lcy-mi x 210 lcy x 1.00 mi= \$16.80	
	Subtotal: \$9,842.79
Section 1300 Geotextiles:	
	Subtotal: \$0.00
Section 1400 Slope Protection:	
	Subtotal: \$0.00
Section 1800 Soil Stabilization:	
Comment: Dry Method all disturbed soils.	
Dry Method with Mulch: \$517.81/acre x 0.10 acres = \$51.78	
Includes Small Quantity Factor of 1.36	
+ Seed Cost: \$132.00/acre x 0.10 acres = \$13.20	
+ Fertilizer Cost: \$34.00/acre x 0.10 acres = \$3.40	
+ Mulch Cost: \$320.00/acre x 0.10 acres = \$32.00	
	Subtotal: \$100.38
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 - 3.75% of total Costs = \$182.73	
Surfacing - 4.46% by rock volume = \$0.00	
	Subtotal: \$182.73
Quarry Development:	
Based on 4.46% of total rock volume	
	Subtotal: \$0.00
	Total: \$14,208.61

ROAD CONSTRUCTION SUMMARY

T.S. Contract Name: Zumwalt CT Sale Date: 10/2015

Road Number: Spur 1D Road Name:

Road Construction: 0.04 mi 16 ft Subgrade 0 ft ditch 6/30/2014

200 Clearing and Grubbing: 0.1 acres	\$445.09
300 Excavation: 115 cy	\$410.72
Haul < 500 ft: 115 sta-yds	
400 Drainage:	\$0.00
Culvert: 0 lf	
DownSpout: 0 lf	
PolyPipe: 0 lf	
500 Renovation:	\$0.00
700-1200 Surfacing:	\$6,530.99
Quarry Name: ROLFE Quarry:surface 106 lcy	
Quarry Name: ROLFE Quarry: Base 228 lcy	
1300 Geotextiles:	\$0.00
1400 Slope Protection:	\$0.00
1800 Soil Stabilization: 0.1 acres	\$100.38
Includes Small Quantity Factor of 1.36	
1900 Cattleguards:	\$0.00
2100 RoadSide Brushing: 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. \$97.54 Surf. \$0.00.....	\$97.54
Quarry Development:	\$0.00

Total: \$7,584.72

Notes:

Quantities shown are estimates only and not pay items.

Surfacing Quantities shown are loose cubic yards.

[illegible]

Rock Volume = 52 lcy
 Purchase Price / Royalty: \$12.50/lcy x 52 lcy = \$650.00
 Processing: \$0.90/lcy x 52 lcy = \$46.80
 Compaction: \$1.34/lcy x 52 lcy = \$69.68
 Basic Rock Haul cost: \$0.74/lcy x 52 lcy = \$38.48
 Rock Haul -15% grades: \$1.10/lcy-mi x 52 lcy x 1.44 mi= \$82.60
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 52 lcy x 4.00 mi= \$101.92
 Basic Water Haul cost: \$0.60/lcy x 52 lcy = \$31.20
 Water Haul -15% grades: \$0.14/lcy-mi x 52 lcy x 1.44 mi= \$10.51
 Water Haul St&Co Roads: \$0.08/lcy-mi x 52 lcy x 1.00 mi= \$4.16

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: Sta. 0+00 - 2+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>
									103 lcy

Rock Volume = 103 lcy
 Purchase Price / Royalty: \$12.00/lcy x 103 lcy = \$1,236.00
 Processing: \$0.90/lcy x 103 lcy = \$92.70
 Compaction: \$1.34/lcy x 103 lcy = \$138.02
 Basic Rock Haul cost: \$0.74/lcy x 103 lcy = \$76.22
 Rock Haul -15% grades: \$1.10/lcy-mi x 103 lcy x 1.42 mi= \$161.34
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 103 lcy x 4.00 mi= \$201.88
 Basic Water Haul cost: \$0.60/lcy x 103 lcy = \$61.80
 Water Haul -15% grades: \$0.14/lcy-mi x 103 lcy x 1.42 mi= \$20.53
 Water Haul St&Co Roads: \$0.08/lcy-mi x 103 lcy x 1.00 mi= \$8.24

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: Junction Sta. 0+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>
									20 lcy

Rock Volume = 20 lcy
 Purchase Price / Royalty: \$12.00/lcy x 20 lcy = \$240.00
 Processing: \$0.90/lcy x 20 lcy = \$18.00
 Compaction: \$1.34/lcy x 20 lcy = \$26.80
 Basic Rock Haul cost: \$0.74/lcy x 20 lcy = \$14.80
 Rock Haul -15% grades: \$1.10/lcy-mi x 20 lcy x 1.40 mi= \$30.89
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 20 lcy x 4.00 mi= \$39.20
 Basic Water Haul cost: \$0.60/lcy x 20 lcy = \$12.00
 Water Haul -15% grades: \$0.14/lcy-mi x 20 lcy x 1.40 mi= \$3.93
 Water Haul St&Co Roads: \$0.08/lcy-mi x 20 lcy x 1.00 mi= \$1.60

Commercial Quarry Name: ROLFE Quarry: Base

Comment: 8" Lift Base: 1-60'diameter landing

<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>
									105 lcy

Rock Volume = 105 lcy
 Purchase Price / Royalty: \$12.00/lcy x 105 lcy = \$1,260.00
 Processing: \$0.90/lcy x 105 lcy = \$94.50
 Compaction: \$1.34/lcy x 105 lcy = \$140.70
 Basic Rock Haul cost: \$0.74/lcy x 105 lcy = \$77.70
 Rock Haul -15% grades: \$1.10/lcy-mi x 105 lcy x 1.44 mi= \$166.78
 Rock Haul St& Co Roads: \$0.49/lcy-mi x 105 lcy x 4.00 mi= \$205.80
 Basic Water Haul cost: \$0.60/lcy x 105 lcy = \$63.00
 Water Haul -15% grades: \$0.14/lcy-mi x 105 lcy x 1.44 mi= \$21.23
 Water Haul St&Co Roads: \$0.08/lcy-mi x 105 lcy x 1.00 mi= \$8.40

Subtotal: \$6,530.99

Section 1300 Geotextiles:

Subtotal: \$0.00

Section 1400 Slope Protection:

Subtotal: \$0.00

Road Number: Spur 1D Continued

Section 1800 Soil Stabilization:

Comment: Dry Method all disturbed soils.

Dry Method with Mulch: $\$517.81/\text{acre} \times 0.10 \text{ acres} = \51.78

Includes Small Quantity Factor of 1.36

+ Seed Cost: $\$132.00/\text{acre} \times 0.10 \text{ acres} = \13.20

+ Fertilizer Cost: $\$34.00/\text{acre} \times 0.10 \text{ acres} = \3.40

+ Mulch Cost: $\$320.00/\text{acre} \times 0.10 \text{ acres} = \32.00

Subtotal: \$100.38

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 - 2.00% of total Costs = \$97.54

Surfacing - 2.92% by rock volume = \$0.00

Subtotal: \$97.54

Quarry Development:

Based on 2.92% of total rock volume

Subtotal: \$0.00

Total: \$7,584.72

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Mobilization Costs - Construction and Surfacing

T.S. Contract Name: Zumwalt CT Sale Date: 10/2015

Average Mobilization distance = 50 miles Factor = 1.00

Mobilization: Construction

Comment: Scraper cost is for Sheepsfoot Roller Cost

Hydro-Mulcher:	1 ea x (1.00 x \$65.00/ea + 3 mi x \$3.64/mi)=	\$75.92
Fire Equipment:	1 ea x (1.00 x \$65.00/ea + 3 mi x \$3.64/mi)=	\$75.92
Graders-all:	1 ea x (1.00 x \$483.00/ea + 3 mi x \$14.73/mi)=	\$527.19
Rollers & Comp:	1 ea x (1.00 x \$483.00/ea + 3 mi x \$26.90/mi)=	\$563.70
Scrapers > 10cy:	1 ea x (1.00 x \$861.00/ea + 3 mi x \$12.65/mi)=	\$898.95
Excavators:	1 ea x (1.00 x \$861.00/ea =	\$861.00
RTBackhoes 24/30:	1 ea x (1.00 x \$483.00/ea + 3 mi x \$5.01/mi)=	\$498.03
Tractors >= D8:	1 ea x (1.00 x \$861.00/ea + 3 mi x \$46.13/mi)=	\$999.39
Dump Truck<=10cy:	2 ea x (1.00 x \$113.00/ea + 3 mi x \$4.69/mi)=	\$254.14
Water Truck:	1 ea x (1.00 x \$107.00/ea + 3 mi x \$4.48/mi)=	\$120.44

Subtotal: \$4,874.68

Mobilization: Surfacing

Subtotal: \$0.00

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Summary of Construction Quantities

