

Washington DNR Timber Sales Program

Updated information is being provided for **Rams Horn VRH & VDT Timber Sale #30-093253** documents as follows:

Documents amended:

Brief Description	DATE	Initials
Contract Clause P-020 – Payment for Forest Products: Fees listed should be \$216,087.00	11/8/2016	KF



TIMBER NOTICE OF SALE

SALE NAME: RAMS HORN VRH & VDT

AGREEMENT NO: 30-093253

AUCTION: November 15, 2016 starting at 10:00 a.m., COUNTY: Grays Harbor, Thurston South Puget Sound Region Office, Enumclaw, WA

SALE LOCATION: Sale located approximately 7 miles northeast of Porter, Washington

PRODUCTS SOLD AND SALE AREA:

All timber, except leave trees bounded out by yellow leave tree area tags and down timber existing more than 5 years from the day of sale bounded by the following: white "Timber Sale Boundary" tags, the B-1000, B-1300 and B-1410 roads in Unit #1; white "Timber Sale Boundary" tags and the B-1300 Road in Unit #2; white "Timber Sale Boundary" tags and the B-1400 Road in Units #5, #9 and #10; white "Timber Sale Boundary" tags, timber type change, the B-1300 and B-1400 road in Unit #6; white "Timber Sale Boundary" tags, timber type change, and the B-1400 Road in Unit #7; white "Timber Sale Boundary" tags, and timber type change in Unit #8; white "Timber Sale Boundary" tags and the Larch Pillar Quarry in Unit #11;

All timber, marked with orange paint, bounded out by white "Timber Sale Boundary" tags and blue "Special Management Unit Boundary" tags in Units #3 and #4;

All right of way timber, except what is described in Clause H-141, bounded by orange "Right of Way" tags in Units #12 and #13 on part(s) of Sections 2 and 3 all in Township 17 North, Range 4 West, Sections 34 and 35 all in Township 18 North, Range 4 West, W.M., containing 258 acres, more or less.

CERTIFICATION: This sale is certified under the Sustainable Forestry Initiative® program Standard (cert no: BV-SFIS-US09000572)

ESTIMATED SALE VOLUMES AND QUALITY:

Table with columns: Species, Avg DBH, Ring Count, Total MBF, and MBF by Grade (1P, 2P, 3P, SM, 1S, 2S, 3S, 4S, UT). Rows include Hemlock, Douglas fir, Red alder, Red cedar, and Sale Total.

MINIMUM BID: \$1,838,000.00 BID METHOD: Sealed Bids

PERFORMANCE SECURITY: \$100,000.00 SALE TYPE: Lump Sum

EXPIRATION DATE: October 31, 2019 ALLOCATION: Export Restricted

BID DEPOSIT: \$183,800.00 or Bid Bond. Said deposit shall constitute an opening bid at the appraised price.

HARVEST METHOD: Harvesting activities are estimated to be 40% ground-based and 60% cable. Forest products sold under this contract shall be harvested and removed using cable and tracked ground based equipment, with tracked ground based equipment limited to sustained



TIMBER NOTICE OF SALE

slopes 45% or less. Non-tethered self-leveling equipment is limited to sustained slopes of 55% or less. Cable-tethered equipment is limited to sustained slopes of 75% or less. Use of tracked skidders shall be allowed for pole yarding only, unless authority to use other equipment is granted in writing by the State. Yarding may be restricted during wet weather if rutting becomes excessive, per clause H-017.

Cutting, yarding and timber haul will not be permitted from:

- November 1st to April 30th nor on weekends or state recognized holidays in Units #2, #3, #4 and #8.
- November 1st to April 30th in Units #1, #5, #6, #7, #9, #10 and #11 nor on weekends or state recognized holidays, unless authority to do so is granted in writing by the Contract Administrator. If permission is granted to operate, the purchaser shall comply with a Winter Operating Plan to include further protection of water, soil, roads and other forest assets at the Purchaser's expense. Preventive measures required in the Winter Operating Plan must be put in place prior to commencing any winter operations.

ROADS:

32.53 stations of required construction. 9.00 stations of required reconstruction. 51.73 stations of optional construction. 565.06 stations of required pre-haul maintenance. 8.8 stations of required abandonment. 16.8 stations of required decommissioning. 3.51 stations of required decommissioning, if built. Purchaser maintenance on the B-1045, B-1045A, B-1300, B-1310, B-1400, B-1410, B-1430, B-1430A, B-1470 and B-1492 roads. Designated maintenance on all other roads used. Rock used in accordance with the quantities on the rock list may be obtained at no cost from the State owned Larch Pillar Quarry, located in Section 2, Township 17 North, Range 04 West, W.M. or from any commercial source at the Purchaser's expense, as approved in writing by the Contract Administrator.

The hauling of forest products will not be permitted from November 1 to April 30, unless authorized in writing by the State on the B-1045A and B-1430 from station 12+71 to 21+15.

Road construction and rock haul will not be permitted from October 1st through April 30th, unless authority to do so is granted in writing by the Contract Administrator. If permission is granted to operate from October 1st through April 30th, the Purchaser shall comply with a Winter Operating Plan to include further protection of water, soil, roads and other forest assets at the Purchaser's expense. Preventive measures required in the Winter Operating Plan must be put in place prior to commencing any winter operations. The hauling of forest products will not be permitted from November 1 to April 30 unless authorized in writing by the Contract Administrator.

ACREAGE DETERMINATION

CRUISE METHOD: Unit acreage was determined by traversing the boundaries by GPS. Right of way acreage was determined by multiplying length times width. GPS data files are available upon request by emailing rachel.mason@dnr.wa.gov. See cruise narrative for cruise method.