T.S. Contract Name: Zumwalt CT Sale Date: 10/2015

Road Number	Const	Improv	Renov	Decomm	Temp
28-11-18.0/a			11.04		
28-11-18.0/b			23.87		
28-11-18.0/c	11.72				
28-11-19.2			2.79		
28-12-13.0			26.19		
28-12-13.1			23.23		
28-12-13.2			35.64		
28-12-13.3			16.32		
28-12-13.4	8.29				
28-12-13.5	11.68				
28-12-13.6	19.44				
28-12-23.0			62.88		
Spur 1A	5.11				
Spur 1B	1.97				
Spur 1C	2.43				
Spur 1D	2.15				
Total Sta:	62.79		201.96		

200 Clearing and Grubbing	Clearing acres
28-11-18.0/a	0.0
28-11-18.0/b	0.2
28-11-18.0/c	0.8
28-11-19.2	0.2
28-12-13.0	0.2
28-12-13.1	0.1
28-12-13.2	0.8
28-12-13.3	0.1
28-12-13.4	0.7
28-12-13.5	1.0
28-12-13.6	1.5
28-12-23.0	0.8
Spur 1A	0.5
Spur 1B	0.2
Spur 1C	0.3
Spur 1D	0.1
Totals:	7.5

300 Excavation	Excav LCY.s	Haul sta-yds	Haul yd-mi
28-11-18.0/c	1,432	1,432	0
28-11-19.2	108	108	0
28-12-13.4	1,285	775	510
28-12-13.5	4,306	1,087	2,768
28-12-13.6	5,330	2,024	3,305
Spur 1A	970	970	0
Spur 1B	134	134	0
Spur 1C	513	513	0
Spur 1D	115	115	0
Totals:	14,193	7,158	6,583

Continuation of Construction Quantities

Waste Area Strike and Dress 28-12-13.5
 Tractor: D8 with rippers 3 hr
 Waste Area Strike and Dress 28-12-13.6
 Tractor: D8 with rippers 3 hr

400 Drainage

Road Number	Culvert	Polypipe	Downspout
28-11-18.0/b	0 lf	38 lf	0 lf
28-12-13.1	0 lf	62 lf	40 lf
28-12-13.2	0 lf	116 lf	30 lf
28-12-13.6	0 lf	66 lf	20 lf
28-12-23.0	0 lf	122 lf	20 lf
Spur 1A	0 lf	0 lf	50 lf
Spur 1B	0 lf	36 lf	0 lf
Spur 1C	0 lf	40 lf	0 lf
Total Drainage:		480 lf	160 lf

0.475 - 0.480: French Drain 28-11-18.0/b
 Excavator - Large (2 CY) 4 hr
 General Laborer 4 hr
 Tamper - handheld 4 hr
 Trash Pump 10 hr
 General Laborer 4 hr
 Culvert Inlet Markers 28-11-18.0/b
 Fence Posts 4 post
 General Laborer 1 hr
 Culvert Inlet Markers 28-12-13.2
 Fence Posts 11 post
 General Laborer 2 hr
 Culvert Inlet markers 28-12-13.6
 Fence Posts 2 post
 General Laborer 1 hr
 Culvert Marker Installation 28-12-13.0
 General Laborer 1 hr
 Fence Posts 4 post
 Culvert Marker installations 28-12-23.0
 General Laborer 2 hr
 fence posts 9 post
 Install Culvert Inlet Markers 28-12-13.3
 Fence Posts 3 post
 General Laborer 1 hr
 Install//replace culv. markers 28-12-13.1
 fence posts 3 post
 General Laborer 1 hr
 Old culvert removal from BLM 28-12-23.0
 General Laborer 2 hr
 Flatbed truck -1 Ton 2 hr
 reattach downspouts/halfrounds 28-11-18.0/b
 General Laborer 2 hr

500 Renovation	Blade Miles	Slide cy
28-11-18.0/a	0.21	0
28-11-18.0/b	0.39	0
28-12-13.0	0.50	0
28-12-13.1	0.44	0
28-12-13.2	0.68	0
28-12-13.3	0.31	0
28-12-23.0	1.19	10

Continuation of Construction Quantities

Totals:		3.71	10
0.475 - 0.480: P-R Backfill 28-11-18.0/b			
General Laborer			4 hr
General Laborer			4 hr
Excavator - Large (2 CY)			4 hr
Tamper - handheld			4 hr
Ditchline bunch/haul 28-12-13.1			
Backhoe			4 hr
Dump Truck 12 cy			4 hr
Ditchline bunching and hauling 28-12-23.0			
Backhoe			8 hr
Dump Truck 12 cy			8 hr
Ditchline Bunching/hauling 28-12-13.2			
Backhoe			6 hr
Dump Truck 12 cy			6 hr
ditchline re-establishment 28-12-13.0			
Backhoe			4 hr
Dump Truck 12 cy			4 hr
Ditchline Re-establishment 28-12-13.3			
Backhoe			2 hr
Dump Truck 12 cy			2 hr
Ditchline Re-establishment 28-11-18.0/b			
Backhoe			3 hr
Dump Truck 12 cy			3 hr
Ditchline Re-establishment 28-11-18.0/a			
Backhoe			2 hr
Dump Truck 12 cy			2 hr
French Drain Excavation: 0.281 28-12-13.2			
Excavator - Large (2 CY)			3 hr
Dump Truck 12 cy			3 hr
General Laborer			3 hr
Sediment Catch Basin MM 0.110 28-12-23.0			
Backhoe			1 hr
straw bale			2 each
General Laborer			1 hr
sidecast PB (MM:0.545-0.576) 28-11-18.0/b			
Excavator - Large (2 CY)			1.5 hr
Dump Truck 12 cy			1.5 hr
sidecast PB (MM:0.629-0.639) 28-11-18.0/b			
Excavator - Large (2 CY)			1 hr
Dump Truck 12 cy			1 hr
Waste Area Strike and Dress 28-12-13.1			
Tractor: D8 with rippers			1 hr
Waste Area Strike and Dress 28-12-13.0			
Tractor: D8 with rippers			2 hr
Waste areas Strike and Dress 28-12-23.0			
Tractor: D8 with rippers			2 hr
Waste Areas strike and dress 28-12-13.2			
Tractor: D8 with rippers			2 hr
widening (0.447-0.481)fill 28-11-18.0/b			
Excavator - Large (2 CY)			4 hr
Dump Truck 12 cy			4 hr
Dump Truck 12 cy			4 hr
General Laborer			4 hr
widening (0.553-0.661)PB areas 28-11-18.0/b			
Excavator - Large (2 CY)			8 hr
General Laborer			8 hr
Dump Truck 12 cy			8 hr
widening(MM:0.355-0.370) 28-11-18.0/b			
Excavator - Large (2 CY)			2.5 hr
Dump Truck 12 cy			2.5 hr
General Laborer			2.5 hr

Continuation of Construction Quantities

Dump Truck 12 cy 2.5 hr

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: ROLFE Quarry:surface

Commercial	Roadway	Turnouts	Other	
28-11-18.0/b	0	0	23	23
28-11-18.0/b	0	0	47	47
28-11-18.0/b	0	0	94	94
28-12-13.6	0	0	399	399
28-12-13.5	0	0	240	240
28-12-13.4	0	0	171	171
Spur 1A	0	0	105	105
Spur 1B	0	0	40	40
Spur 1C	0	0	50	50
Spur 1D	0	0	44	44
28-12-23.0	0	0	1,291	1,291
28-12-13.1	0	0	476	476
28-12-13.0	0	0	451	451
28-12-13.0	0	0	135	135
28-12-13.0	0	0	20	20
28-12-13.1	0	0	10	10
28-12-13.2	0	0	10	10
28-12-13.2	0	0	60	60
28-12-13.2	0	0	972	972
28-12-13.2	0	0	15	15
28-12-13.4	0	0	10	10
28-12-13.4	0	0	104	104
28-12-13.5	0	0	10	10
28-12-13.5	0	0	52	52
28-12-13.5	0	0	10	10
28-12-13.5	0	0	13	13
28-12-13.6	0	0	10	10
28-12-13.6	0	0	52	52
28-12-13.6	0	0	52	52
28-12-23.0	0	0	80	80
28-12-23.0	0	0	40	40
28-12-23.0	0	0	52	52
Spur 1A	0	0	10	10
Spur 1A	0	0	104	104
Spur 1B	0	0	10	10
Spur 1B	0	0	52	52
Spur 1C	0	0	10	10
Spur 1C	0	0	104	104
Spur 1D	0	0	10	10
Spur 1D	0	0	52	52
28-12-13.3	0	0	10	10
28-12-13.3	0	0	52	52
28-12-13.0	0	0	30	30
28-12-13.0	0	0	10	10
28-12-13.1	0	0	30	30
28-12-13.2	0	0	60	60
28-12-13.3	0	0	335	335
28-12-13.2	0	0	78	78
Totals:	0	0	6,095	6,095

Quarry Name: ROLFE Quarry: cpp bd

Commercial	Roadway	Turnouts	Other	
28-12-23.0	0	0	82	82

Continuation of Construction Quantities

28-12-13.1	0	0	24	24
28-12-13.2	0	0	89	89
28-12-13.6	0	0	24	24

Totals:	<u>0</u>	<u>0</u>	<u>219</u>	<u>219</u>
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Quarry Name: ROLFE Quarry: Base

Commercial	Roadway	Turnouts	Other	
28-11-18.0/b	0	0	15	15
28-11-18.0/b	0	0	104	104
28-11-18.0/b	0	0	45	45
28-12-13.6	0	0	923	923
28-12-13.5	0	0	555	555
28-12-13.4	0	0	394	394
Spur 1A	0	0	243	243
Spur 1B	0	0	94	94
Spur 1C	0	0	116	116
Spur 1D	0	0	103	103
28-12-23.0	0	0	28	28
28-12-23.0	0	0	50	50
28-12-23.0	0	0	20	20
28-12-13.1	0	0	20	20
28-12-13.1	0	0	20	20
28-12-13.0	0	0	30	30
28-12-13.0	0	0	40	40
28-12-13.0	0	0	20	20
28-12-13.1	0	0	20	20
28-12-13.2	0	0	20	20
28-12-13.2	0	0	10	10
28-12-13.2	0	0	60	60
28-12-13.2	0	0	139	139
28-12-13.4	0	0	20	20
28-12-13.4	0	0	210	210
28-12-13.5	0	0	20	20
28-12-13.5	0	0	26	26
28-12-13.5	0	0	20	20
28-12-13.5	0	0	105	105
28-12-13.6	0	0	20	20
28-12-13.6	0	0	105	105
28-12-13.6	0	0	104	104
28-12-23.0	0	0	20	20
28-12-23.0	0	0	105	105
Spur 1A	0	0	20	20
Spur 1A	0	0	210	210
Spur 1B	0	0	20	20
Spur 1B	0	0	105	105
Spur 1C	0	0	20	20
Spur 1C	0	0	210	210
Spur 1D	0	0	20	20
Spur 1D	0	0	105	105
28-12-13.3	0	0	20	20
28-12-13.3	0	0	105	105
28-12-13.2	0	0	20	20
Totals:	<u>0</u>	<u>0</u>	<u>4,679</u>	<u>4,679</u>

Quarry Name: ROLFE Quarry: RipRap

Commercial	Roadway	Turnouts	Other	
Totals:	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>

Quarry Name: ROLFE Quarry: P-R

Commercial	Roadway	Turnouts	Other	
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Continuation of Construction Quantities

28-11-18.0/b	0	0	80	80
28-12-13.2	0	0	100	100
Totals:	<u>0</u>	<u>0</u>	<u>180</u>	<u>180</u>

Quarry Name: ROLFE Quarry: Drain

Commercial	Roadway	Turnouts	Other	
28-11-18.0/b	0	0	100	100
28-12-13.2	0	0	150	150
Totals:	<u>0</u>	<u>0</u>	<u>250</u>	<u>250</u>

culvert bedding compaction	28-12-13.6	
General Laborer		2 hr
Tamper - handheld		2 hr
Culvert Bedding Compaction	28-12-13.1	
Tamper - handheld		1 hr
Culvert Bedding Compaction	28-12-23.0	
Tamper - handheld		6 hr
drain rock placement	28-12-13.2	
Backhoe		3 hr
General Laborer		3 hr
Tamper - handheld		3 hr
French Drain Pit-Run Backfill	28-12-13.2	
Tractor & Sheepsfoot roller		2 hr
Backhoe		2 hr
General Laborer		2 hr

1300 Geotextiles

French Drain: MM 0.281 - 0.288	28-12-13.2	
High strength, Non-Woven		400 sy
General Laborer		6 hr
French Drain 1 (0.475-0.480)	28-11-18.0/b	
High strength, Non-Woven		206 sy
General Laborer		2 hr
Foreman		2 hr

1400 Slope Protection

Slope Protection Class	3	L.C.Y.s
28-12-13.0		10
28-12-13.2		10
28-12-13.6		10

Totals: 30

Slope Protection Class	5	L.C.Y.s
28-11-18.0/b		50
28-12-13.2		80

Totals: 130

RipRap Placement	28-12-13.0	
Excavator - Large (2 CY)		1 hr
RipRap Placement	28-12-13.2	
Excavator - Large (2 CY)		4 hr
General Laborer		4 hr
RipRap Placement	28-11-18.0/b	
Excavator - Large (2 CY)		3 hr
General Laborer		3 hr

1800 Soil stabilization - acres Dry W/O Dry/with Hydro

Continuation of Construction Quantities

	Mulch	Mulch	Mulch
28-11-18.0/a	0.0	0.4	
28-11-18.0/b	0.0	0.5	
28-11-18.0/c	0.0		0.4
28-11-19.2	0.0		0.1
28-12-13.0	0.0	0.4	
28-12-13.1	0.0	0.2	
28-12-13.2	0.0	0.8	
28-12-13.3	0.0	0.3	
28-12-13.4	0.0	0.2	
28-12-13.5	0.0	0.3	0.5
28-12-13.6	0.0	0.3	0.7
28-12-23.0	0.0	0.6	
Spur 1A	0.0	0.2	
Spur 1B	0.0	0.1	
Spur 1C	0.0	0.1	
Spur 1D	0.0	0.1	

Totals: 0.0 4.5 1.7
 Small Quantity Factor of 1.36 used

1900 Cattleguards

Totals: No Quantities

2100 RoadSide Brushing

acres

28-11-18.0/a	0.5
28-11-18.0/b	1.0
28-12-13.0	1.2
28-12-13.1	1.1
28-12-13.2	1.6
28-12-13.3	0.7
28-12-23.0	2.9