FEES: \$143,385.00 is due on day of sale. \$9.00 per MBF is due upon removal. These are in addition to the bid price.

SPECIAL REMARKS: Units #1, #2 and #5 through #10 are VRH, Units #3 and #4 are VDT. Unit #11 is a pit expansion, Units #12 and #13 are Right of Way units. All take trees within Unit #3 and #4 are pre-marked with a single orange band around the tree.



TIMBER NOTICE OF SALE

Prior to removal of timber, the B-1490 road, from station 8+96 to 17+32, must be decommissioned, see road plan clause 0-11 for further details.

Blue painted trees within the timber sale boundary are from a previous harvest and do not indicate anything.

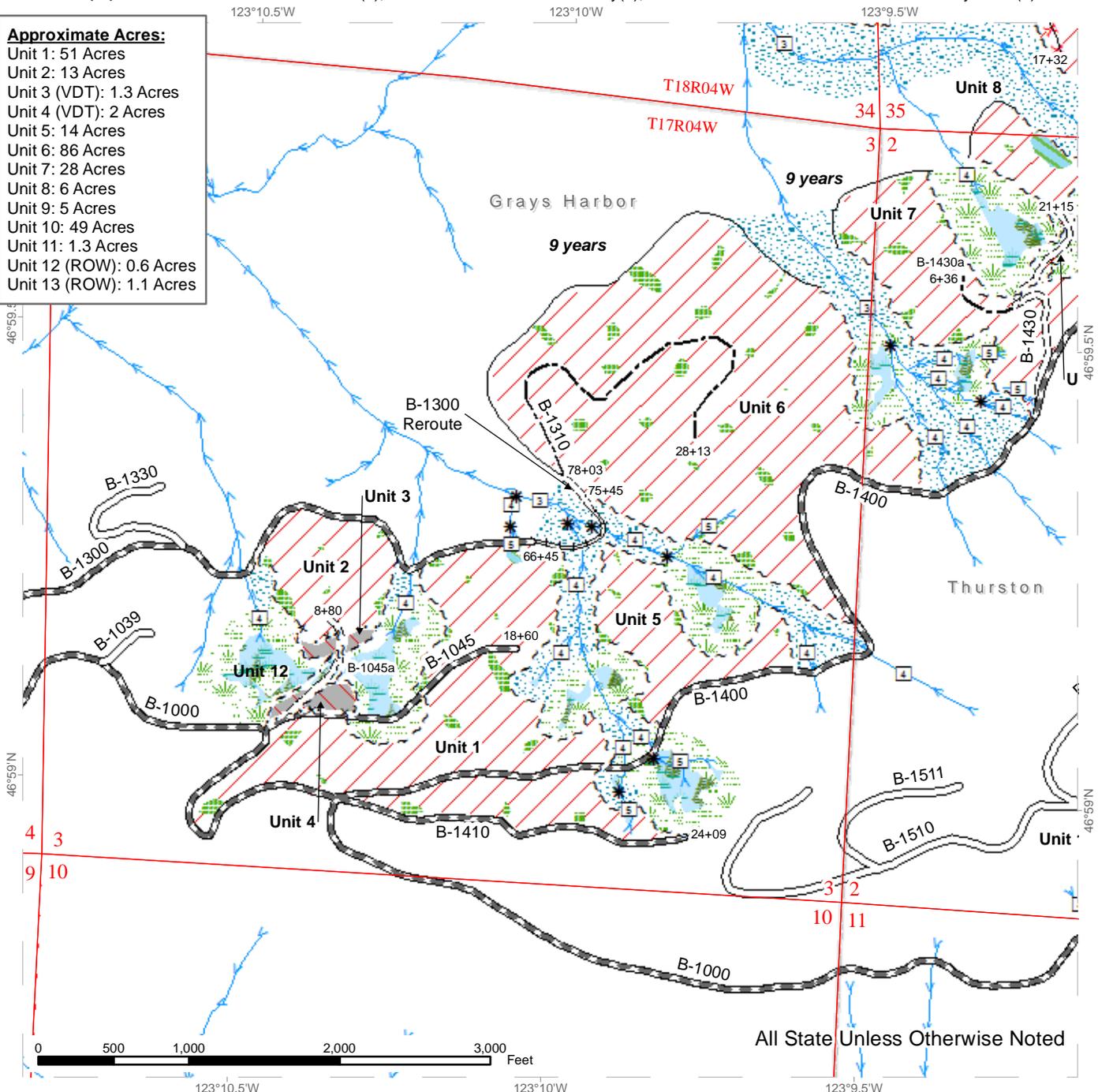
Construction on the B-1045A Road includes installation of geotextile fabric and chain-link fencing. See Road Plan section 11 for details.

TIMBER SALE MAP

SALE NAME: RAMS HORN VRH & VDT
AGREEMENT #: 93253
TOWNSHIP(S): T18R04W, T17R04W
TRUST(S): State Forest Purchase(2), Common School and Indemnity(3), Charitable/Educational/Penal & Reformatory Instit.(6)

REGION: South Puget Sound Region
COUNTY(S): GRAYS HARBOR, THURSTON
ELEVATION RGE: 805-1815

Approximate Acres:
 Unit 1: 51 Acres
 Unit 2: 13 Acres
 Unit 3 (VDT): 1.3 Acres
 Unit 4 (VDT): 2 Acres
 Unit 5: 14 Acres
 Unit 6: 86 Acres
 Unit 7: 28 Acres
 Unit 8: 6 Acres
 Unit 9: 5 Acres
 Unit 10: 49 Acres
 Unit 11: 1.3 Acres
 Unit 12 (ROW): 0.6 Acres
 Unit 13 (ROW): 1.1 Acres