Totals: 9.0

2300 Engineering

stations

Totals: 0.00

2400 Minor Concrete

Totals: No Quantities

2500 Gabions

Totals: No Quantities

8000 Miscellaneous

Totals: No Quantities

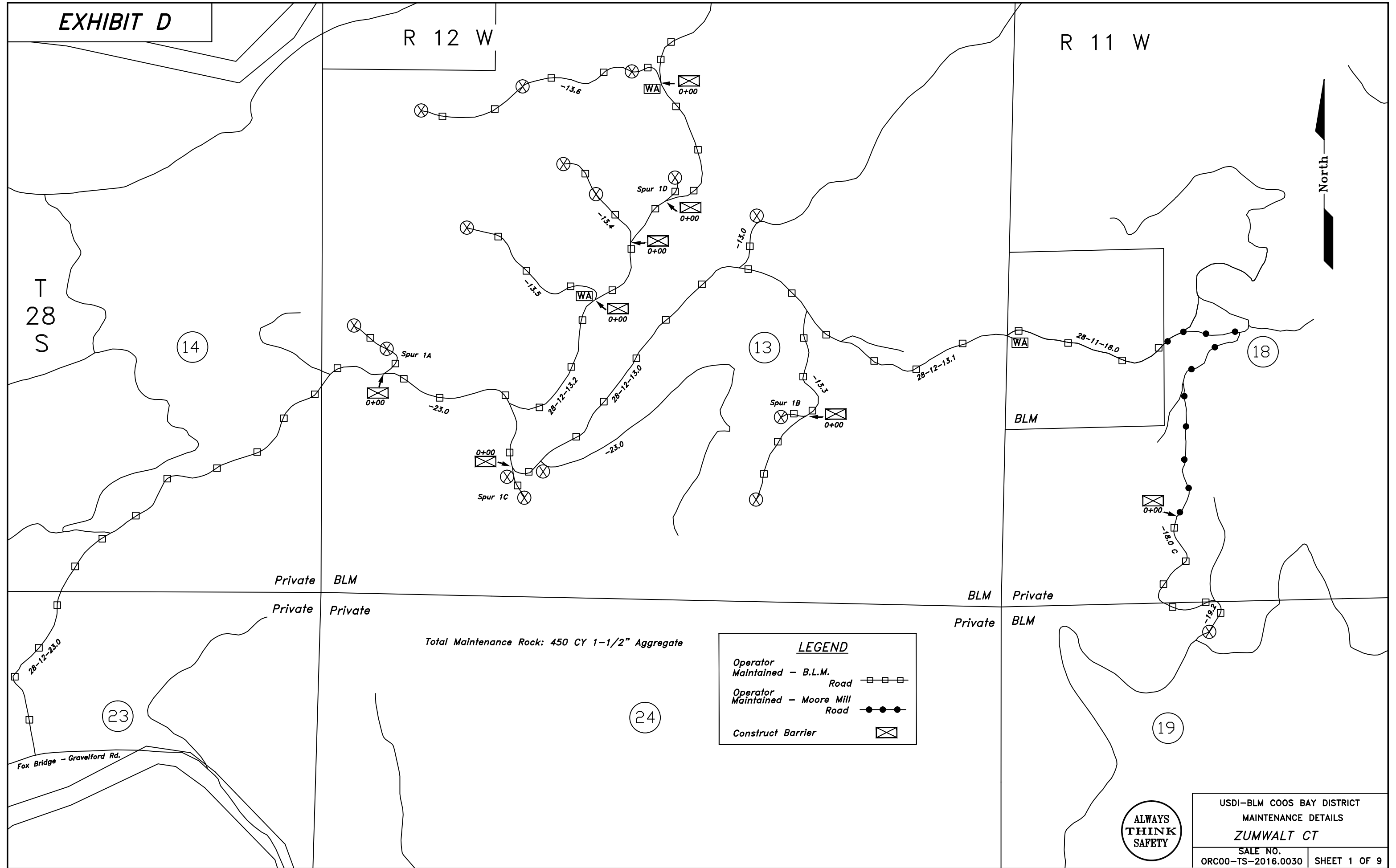
EXHIBIT D

R 12 W

R 11 W

T
28
S

North



Total Maintenance Rock: 450 CY 1-1/2" Aggregate

LEGEND

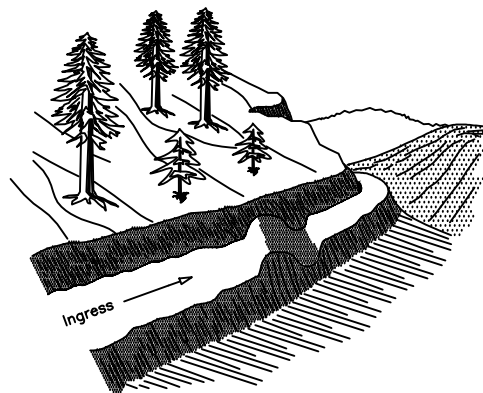
- Operator Maintained - B.L.M. Road
- Operator Maintained - Moore Mill Road
- Construct Barrier

ALWAYS
THINK
SAFETY

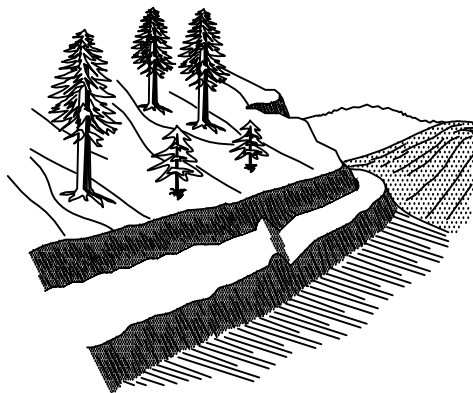
USDI-BLM COOS BAY DISTRICT
MAINTENANCE DETAILS
ZUMWALT CT

SALE NO.
ORC00-TS-2016.0030

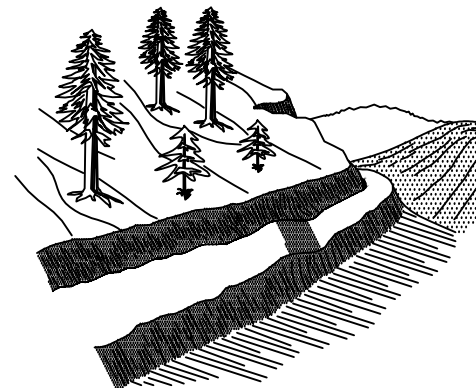
SHEET 1 OF 9



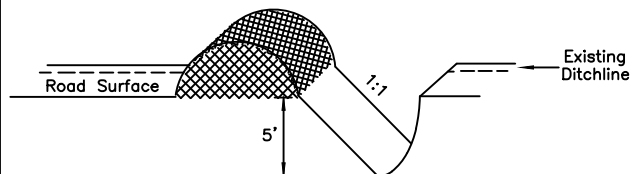
BARRIERS



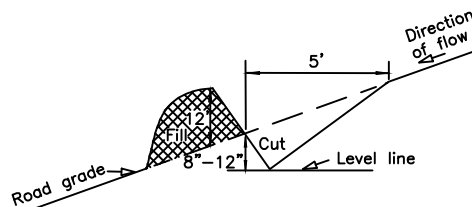
WATER BAR



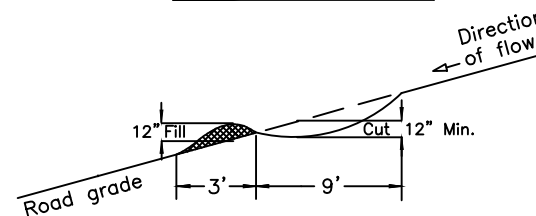
WATER DIP



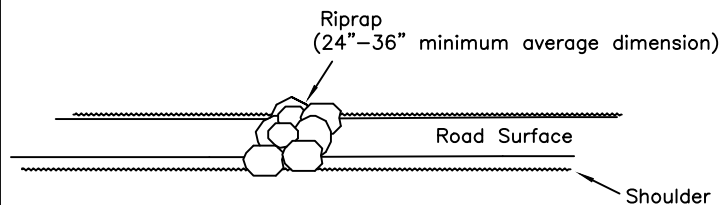
(NOT TO SCALE)



(NOT TO SCALE)



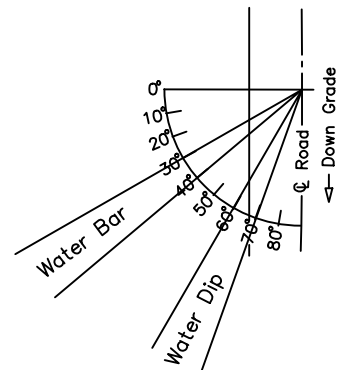
(NOT TO SCALE)



NOTES

- ALL BARRIERS, WATER BARS, AND WATER DIPS AS REQUIRED SHALL BE CONSTRUCTED AS SHOWN.
- LOCATIONS WILL BE AS DIRECTED BY THE AUTHORIZED OFFICER PRIOR TO CONSTRUCTION.
- ALL WATER BARS SHALL BE SKEWED 30° - 40°.
- ALL WATER DIPS SHALL BE SKEWED 60° - 70°.
- ALL WATER BARS AND WATER DIPS SHALL BE CUT INTO THE ROADBED FROM THE DITCHLINE.
- DITCHLINES SHALL BE BLOCKED WITH EXCAVATED MATERIAL (DITCH DAM) DOWNGRADE FROM ALL WATER BARS AND WATER DIPS.
- EXCAVATED MATERIAL FROM BARRIER TRENCH SHALL BE PLACED ON THE SIDE NEAREST THE BEGINNING OF THE ROAD.
- OUTLETS OF WATER DIPS MUST BE ROCKED ON FILL SLOPE.
- 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.
- 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



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

**BARRIER AND EROSION
CONTROL DETAIL**

DESIGNED J. MENGUITA
REVIEWED R. SHIPP
APPROVED K. WESTENSKOW

DRAWN JRM SCALE NONE
DATE 8/15 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 **	BASE **	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)	(B)	(B)	(A)	(B)	(A)				
28-11-18.0 C	(C)	(C)	(B)	(B)	(A)	(B)	(A)	0.4			
28-11-19.2	(C)	(C)	(B)	(B)	(A)	(B)	(A)	0.1			
28-12-13.0	(C)	(C)	(B)	(B)	(A)	(B)	(A)				
28-11-13.2	(C)	(C)	(B)	(B)	(A)	(B)	(A)				
28-11-13.3	(C)	(C)	(B)	(B)	(A)	(B)	(A)				
28-11-13.4	(C)	(C)	(B)	(B)	10 (A)	(B)	(A)				
28-11-13.5	(C)	(C)	(B)	(B)	10 (A)	(B)	(A)				
28-11-13.6	(C)	(C)	(B)	(B)	10 (A)	(B)	(A)				
	(C)	(C)	(B)	(B)	(A)	(B)	(A)				
Spur 1A	(C)	(C)	(B)	(B)	10 (A)	(B)	(A)				
Spur 1B	(C)	(C)	(B)	(B)	10 (A)	(B)	(A)				
Spur 1C	(C)	(C)	(B)	(B)	10 (A)	(B)	(A)				
Spur 1D	(C)	(C)	(B)	(B)	10 (A)	(B)	(A)				
	(C)	(C)	(B)	(B)	(A)	(B)	(A)				
	(C)	(C)	(B)	(B)	(A)	(B)	(A)				
	(C)	(C)	(B)	(B)	(A)	(B)	(A)				
	(C)	(C)	(B)	(B)	(A)	(B)	(A)				
	(C)	(C)	(B)	(B)	(A)	(B)	(A)				
	(C)	(C)	(B)	(B)	(A)	(B)	(A)				
	(C)	(C)	(B)	(B)	(A)	(B)	(A)				
	(C)	(C)	(B)	(B)	(A)	(B)	(A)				
	(C)	(C)	(B)	(B)	(A)	(B)	(A)				
	(C)	(C)	(B)	(B)	(A)	(B)	(A)				
	(C)	(C)	(B)	(B)	(A)	(B)	(A)				
	(C)	(C)	(B)	(B)	(A)	(B)	(A)				
	(C)	(C)	(B)	(B)	(A)	(B)	(A)				
TOTALS	(C)	450 (C)	(B)	(B)	70 (A)	(B)	(A)	0.5			

* FOR INFORMATIONAL USE ONLY. QUANTITIES SHOWN ARE NOT PAY ITEMS.
 ** ROCK QUANTITIES ARE TRUCK MEASUREMENT.

ITEM	SIZE	GRADE
PITRUN		
1000 (Base)	3"	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 _____	J. MENGUITA
REVIEWED _____	R. SHIPP
APPROVED _____	K. WESTENSKOW
DRAWN JRM	SCALE NONE
DATE 8/15	SHEET 3 OF 9
DRAWING NO.	

SALE NO. ORC00-TS-2016.0030
ZUMWALT CT
EXHIBIT D
SHEET 4 OF 9 SHEETS

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 0 yds³ of crushed aggregate, conforming to the requirements in Section 1000 of Exhibit C of this contract, and 450 yds³ of crushed aggregate, conforming to the requirements in Section 1200 of Exhibit C 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, roller, 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.

SALE NO. ORC00-TS-2016.0030
ZUMWALT CT
EXHIBIT D
SHEET 6 OF 9 SHEETS

- 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>
28-11-18.0 C	Construct earthen barrier at Sta. 0+00 in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.
	Construct waterbars in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.
	Seed, fertilize, and mulch all disturbed areas in accordance with Section 1800 of the Exhibit C.
28-11-19.2	Construct waterbars in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.
	Seed, fertilize, and mulch all disturbed areas in accordance with Section 1800 of the Exhibit C.
28-12-13.4	Construct riprap barrier at Sta. 0+00 in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.
	Construct waterbars in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.
28-12-13.5	Construct riprap barrier at Sta. 0+00 in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.
	Construct waterbars in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.
28-12-13.6	Construct riprap barrier at Sta. 0+00 in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.
	Construct waterbars in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.
Spur 1A	Construct riprap barrier at Sta. 0+00 in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.
	Construct waterbars in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.

SALE NO. ORC00-TS-2016.0030
ZUMWALT CT
EXHIBIT D
SHEET 9 OF 9 SHEETS

- Spur 1B Construct riprap barrier at Sta. 0+00 in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.
- Construct waterbars in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.
- Spur 1C Construct riprap barrier at Sta. 0+00 in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.
- Construct waterbars in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.
- Spur 1D Construct riprap barrier at Sta. 0+00 in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.
- Construct waterbars in accordance with Sheet No. 2 of the Exhibit D and as directed by the Authorized Officer.

SALE NAME: Zumwalt CT

EXHIBIT E
ROAD USE AND MAINTENANCE FEES

SALE NUMBER: ORC00-TS-2016.0030

SALE VOLUME: 3607 NET MBF

A. ROAD USE FEES - Payable to Private Company:

COMPANY NAME	AGREEMENT NUMBER	ROAD NUMBER	NET MBF	USE FEE per MBF	TOTAL FEES
Moore Mill	C-364	28-11-18.0 A	490	\$5.95	\$2,915.50
Moore Mill	C-364	28-11-18.0 B	490	\$21.29	\$10,432.10
					\$0.00
TOTAL USE FEE:					\$13,347.60

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	ROCKWEAR /MBF/Mile	Subtotal	MAINT. /MBF/Mile	Subtotal	TOTAL FEES
					\$0.00		\$0.00	\$0.00
					\$0.00		\$0.00	\$0.00
					\$0.00		\$0.00	\$0.00
0					\$0.00		\$0.00	\$0.00

2. ROCKWEAR Fees Payable to the U.S. (OPERATOR Maintained Roads):

a. Timber Haul:

Surface Type	ROAD NUMBER	NET MBF	ROAD MILES	ROCKWEAR /MBF/Mile	TOTAL FEES
dirt	28-11-19.2	218	0.05	\$0.00	\$0.00
dirt	28-11-18.0 C	218	0.07	\$0.00	\$0.00
dirt	28-11-18.0 C	490	0.15	\$0.00	\$0.00
rock	28-12-13.1	490	0.31	\$0.49	\$74.43
rock	28-12-13.3	404	0.16	\$0.49	\$31.67
rock	Spur 1B	260	0.04	\$0.49	\$5.10
rock	28-12-13.3	664	0.15	\$0.49	\$48.80
rock	28-12-13.1	1154	0.13	\$0.49	\$73.51
rock	28-12-13.0	109	0.08	\$0.49	\$4.27
rock	28-12-13.0	1263	0.42	\$0.49	\$259.93
rock	28-12-23.0	1341	0.04	\$0.49	\$26.28
rock	Spur 1C	280	0.02	\$0.49	\$2.74
rock	Spur 1C	581	0.03	\$0.49	\$8.54
rock	28-12-23.0	1922	0.13	\$0.49	\$122.43
rock	28-12-13.6	155	0.15	\$0.49	\$11.39
rock	28-12-13.6	293	0.17	\$0.49	\$24.41
rock	28-12-13.6	402	0.05	\$0.49	\$9.85
rock	28-12-13.2	402	0.11	\$0.49	\$21.67
rock	28-12-13.2	433	0.12	\$0.49	\$25.46
rock	Spur 1D	73	0.04	\$0.49	\$1.43
rock	28-12-13.2	506	0.07	\$0.49	\$17.36
rock	28-12-13.4	202	0.07	\$0.49	\$6.93
rock	28-10-13.4	249	0.06	\$0.49	\$7.32
rock	28-10-13.4	311	0.03	\$0.49	\$4.57
rock	28-10-13.2	817	0.10	\$0.49	\$40.03
rock	28-10-13.5	280	0.08	\$0.49	\$10.98
rock	28-10-13.5	295	0.06	\$0.49	\$8.67
rock	28-10-13.5	389	0.06	\$0.49	\$11.44
rock	28-10-13.5	404	0.02	\$0.49	\$3.96
rock	28-12-13.2	1221	0.07	\$0.49	\$41.88
rock	28-12-13.2	1228	0.07	\$0.49	\$42.12
rock	28-12-13.2	1268	0.07	\$0.49	\$43.49
rock	28-12-23.0	3190	0.16	\$0.49	\$250.10
rock	28-12-23.0	3283	0.05	\$0.49	\$80.43
rock	Spur 1A	78	0.05	\$0.49	\$1.91

SALE NAME: Zumwalt CT

EXHIBIT E
ROAD USE AND MAINTENANCE FEES

SALE NUMBER: ORC00-TS-2016.0030

rock	Spur 1A	200	0.05	\$0.49	\$4.90
rock	28-12-23.0	3483	0.04	\$0.49	\$68.27
rock	28-12-23.0	3607	0.77	\$0.49	\$1,360.92
4.30					\$2,757.20

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

Surface Type	COMPANY NAME	AGREEMENT NUMBER	ROAD NUMBER	NET MBF	ROAD MILES	& MAINT. /MBF/Mile	TOTAL FEES
rock	Moore Mill	C-364	28-11-18.0 A	490	0.21	\$0.49	\$50.42
rock	Moore Mill	C-364	28-11-18.0 B	490	0.45	\$0.49	\$108.05
							\$0.00
							\$0.00
							\$0.00
							\$0.00
							\$0.00
0.66							\$158.47

4. OPERATOR MAINTENANCE WILL BE REQUIRED ON APPROX. 5.2 MILES OF ROAD. (SEE EXHIBIT D)

SUMMARY OF ROAD USE & ROAD MAINTENANCE FEES	ROAD USE FEES		ROCKWEAR & MAINTENANCE FEES		MAINTENANCE FEES	
	TOTAL	\$/MBF	TOTAL	\$/MBF	TOTAL	\$/MBF
1. COMPANY-OWNED ROADS:	\$13,347.60	\$3.70	\$158.47	\$0.04		\$0.00
2. BLM MAINTAINED ROADS:			\$0.00	\$0.00	\$0.00	\$0.00
3. BLM OPERATOR-MAINTAINED ROADS:			\$2,757.20	\$0.76		\$0.00
	\$13,347.60	\$3.70	\$2,915.66	\$0.81	\$0.00	\$0.00