All State Unless Otherwise Noted

Variable Retention Harvest Units	Blue "Special Mgmt Area" Tags	Streams
Variable Density Thinning Units	Reprod	Stream Type
Leave Tree Area- Marked with Yellow "Leave Tree Area" Tags	Orange "Right of Way" Tags	Stream Type Break
Riparian Mgt Zone	Existing Roads	
Forested Wetland	Required Pre-Haul Maintenance	
Wetland Mgt Zone	Required Construction	
Non-Tradeable Leave Tree Area - Marked with Yellow "Leave Tree Area" Tags	Required Reconstruction	
White "Timber Sale Boundary" Tags	Required Decommission	
	Optional Construction	

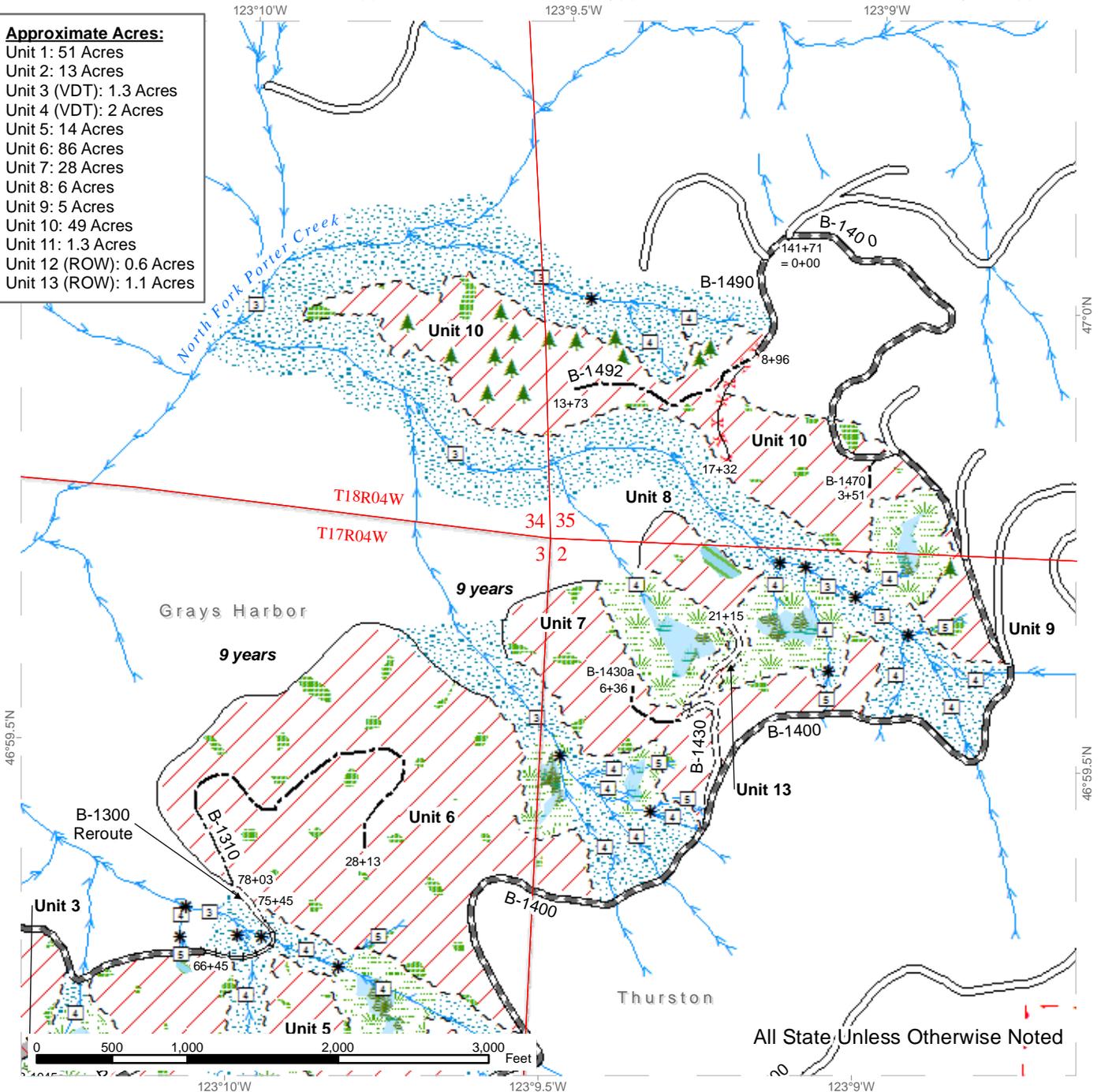


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Variable Density Thinning Units	Reprod	Stream Type
Leave Tree Area- Marked with Yellow "Leave Tree Area" Tags	Orange "Right of Way" Tags	Stream Type Break
Riparian Mgt Zone	Existing Roads	Leave Trees
Forested Wetland	Required Pre-Haul Maintenance	
Wetland Mgt Zone	Required Construction	
Non-Tradeable Leave Tree Area - Marked with Yellow "Leave Tree Area" Tags	Required Reconstruction	
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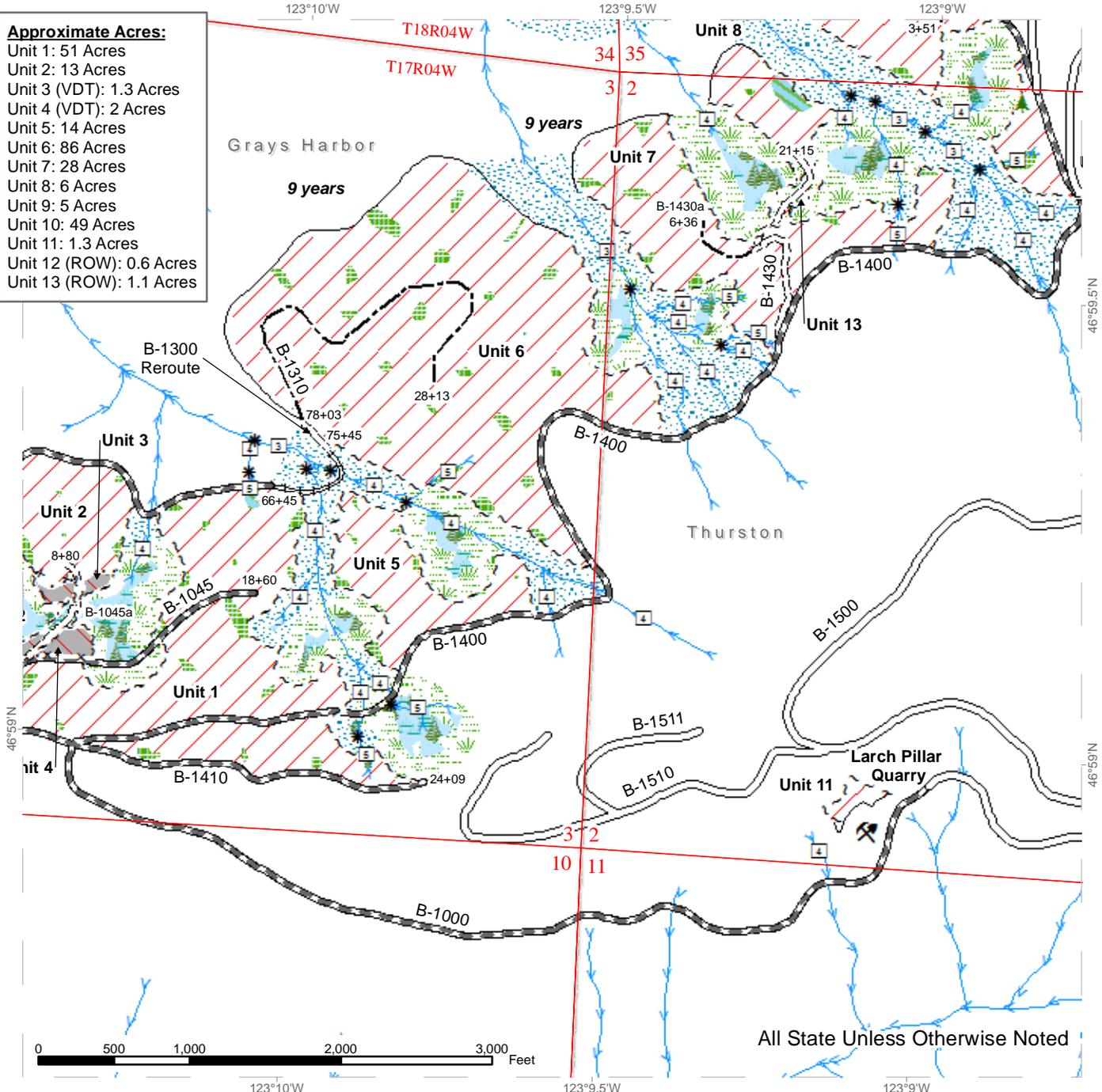