	TOTAL	\$/MBF
MAINTENANCE OBLIGATION PAYABLE TO BLM:	\$2,757.20	\$0.76

Exhibit F
Sheet 1 of 1

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.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

EQUAL OPPORTUNITY IN EMPLOYMENT
CERTIFICATION OF NONSEGREGATED FACILITIES

Bid, offer, or contract number or
other identification

By the submission of this bid or offer and/or by entering into this contract, the bidder, offeror, lessee, subcontractor, or applicant certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. He certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The bidder, offeror, applicant, or subcontractor agrees that a breach of this certification is a violation of the Equal Opportunity clause in this contract. As used in this certification, the term "segregated facilities" means, but is not limited to, any waiting rooms, work areas, rest rooms and wash rooms, restaurants and

other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex, or national origin, because of habit, local custom, or otherwise. He further agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity clause; that he will retain such certifications in his files; and that he will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods):

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENT
FOR CERTIFICATIONS OF NONSEGREGATED FACILITIES

A Certification of Nonsegregated Facilities, as required by the May 9, 1967, order (32 F.R. 7439, May 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted prior to the award of a subcontract exceeding \$10,000 which is not exempt from the

provisions of the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

INSTRUCTIONS TO BIDDERS

1. **AUTHORITY**—Timber located on the revested Oregon and California Railroad Grant Lands and on the reconveyed Coos Bay Wagon Road Grant Lands is administered and sold pursuant to authority of the Act of August 28, 1937 (50 Stat. 874; 43 U.S.C. 1181a); timber located on other lands and other vegetative resources on all public lands of the United States under jurisdiction of the Bureau of Land Management are administered and sold pursuant to authority of the Act of July 31, 1947 (61 Stat. 681), as amended, by the Act of July 23, 1955 (69 Stat. 367; 30 U.S.C. 601 et. seq.). Regulations of the Secretary of the Interior governing sale of timber are codified in 43 CFR Group 5400.

2. **QUALIFICATIONS OF BIDDERS**—A bidder for sale of timber/vegetative resources must be either (a) a citizen of the United States, (b) a partnership composed wholly of such citizens, (c) an unincorporated association composed wholly of such citizens, or (d) a corporation authorized to transact business in the State in which the timber/vegetative resource is located.

3. **INSPECTION OF TIMBER/VEGETATIVE RESOURCES**—Bidder is invited, urged, and cautioned to inspect the timber/vegetative resource prior to submitting a bid. By executing the timber/vegetative resource sale contract, bidder warrants that the contract is accepted on the basis of his examination and inspection of the timber/vegetative resource and his opinion of its value.

4. **DISCLAIMER OF WARRANTY**—Government expressly disclaims any warranty of the fitness of the designated timber/vegetative resource for any purpose of the bidder; all timber/vegetative resources are to be sold "As Is" without any warranty of merchantability by Government. Any warranty as to the quantity or quality of timber/vegetative resource to be sold is expressly disclaimed by Government.

5. **BIDS**—Sealed or written bids for not less than the advertised appraised price, per timber/vegetative resource must be submitted in duplicate to the District Manager who issued *Timber/Vegetative Resource Sale Notice*.

(a) **Sealed Bid Sales**—Bids will be received until time for opening which is set out in the Notice. Enclose both copies of bid with required bid deposit in a sealed envelope marked on the outside *Bid for Timber/Vegetative Resources*, time bid is to be opened, tract number, and legal description of land on which timber/vegetative resource is located. In event of a tie, the high bidder shall be determined by lot from among those who submitted the tie bids.

(b) **Auction Sales**—Submission of the required bid deposit and a written bid is required to qualify for oral bidding. Oral bidding shall begin from the highest written bid. No oral bid will be considered which is not higher than the preceding bid. In the event there is a tie in high written bids, and no oral bidding occurs, the bidder who was the first to submit his bid deposit and written bid shall be declared the high bidder. If the officer conducting the sale cannot determine who made the first submission of high tie written bids, the high bidder shall be determined by lot. High bidder must confirm his bid, in writing, immediately upon being declared high bidder.

(c) Except as otherwise provided in 43 CFR 5442.2, bids will not be considered in resale of timber/vegetative resource remaining from an uncompleted contract from any person or affiliate of such person who failed to complete the original contract because of (1) cancellation for the purchaser's breach or (2) through failure to complete payment by expiration date.

(d) When it is in the interest of the Government to do so, it may reject any and all bids and may waive minor deficiencies in bids or in sale advertisement.

6. **BID FORMS**—All sealed, written bids, and confirmation of oral bids shall be submitted on forms provided by Government.

(a) **Lump Sum Sales**—Bids shall specify (1) Bureau of Land Management estimated volume, (2) price per unit, and (3) total purchase price. Estimated volume and price per unit are to be used for administrative and appraisal purposes only. Upon award of contract, high bidder shall be liable for total purchase price, including any adjustment which may be made as a result of reappraisal if an extension of time is granted, even though quantity of timber/vegetative resource actually cut, removed, or designated for taking is more or less than the estimated volume or quantity listed.

(b) **Timber Scale Sales**—Bids must state price per thousand board feet that will be paid for each species. High bidder will be determined by multiplying bid price per thousand board feet per species by Bureau of Land Management

estimate of volume of each species. Purchaser shall be liable for purchase price of all merchantable timber sold under contract even though all such timber is not actually cut and removed prior to expiration of time for cutting and removal as specified in contract.*

7. **BID DEPOSIT**—All bidders must make a deposit of not less than the amount specified in the *Timber/Vegetative Resource Notice*. Deposit may be in the form of cash, money orders, bank drafts, cashiers or certified checks made payable to the Department of the Interior—BLM, bid bonds of a corporate surety shown on the approved list of the United States Treasury Department*, or any approved guaranteed remittance approved by the Contracting Officer. Upon conclusion of bidding, the bid deposit of all bidders, except high bidder, will be returned. The cash deposit of the successful bidder may be applied toward the required sale deposit and/or the purchase price. Cash not applied to the sale deposit or the purchase price, or a corporate surety bid bond, will be returned at the time the contract is signed by the Government.

8. **AWARD OF CONTRACT**—Government may require high bidder to furnish such information as is necessary to determine the ability of bidder to perform the obligation of contract. Contract will be awarded to high bidder, unless he is not qualified or responsible or unless all bids are rejected. If high bidder is not qualified or responsible or fails to sign and return the contract together with required performance bond and any required payment, contract may be offered and awarded to the highest bidders qualified, responsible, and willing to accept the contract.

9. **TIMBER/VEGETATIVE RESOURCE SALE CONTRACT**—To be executed by purchaser, has been prepared by Government, and may be examined in the District Manager's office.

10. PERFORMANCE BOND—

(a) A performance bond in an amount of not less than 20 percent of total purchase price is required, but the amount of the bond shall not be in excess of \$500,000, except when the purchaser opts to increase the minimum bond to permit cutting prior to payment as provided in 43 CFR 5451.2, or in the event the purchaser is a holder of an unresolved default the bond may be increased as provided in 43 CFR 5450.1(b). Performance bond may be (1) bond of a corporate surety shown on approval list issued by the United States Treasury Department and executed on an approved standard form, (2) personal surety bond executed on an approved standard form if Government determines principals and bondsmen are capable of carrying out the terms of the contract, (3) cash bonds, (4) negotiable securities of the United States, or (5) any guaranteed remittance approved by the Contracting Officer.

(b) If purchaser elects to cut timber without skidding or yarding it to a loading point or removing it prior to the payment of the second or subsequent installments, Government shall require an increase in amount of performance bond initially required by an amount equal to the value of timber to be cut. Such increase must be on a bond rider form supplied by Government and be approved, in writing, by Government prior to cutting timber covered by the bond increase. This increased amount of bond shall be used to assure payment for timber cut in advance of payment.*

11. **PAYMENT BOND**—If purchaser elects to (a) cut and remove timber, or (b) remove timber already cut which has been secured by an increased performance bond as provided in paragraph 10(b) above, before payment of the second or subsequent installments, Government shall require a payment bond on a form supplied by Government. Purchaser shall obtain written approval from Government of payment bond prior to cutting and/or removal of timber covered by the bond. Payment bond shall be used to assure payment for timber cut and/or removed in advance of payment.*

12. **PAYMENT OF PURCHASE PRICE**—For sales of \$500 or more, Government may allow payment by installments. Except as discussed in paragraphs 10 and 11 above, no part of any timber/vegetative resource sold may be severed, cut, or removed unless advance payment has been made as provided in contract.

13. **LIQUIDATED DAMAGES**—Within thirty (30) days from receipt of *Timber/Vegetative Resources Sale Contract*, the successful bidder shall sign contract and return it to Government, together with required bond and any required payment. If successful bidder fails to comply within the stipulated time, his bid deposit shall be retained by Government as liquidated damages.

14. **NINETY-DAY SALES** – If no bid is received within time specified in the advertisement of sale and if Government determines that there has been no significant rise in the market value of timber/vegetative resource, it may, in its discretion, keep the sale open, not to exceed ninety (90) days.

15. **UNAUTHORIZED USE OF GOVERNMENT PROPERTY** – A sale may be refused to high bidder who has been notified that he has failed to make satisfactory arrangements for payment of damages resulting from unauthorized use of, or injury to, property of the United States.

16. **EQUAL OPPORTUNITY CLAUSE** – This contract is subject to the provisions of Executive Order No. 11246 of September 24, 1965, as amended, which sets forth the nondiscrimination clauses. Copies of this order may be obtained from the District Manager. 43 CFR 60-1.7(b) requires that the Equal Opportunity Compliance Report Certification will be completed by prospective contractors. Certification may be obtained from District Manager.

17. **LOG EXPORT** – All timber offered for sale except as noted in the *Timber Sale Notice* is restricted from export from the United States in the form of unprocessed timber and cannot be 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 sawlogs, peeler logs, and pulp logs; (2)

cants or squares to be subsequently remanufactured exceeding eight and three quarters (8-3/4) inches in thickness; (3) split or round bolts or other roundwood not processed to standards and specifications suitable for end product use; or (4) western red cedar lumber which does not meet lumber of American Lumber Standards Grades of Number 3 dimensions or better, or Pacific Lumber Inspection Bureau R-List Grades of Number 3 common or better. 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 remanufacture of eight and three quarters (8-3/4) inches in thickness or less; or (6) shakes and shingles. In event purchaser wishes to sell any or all of timber restricted from export in the form of unprocessed timber, the buyer, exchanges, or recipient shall be required to comply with contractual provisions relating to "unprocessed timber". Special reporting, branding and painting of logs may be included in contract provisions.*

18. **DETAILED INFORMATION** – Detailed information concerning contract provisions, bid, performance bond forms, tract location maps, and access conditions may be obtained from the District Manager. All persons interested in bidding on the products listed are encouraged to familiarize themselves with all such detailed information.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

☒ **TIMBER or
TIMBER AND OTHER WOOD PRODUCTS**

DEPOSIT AND BID FOR

☐ **VEGETATIVE RESOURCES
(Other Than Timber)**

Name of Bidder
Tract Number ORC00-TS-2016.0030
Sale Name Zumwalt CT
Sale Notice (dated) 10/22/2015
BLM District Coos Bay District

<input type="checkbox"/> Sealed Bid for Sealed Bid Sale		<input checked="" type="checkbox"/> Written Bid for Oral Auction Sale	
Time for opening sealed bids	<input type="checkbox"/> a.m. <input type="checkbox"/> p.m.	Sale commences 10:00	<input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.
On (date)	Place	On (date) 11/20/15	Place Conference Room A

In response to the above dated Sale Notice, the required deposit and bid are hereby submitted for the purchase of designated timber/vegetative resource on the tract specified above.

Required bid deposit is \$27,400.00 and is enclosed in the form of:
☐ cash ☐ money order ☐ cashier's check ☐ certified check ☐ bank draft
☐ bid bond of corporate surety on approved list of the United States Treasury ☐ guaranteed remittance approved by the authorized officer.

IT IS AGREED That the bid deposit shall be retained by the United States as liquidated damages if the bid is accepted and the undersigned fails to execute and return the contract, together with any required performance bond and any required payment within 30 days after the contract is received by the successful bidder. It is understood that no bid for less than the appraised price on a unit basis per species will be considered. If the bid is rejected the deposit will be returned.

BID SCHEDULE - LUMP SUM SALE

NOTE: Bidders should carefully check computations in completing the Bid Schedule

BID SUBMITTED					ORAL BID MADE	
PRODUCT SPECIES	UNIT	ESTIMATED VOLUME OR QUANTITY	UNIT PRICE	TOTAL VALUE	UNIT PRICE	TOTAL VALUE
Douglas-fir	MBF	2,236	X	=	X	=
Red Alder	MBF	658	X	=	X	=
Grand Fir	MBF	649	X	=	X	=
Port Orford-cedar	MBF	30	X	=	X	=
Western redcedar	MBF	18	X	=	X	=
Western Hemlock	MBF	16	X	=	X	=
			X	=	X	=
			X	=	X	=
			X	=	X	=
			X	=	X	=
			X	=	X	=
			X	=	X	=
			X	=	X	=
			X	=	X	=
			X	=	X	=
			X	=	X	=
TOTAL PURCHASE PRICE						

If sale contract is executed, undersigned is liable for total purchase price even though the quantity cut, removed, or designated for taking is more or less than the total estimated volume or quantity shown above. Undersigned certifies bid was arrived at by bidder or offeror independently, and was tendered without collusion with any other bidder or offeror. In submitting or confirming this bid, undersigned agrees to the foregoing provisions, applicable regulations, and certifies that he is authorized to act as, or on behalf of, the bidder.

Bid submitted on *(date)*

(Check appropriate box, sign in ink, and complete the following)

<input type="checkbox"/> Signature, if firm is individually owned	Name of firm <i>(type or print)</i>
<input type="checkbox"/> Signatures, if firm is a partnership or L.L.C.	Business address, include zip code <i>(type or print)</i>
<input type="checkbox"/> Corporation organized under the state laws of	<i>(To be completed following oral bidding)</i>
Signature of Authorized Corporate Signing Officer	I HEREBY confirm the above oral bid By <i>(signature)</i>
Title	Date
Submit bid, in <i>duplicate</i> , to qualify for either an oral auction or sealed bid sale together with the required bid deposit made payable to the Department of the Interior – BLM. Oral Auction – Submit to Sales Supervisor prior to closing of qualifying period for tract.	Sealed Bid – Send to District Manager, who issued the sale notice, in a sealed envelope marked on the outside: (1) "Bid for Timber" or (1a) "Vegetative Resources Other Than Timber" (2) Time bids are to be opened (3) Legal description

NOTICES

The Privacy Act and 43 CFR 2.48(d) require that you be furnished with the following information in connection with the information required by this form.

AUTHORITY: 38 FR 6280 and 43 CFR 5442.1

PRINCIPAL PURPOSE: To qualify an oral auction bidder, and then if successful, to bind bidder to certain contract conditions.

ROUTINE USES: To determine that an individual is qualified to participate in oral auction bidding, and, as surety that bidder will fulfill contract requirements.

EFFECT OF NOT PROVIDING INFORMATION: Filing this deposit and bid information is necessary only when an individual wishes to participate in a sealed or auction bid sale for timber or vegetative resources.

(Continued on page 3)

(Form 5440-9, page 2)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

☒ **TIMBER or
TIMBER AND OTHER WOOD PRODUCTS**

DEPOSIT AND BID FOR

☐ **VEGETATIVE RESOURCES
(Other Than Timber)**

Name of Bidder

Tract Number
ORC00-TS-2016.0030

Sale Name
Zumwalt CT

Sale Notice (dated)
10/22/2015

BLM District
Coos Bay District

☐ Sealed Bid for Sealed Bid Sale

☒ Written Bid for Oral Auction Sale

Time for opening sealed bids ☐ a.m. ☐ p.m.

Sale commences 10:00 ☒ a.m. ☐ p.m.

On (date) Place

On (date) 11/20/15 Place Conference Room A

In response to the above dated Sale Notice, the required deposit and bid are hereby submitted for the purchase of designated timber/vegetative resource on the tract specified above.

Required bid deposit is \$27,400.00 and is enclosed in the form of:

☐ cash ☐ money order ☐ cashier's check ☐ certified check ☐ bank draft

☐ bid bond of corporate surety on approved list of the United States Treasury ☐ guaranteed remittance approved by the authorized officer.

IT IS AGREED That the bid deposit shall be retained by the United States as liquidated damages if the bid is accepted and the undersigned fails to execute and return the contract, together with any required performance bond and any required payment within 30 days after the contract is received by the successful bidder. It is understood that no bid for less than the appraised price on a unit basis per species will be considered. If the bid is rejected the deposit will be returned.