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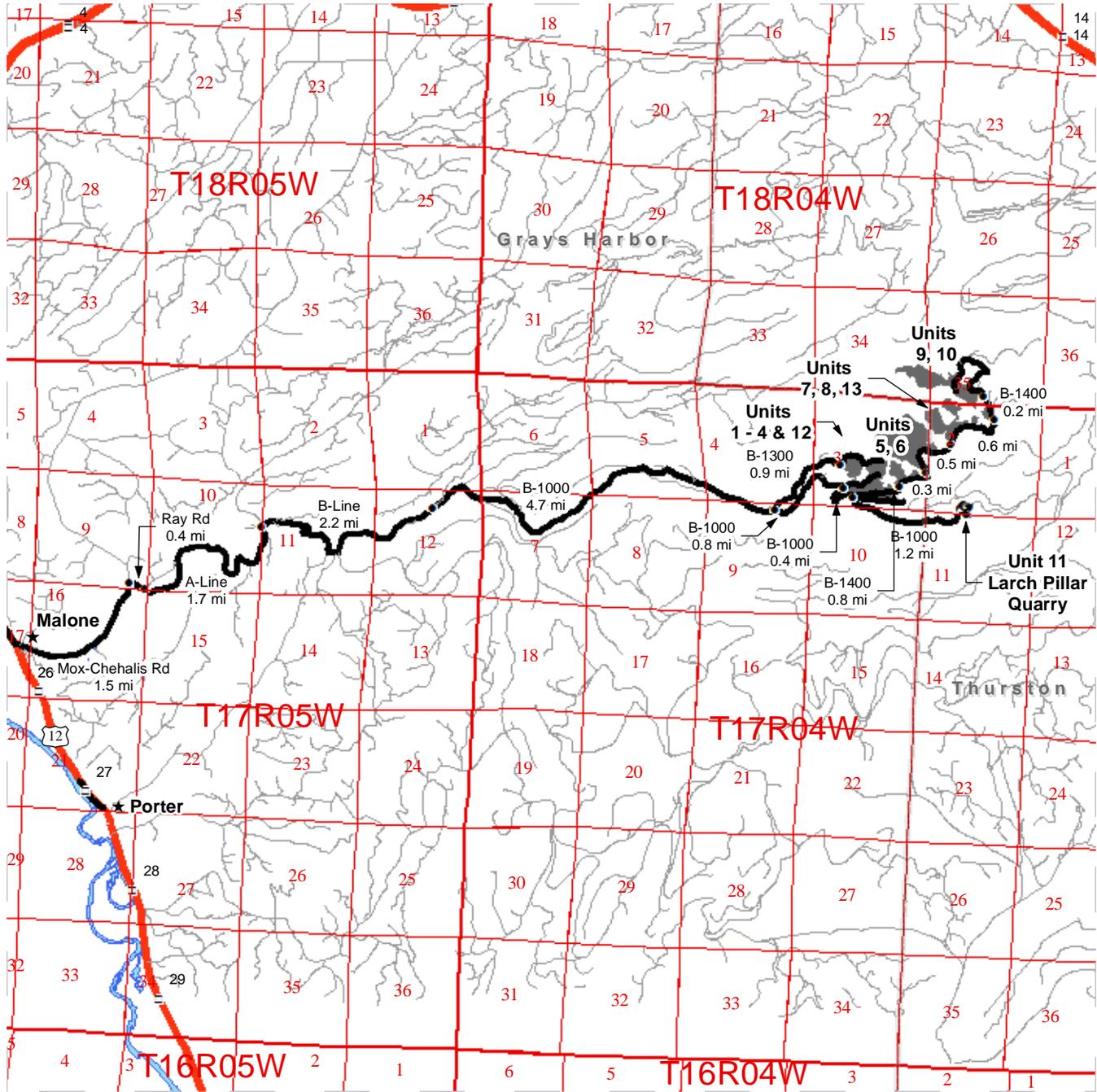
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Variable Density Thinning Units	Reprod	Stream Type
Leave Tree Area- Marked with Yellow "Leave Tree Area" Tags	Orange "Right of Way" Tags	Stream Type Break
Riparian Mgt Zone	Existing Roads	Leave Trees
Forested Wetland	Required Pre-Haul Maintenance	Existing Rock Pit
Wetland Mgt Zone	Required Construction	
Non-Tradeable Leave Tree Area - Marked with Yellow "Leave Tree Area" Tags	Required Reconstruction	
White "Timber Sale Boundary" Tags	Optional Construction	



DRIVING MAP

SALE NAME: RAMS HORN VRH & VDT
AGREEMENT#: 93253
TOWNSHIP(S): T18R04W, T17R04W, T18R05W, T17R05W, T16R05W
TRUST(S): State Forest Purchase(2), Common School and Indemnity(3), Charitable/Educational/Penal & Reformatory Inst.(6)

REGION: South Puget Sound Region
COUNTY(S): GRAYS HARBOR, THURSTON
ELEVATION RGE: 805-1815



- Timber Sale Unit
- Highways
- Haul Route
- Other Route
- Milepost Markers
- Distance Indicator
- Existing Rock Pit

DRIVING DIRECTIONS:
 From US Highway 12 at milepost 26 turn east onto Mox-Chehalis Rd. and follow for 1.5 miles. Turn right (east) onto Ray Rd. and follow for 0.4 miles. Continue straight onto the A-Line and follow for 1.7 miles. Turn right (east) onto the B-Line and continue for 2.2 miles. Veer right onto the B-1000 and follow for 4.75 miles.
 Unit 1: Continue on the B-1000 for 0.4 miles.
 Unit 3, 4 and 12: Continue on the B-1000 for 1.2 miles.
 Unit 2: From the B-1000 and B-1300 junction, turn north on B-1300 and follow for 0.9 miles.
 From the B-1000 and B-1300 junction continue on the B-1000 for 1.2 miles to the B-1400 Road.
 Unit 5: Continue on the B-1400 for 0.8 miles.
 Unit 6: Continue on the B-1400 for 1.1 miles.
 Unit 7, 8 and 13: Continue on the B-1400 for 1.6 miles.
 Unit 9: Continue on the B-1400 for 2.2 miles.
 Unit 10: Continue on the B-1400 for 2.4 miles.



**STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES**

**BILL OF SALE AND CONTRACT FOR
FOREST PRODUCTS**

Export Restricted Lump Sum AGREEMENT NO. 30-093253

SALE NAME: RAMS HORN VRH & VDT

**THE STATE OF WASHINGTON DEPARTMENT OF NATURAL
RESOURCES, HEREINAFTER ACTING SOLELY, IN ITS PROPRIETARY
CAPACITY, STATE, AND PURCHASER, AGREE AS FOLLOWS:**

Section G: General Terms

G-001 Definitions

The following definitions apply throughout this contract;

Bill of Sale and Contract for Forest Products: Contract between the Purchaser and the State, which sets forth the procedures and obligations of the Purchaser in exchange for the right to remove forest products from the sale area. The Bill of Sale and Contract for Forest Products may include a Road Plan for any road construction or reconstruction, where applicable.

Contract Administrator: Region Manager's designee responsible for assuring that the contractual obligations of the Purchaser are met.

Forest Product: Any material derived from the forest for commercial use.

Purchaser: The company or individual that has entered a Bill of Sale and Contract for Forest Products with the State for the right to harvest and remove forest products from the timber sale area.

Road Construction: Includes building new and maintaining existing forest roads and associated work that may be optional or required as described in the Road Plan.

State: The Washington State Department of Natural Resources, landowner and seller of Forest Products from the timber sale area. The State is represented by the Region Manager as designated on the contract signature page. Contractual obligations to the State are enforced by the Region Manager or the designated Contract Administrator.

Subcontractor: Individual or company employed by the Purchaser to perform a portion or all of the services required by The Bill of Sale and Contract for Forest Products. The Purchaser is responsible for independently negotiating, procuring and paying for all subcontracted services rendered.

G-011 Right to Remove Forest Products and Contract Area

Purchaser was the successful bidder on November 15, 2016 and the sale was confirmed on _____. The State, as owner, agrees to sell to Purchaser, and Purchaser agrees to purchase as much of the following forest products as can be cut and removed during the term of this contract: All timber, except leave trees bounded out by yellow leave tree area tags and down timber existing more than 5 years from the day of sale bounded by the following:

white "Timber Sale Boundary" tags, the B-1000, B-1300 and B-1410 roads in Unit #1; white "Timber Sale Boundary" tags and the B-1300 Road in Unit #2; white "Timber Sale Boundary" tags and the B-1400 Road in Units #5, #9 and #10; white "Timber Sale Boundary" tags, timber type change, the B-1300 and B-1400 road in Unit #6; white "Timber Sale Boundary" tags, timber type change, and the B-1400 Road in Unit #7; white "Timber Sale Boundary" tags, and timber type change in Unit #8; white "Timber Sale Boundary" tags and the Larch Pillar Quarry in Unit #11;

All timber, marked with orange paint, bounded out by white "Timber Sale Boundary" tags and blue "Special Management Unit Boundary" tags in Units #3 and #4;

All right of way timber, except what is described in Clause H-141, bounded by orange "Right of Way" tags in Units #12 and #13., located on approximately 258 acres on part(s) of Sections 2, and 3 all in Township 17 North, Range 4 West, Sections 34, and 35 all in Township 18 North, Range 4 West W.M. in Grays Harbor, and Thurston County(s) as designated on the sale area and as shown on the attached timber sale map.

All forest products described above from the bole of the tree that meet or exceed 2 inches diameter inside bark on the small end are eligible for removal. Above ground components of a tree that remain as by-products after the manufacture of logs, including but not limited to tree tops, branches, limbs, needles, leaves, stumps, are not eligible for removal under the terms of this contract.

Forest products purchased under a contract that is designated as export restricted shall not be exported until processed. Forest products purchased under a contract that is designated as exportable may be exported prior to processing.

G-020 Inspection By Purchaser

Purchaser hereby warrants to the State that they have had an opportunity to fully inspect the sale area and the forest products being sold. Purchaser further warrants to the State that they enter this contract based solely upon their own judgment of the value of the forest products, formed after their own examination and inspection of both the timber sale area and the forest products being sold. Purchaser also warrants to the State that they enter this contract without any reliance upon the volume estimates, acreage estimates, appraisals, pre-bid documentation, or any other representations by the State Department of Natural Resources.

G-031 Contract Term

Purchaser shall complete all work required by this contract prior to October 31, 2019.

G-040 Contract Term Adjustment - No Payment

Purchaser may request an adjustment in the contract term. A claim must be submitted in writing and received by the State within 30 days after the start of interruption or delay. The claim must also indicate the actual or anticipated length of interruption or delay. The State may grant an adjustment without charge only if the cause for contract term adjustment is beyond Purchaser's control. The cause must be one of the following and the adjustment may be granted only if operations or planned operations under this contract are actually interrupted or delayed:

- a. Road and bridge failures which deny access.
- b. Access road closures imposed by road owner.
- c. Excessive suspensions as provided in clause G-220.
- d. Regulatory actions not arising from Purchaser's failure to comply with this contract which will prevent timber harvest for a period less than 6 months.

G-051 Contract Term Extension - Payment

Extensions of this contract term may be granted only if, in the judgment of the State, Purchaser is acting in good faith and is endeavoring to remove the forest products conveyed. The term of this contract may be extended for a reasonable time by the State if all of the following conditions are satisfied:

- a. A written request for extension of the contract term must be received prior to the expiration date of the contract.
- b. Completion of all required roads and compliance with all contract and regulatory requirements.
- c. For the first extension, not to exceed 1 year, payment of at least 25 percent of the total contract price.

For the second extension, not to exceed 1 year, payment of at least 90 percent of the total contract price.

The payments shall not include the initial deposit which shall be held according to the provisions of RCW 79.15.100.

- d. Payment of an amount based on 12 percent interest per annum on the unpaid portion of the total contract price.

All payments, except the initial deposit, will be deducted from the total contract price to determine the unpaid portion of the contract.

- e. Payment of \$842.00 per acre per annum for the acres on which an operating release has not been issued within the VRH units. Payment of \$120.00 per acre per annum for the acres on which an operating release has not been issued within the VDT units.
- f. In no event will the extension charge be less than \$200.00.
- g. Extension payments are non-refundable.

G-053 Surveys - Sensitive, Threatened, Endangered Species

Whenever the State determines that a survey for sensitive, threatened, or endangered species is prudent, or when Purchaser determines a survey is prudent and the State agrees, Purchaser shall perform such surveys at Purchaser's expense and to the standards required by the State. The survey information shall be supplied to the State.

G-060 Exclusion of Warranties

The PARTIES AGREE that the IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE and ALL OTHER WARRANTIES EXPRESSED OR IMPLIED ARE EXCLUDED from this transaction and shall not apply to the goods sold. For example, THE FOLLOWING SPECIFIC MATTERS ARE NOT WARRANTED, and are EXCLUDED from this transaction:

- a. The MERCHANTABILITY of the forest products. The use of the term "merchantable" in any document is not intended to vary the foregoing.
- b. The CONDITION of the forest products. The forest products will be conveyed "AS IS."
- c. The ACREAGE contained within any sale area. Any acreage descriptions appearing in the timber notice of sale, timber sale contract, or other documents are estimates only, provided solely for administrative and identification purposes.
- d. The VOLUME, QUALITY, OR GRADE of the forest products. The State neither warrants nor limits the amount of timber to be harvested. The

descriptions of the forest products to be conveyed are estimates only, made solely for administrative and identification purposes.