BID SCHEDULE -- LUMP SUM SALE

NOTE: Bidders should carefully check computations in completing the Bid Schedule

BID SUBMITTED					ORAL BID MADE	
PRODUCT SPECIES	UNIT	ESTIMATED VOLUME OR QUANTITY	UNIT PRICE	TOTAL VALUE	UNIT PRICE	TOTAL VALUE
Douglas-fir	MBF	2,236	X	=	X	=
Red Alder	MBF	658	X	=	X	=
Grand Fir	MBF	649	X	=	X	=
Port Orford-cedar	MBF	30	X	=	X	=
Western redcedar	MBF	18	X	=	X	=
Western Hemlock	MBF	16	X	=	X	=
			X	=	X	=
			X	=	X	=
			X	=	X	=
			X	=	X	=
			X	=	X	=
			X	=	X	=
			X	=	X	=
			X	=	X	=
			X	=	X	=
			X	=	X	=
TOTAL PURCHASE PRICE						

If sale contract is executed, undersigned is liable for total purchase price even though the quantity cut, removed, or designated for taking is more or less than the total estimated volume or quantity shown above. Undersigned certifies bid was arrived at by bidder or offeror independently, and was tendered without collusion with any other bidder or offeror. In submitting or confirming this bid, undersigned agrees to the foregoing provisions, applicable regulations, and certifies that he is authorized to act as, or on behalf of, the bidder.

Bid submitted on *(date)*

(Check appropriate box, sign in ink, and complete the following)

<input type="checkbox"/> Signature, if firm is individually owned	Name of firm <i>(type or print)</i>
<input type="checkbox"/> Signatures, if firm is a partnership or L.L.C.	Business address, include zip code <i>(type or print)</i>
<input type="checkbox"/> Corporation organized under the state laws of	<i>(To be completed following oral bidding)</i>
Signature of Authorized Corporate Signing Officer	I HEREBY confirm the above oral bid By <i>(signature)</i>
Title	Date
Submit bid, in <i>duplicate</i> , to qualify for either an oral auction or sealed bid sale together with the required bid deposit made payable to the Department of the Interior – BLM. Oral Auction – Submit to Sales Supervisor prior to closing of qualifying period for tract.	Sealed Bid – Send to District Manager, who issued the sale notice, in a sealed envelope marked on the outside: (1) "Bid for Timber" or (1a) "Vegetative Resources Other Than Timber" (2) Time bids are to be opened (3) Legal description

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(Continued on page 3)

(Form 5440-9, page 2)

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

Coos Bay
Zumwalt CT
ORC00-TS-2016.0030

Timber - Sale - Summary

Legal Description

Forest Type	Township	Range	Section	Subdivision
CBWR	28 S	11 W	19	Lot 1, NE1/4NW1/4
CBWR	28 S	12 W	13	Lot 2, W1/2NE1/4, S1/2NW1/4, SW1/4, W1/2SE1/4

Cutting Volume (16' MBF)

Unit	DF	RA	GF	POC	WRC	WH			Total	Regen	Partial	ROW
1	269	83	76	4	2	2			436	0	28	0
2	528	163	149	7	4	4			855	0	55	0
3	144	44	41	2	1	1			233	0	15	0
4	1	42	4						47	0	7	0
5	643	199	181	9	4	5			1,041	0	67	0
6	393	122	111	5	3	3			637	0	41	0
RW	258	5	87	3	4	1			358	0	0	5
Totals	2,236	658	649	30	18	16			3,607	0	213	5

Logging Costs per 16' MBF

Stump to Truck	\$	207.14
Transportation	\$	24.00
Road Construction	\$	105.19
Road Amortization	\$	3.70
Road Maintenance	\$	6.94
Other Allowances :		

Gross Yarding	\$ 4.99
Habitat Creation	\$ 3.15
Landing pullback	\$ 0.95
Misc	\$ 0.62
Slash Disposal	\$ 0.75
Vehicle Washing	\$ 0.90
Total Other Allowances :	\$ 11.36

Total Logging Costs per 16' MBF

\$ 358.34

Utilization Centers

Center #1 : Coquille, OR 13 Miles
Center #1 : Myrtle Point, OR 8 Miles
Weighted distance to Utilization Centers 12

Length of Contract

Cutting and Removal Time 36 Months
Personal Property Removal Time 1 Months

Profit & Risk

Total Profit & Risk	14 %
Basic Profit & Risk	11 % + Additional Risk 3 %
Back Off	0 %

Tract Features

Avg Log	Douglas-fir : 61 bf	All : 58 bf
Recovery	Douglas-fir : 93 %	All : 92 %
Salvage	Douglas-fir : 0 %	All : 0 %
Avg Volume (16' MBF per Acre)		17
Avg Yarding Slope		36 %
Avg Yarding Distance (feet)		347
Avg Age		55
Volume Cable		80 %
Volume Ground		20 %
Volume Aerial		0 %
Road Construction Stations		62.79
Road Improvement Stations		0.00
Road Renovation Stations		201.95
Road Decommission Stations		73.78

Cruise

Cruised By	Wooley, Stover
Date	07/14/2015
Type of Cruise	VP, 3P, BLM100
County, State	Coos, OR

Net Volume

Green (16' MBF)	3,607
Salvage (16' MBF)	0
Douglas-fir Peeler	0
Export Volume	30
Scaling Allowance (\$0.75 per 16' MBF)	\$2,705.25

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Coos Bay
Zumwalt CT
ORC00-TS-2016.0030

Prospectus

Appraisal Method : (16' MBF)

Species	Trees	Net Volume 16' MBF	Net Volume 32' MBF	Net Volume CCF
Douglas-fir	7,453	2,236	1,879	
Red Alder	8,279	658	490	
Grand Fir	1,637	649	523	
Port-Orford-cedar	172	30	24	
Western red-cedar	244	18	14	
Western Hemlock	94	16	13	
Total	17,879	3,607	2,943	

All Species

Gross Volume	Number Trees	Avg bf Volume Per Tree	DBH	Gross Merch Volume	Merch Logs	Avg bf Gross Merch Log
3,931	17,879	219	14.0	3,857	66,654	58

Merch Logs	Cull Logs	Total Logs	Logs per Tree	Net Volume	Gross Volume	Recovery
66,654	2,533	69,187	3.9	3,607	3,931	92 %

Douglas-fir

Gross Volume	Number Trees	Avg bf Volume Per Tree	DBH	Gross Merch Volume	Merch Logs	Avg bf Gross Merch Log
2,393	7,453	321	15.4	2,353	38,406	61

Merch Logs	Cull Logs	Total Logs	Logs per Tree	Net Volume	Gross Volume	Recovery
38,406	930	39,336	5.3	2,236	2,393	93 %

Cutting Areas

Unit	Regen Acres	Partial Cut Acres	Right Of Way Acres	Total Acres
1		28		28
2		55		55
3		15		15
4		7		7
5		67		67
6		41		41
RW			5	5
Totals :		213	5	218

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Coos Bay
Zumwalt CT
ORC00-TS-2016.0030

Stumpage Summary

Stumpage Computation (16' MBF)

Species	Trees	Net Volume	Pond Value	(-) Profit & Risk	(-) Logging Cost	(+) Marginal Log Value	(-) Back Off	Appraised Price	Appraised Value
DF	7,453	2,236	\$ 528.51	\$ 73.99	\$ 358.34			\$ 96.20	\$ 215,103.20
RA	8,279	658	\$ 403.70	\$ 56.52	\$ 358.34			\$ 40.40	\$ 26,583.20
GF	1,637	649	\$ 428.38	\$ 59.97	\$ 358.34			\$ 42.80	\$ 27,777.20
POC	172	30	\$ 446.00	\$ 62.44	\$ 358.34			\$ 44.60	\$ 1,338.00
WRC	244	18	\$ 544.46	\$ 76.22	\$ 358.34			\$ 109.90	\$ 1,978.20
WH	94	16	\$ 398.49	\$ 55.79	\$ 358.34			\$ 39.80	\$ 636.80
Totals	17,879	3,607							\$ 273,416.60

Log Code by Percent

Species	Code #1	Code #2	Code #3	Code #4	Code #5	Code #6
Grand Fir				70.0	28.0	3.0
Port-Orford-cedar			1.0	50.0	40.0	10.0
Douglas-fir				55.0	40.0	5.0
Western red-cedar			61.0	39.0		
Western Hemlock				71.0	19.0	10.0
Red Alder		29.0	31.0	40.0		

Marginal Log Volume

Species	Grade #7	Grade #8
Grand Fir		
Port-Orford-cedar		
Douglas-fir		
Western red-cedar		
Western Hemlock		
Red Alder		

Appraised By : Sill, Tom

Date : 08/24/2015

Area Approval By : Wooley, Michael

Date : 08/25/2015

District Approval By :

Date :