- e. The CORRECTNESS OF ANY SOIL OR SURFACE CONDITIONS, PRE-SALE CONSTRUCTION APPRAISALS, INVESTIGATIONS, AND ALL OTHER PRE-BID DOCUMENTS PREPARED BY OR FOR THE STATE. These documents have been prepared for the State's appraisal purposes only.
- f. THAT THE SALE AREA IS FREE FROM THREATENED OR ENDANGERED SPECIES or their habitat. The State is not responsible for any interference with forestry operations that result from the presence of any threatened or endangered species, or the presence of their habitat, within the sale area.
- g. THAT THE FORESTRY OPERATIONS to be performed under this contract WILL BE FREE FROM REGULATORY ACTIONS by governmental agencies. The State is not responsible for actions to enforce regulatory laws, such as the Washington Forest Practices Act (chapter 76.09 RCW), taken by the Department of Natural Resources or any other agency that may affect the operability of this timber sale.
- h. Items contained in any other documents prepared for or by the State.

G-062 Habitat Conservation Plan

The State has entered into a Habitat Conservation Plan (HCP) with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service (the Services) to address state trust land management issues relating to compliance with the Federal Endangered Species Act. The activities to be carried out under this contract are located within the State's HCP area and are subject to the terms and conditions of the HCP, and the Services' Incidental Take Permit Nos. 812521 and 1168 (collectively referred to as ITP), or as amended hereafter by the Services. The ITP authorizes the incidental take of certain federally listed threatened and endangered species, as specified in the ITP conditions. All HCP materials, including the ITP, are available for review at the State's Regional Offices and the administrative headquarters in Olympia, Washington.

By signing this contract, Purchaser agrees to comply with the terms and conditions of the ITP, and the HCP, which shall become terms of this contract. The State agrees to authorize the lawful activities of the Purchaser carried out pursuant to this contract, PROVIDED the Purchaser remains in compliance with the terms and conditions of both the HCP and ITP. The requirements set forth in this contract are intended to comply with the terms and conditions of the HCP and ITP. Accordingly, non-compliance with the terms and conditions of the HCP and ITP will render the authorization provided in this paragraph void, be deemed a breach of the contract and may subject Purchaser to liability for violation of the Endangered Species Act.

Any modifications to the contract shall be proposed in writing by Purchaser, shall continue to meet the terms and conditions of the HCP and ITP, and shall require the prior written approval of the Region Manager before taking effect.

G-063 Incidental Take Permit Notification Requirements

- a. Purchaser shall immediately notify the Contract Administrator of new locations of permit species covered by the Incidental Take Permits (ITP) that are discovered within the area covered by the State's Habitat Conservation Plan (HCP), including, but not limited to: locations of occupied murrelet habitat; spotted owl nest sites; wolves; grizzly bears; nests, communal roosts, or feeding concentrations of bald eagles; peregrine falcon nests; Columbian white-tailed deer; Aleutian Canada geese; Oregon silverspot butterflies; and additional stream reaches found to contain bull trout. Purchaser is required to notify the Contract Administrator upon discovery of any fish species found in streams or bodies of water classified as non-fish bearing. In all circumstances, notification must occur within a 24 hour time period.
- b. Upon locating any live, dead, injured, or sick specimens of any permit species covered by the ITP, Purchaser shall immediately notify the Contract Administrator. Purchaser shall notify the Contract Administrator if there is any doubt as to the identification of a discovered permit species. Purchaser may be required to take certain actions to help the Contract Administrator safeguard the well-being of any live, injured or sick specimens of any permit species discovered, until the proper disposition of such specimens can be determined by the Contract Administrator. Any such requirements will be explained to Purchaser by the Contract Administrator during the Pre-Work Conference. In all circumstances, notification must occur within a 24 hour time period.
- c. Purchaser shall refer to a specific ITP number, PRT-812521 or ITP 1168 (copies which are located in the region office) in all correspondence and reports concerning permit activities.
- d. Provisions and requirements of the ITP shall be clearly presented and explained to Purchaser by Contract Administrator during the Pre-Work Conference as per contract clause G-330. All applicable provisions of the ITP and this schedule must be presented and clearly explained by Purchaser to all authorized officers, employees, contractors, or agents of Purchaser conducting authorized activities in the timber sale area. Any questions Purchaser may have about the ITP should be directed to the Contract Administrator.

G-064 Permits

Purchaser is responsible for obtaining any permits not already obtained by the State that relate to Purchaser's operation. Forest Practice Application / Hydraulic Project Approval permits obtained by the State shall be transferred to Purchaser. Purchaser is responsible for all permits, amendments and renewals.

G-065 Regulatory Disclaimer

The State disclaims any responsibility for, or liability relating to, regulatory actions by any government agency, including actions pursuant to the Forest Practices Act, Ch. 76.09 RCW that may affect the operability of the timber sale.

G-066 Governmental Regulatory Actions

a. Risk

Purchaser shall be responsible for any increased operational costs arising from any applicable foreign or domestic governmental regulation or order that does not cause contract performance to become commercially impracticable or that does not substantially frustrate the purpose of the contract. If impracticability or frustration results from Purchaser's failure to comply with this contract, Purchaser shall remain responsible for payment of the total contract price notwithstanding the impracticability or frustration.

b. Sale Area

When portions of the sale area become subject to a foreign or domestic governmental regulation or order that will likely prevent timber harvest for a period that will exceed the expiration date of this contract, and Purchaser has complied with this contract, the following shall apply:

i. RCW 79.15.140 shall govern all adjustments to the contract area.

c. Adjustment of Price

The State shall adjust the total contract price by subtracting from the total contract price an amount determined in the following manner: The State shall cause the timber sale area subject to governmental regulation or order to be measured. The State shall calculate the percentage of the total sale area subject to the governmental regulation or order. The State shall reduce the total contract price by that calculated percentage. However, variations in species, value, costs, or other items pertaining to the affected sale area will be analyzed and included in the adjustment if deemed appropriate by the State. The State will further reduce the total contract price by the reasonable cost of unamortized roads Purchaser constructed but was unable to fully use for removing timber. A reduction in total contract price terminates all of the Purchaser's rights to purchase and remove the timber and all other interest in the affected sale area.

G-070 Limitation on Damage

In the event of a breach of any provision of this contract by the State, the exclusive remedy available to Purchaser will be limited to a return of the initial deposit, unapplied payments, and credit for unamortized improvements made by Purchaser.

The State shall not be liable for any damages, whether direct, incidental or consequential.

G-080 Scope of State Advice

No advice by any agent, employee, or representative of the State regarding the method or manner of performing shall constitute a representation or warranty that said method, manner or result thereof will conform to the contract or be suitable for Purchaser's purposes under the contract. Purchaser's reliance on any State advice regarding the method or manner of performance shall not relieve Purchaser of any risk or obligation under the contract. Purchaser retains the final responsibility for its operations under this contract and State shall not be liable for any injuries resulting from Purchaser's reliance on any State advice regarding the method or manner of performance.

G-091 Sale Area Adjustment

The Parties may agree to adjustments in the sale area boundary. The cumulative changes to the sale area during the term of the contract shall not exceed more than four percent of the original sale area. If the sale area is increased, the added forest products become a part of this contract. The State shall determine the volume added and shall calculate the increase to the total contract price using the rates set forth in clause G-101, G-102, or G-103. If the sale area is reduced, the State shall determine the volume to be reduced. The State shall calculate the reduction to the total contract price using the rates set forth in clause G-101, G-102, or G-103.

G-101 Forest Products Not Designated

Any forest products not designated for removal, which must be removed in the course of operations authorized by the State, shall be approved and designated by the Contract Administrator. Added forest products become a part of this contract and the Scribner log scale volume, as defined by the Northwest Log Rules Advisory Group, shall be determined by the Contract Administrator. Added forest products shall be paid for at the following contract payment rates per Mbf Scribner log scale.

The pricing schedule has not been set for the sale.

G-106 Adding Naturally Damaged Forest Products

Any forest products not designated for removal that are seriously damaged by disease, insects or wind, or that may contribute seriously to the spread of insect or disease damage may be added to this sale by the State's Contract Administrator. Additions must be in unlogged areas of the sale and added volume shall not exceed an amount equal to 10 percent of the original advertised volume. Added forest products become a part of this contract and shall be paid for at the rate set forth in clause G-101, G-102 or G-103.

G-111 Title and Risk of Loss

Title to the forest products under this contract passes to the Purchaser after they are removed from the sale area, if adequate advance payment or payment security has been provided to the State under this contract. Purchaser bears all risk of loss of, or damage to, and has an insurable interest in, the forest products described in this contract from

the time the sale is confirmed under RCW 79.15.120. Breach of this contract shall have no effect on this provision.

G-116 Sustainable Forestry Initiative® (SFI) Certification

Forest products purchased under this contract are certified as being in conformance with the Sustainable Forestry Initiative program Standard under certificate number: BV-SFIS-US09000572.

Purchaser shall have at least one person regularly on-site during active operations that have completed training according to the requirements outlined within the SFI® program Standard. Purchaser shall designate in writing the name(s) of the individual(s) who will be on-site and provide proof of their successful completion of an approved training program prior to active operations.

G-120 Responsibility for Work

All work, equipment, and materials necessary to perform this contract shall be the responsibility of Purchaser. Any damage to improvements, except as provided in clause G-121 or unless the State issues an operating release pursuant to clause G-280, shall be repaired promptly to the satisfaction of the State and at Purchaser's expense.

G-121 Exceptions

Exceptions to Purchaser's responsibility in clause G-120 shall be limited exclusively to the following. These exceptions shall not apply where road damage occurs due to Purchaser's failure to take reasonable precautions or to exercise sound forest engineering and construction practices.

Road is defined as the road bed, including but not limited to its component parts, such as subgrade, ditches, culverts, bridges, and cattle guards.

For the purposes of this clause, damage will be identified by the State and is defined as:

1. Failure of (a) required improvements or roads designated in clause C-050, or (b) required or optional construction completed to the point that authorization to haul has been issued;
2. Caused by a single event from forces beyond the control of Purchaser, its employees, agents, or invitees, including independent contractors; and
3. Includes, but is not limited to natural disasters such as earthquakes, volcanic eruptions, landslides, and floods.

The repair work identified by the State shall be promptly completed by Purchaser at an agreed price. The State may elect to accomplish repairs by means of State-provided resources. The State will bear the cost to repair damages caused by a third party. In all other cases, the Purchaser shall bear responsibility for the costs as described below.

For each event, Purchaser shall be solely responsible for the initial \$5,000 in repairs. For repairs in excess of \$5,000, the parties shall share equally the portion of costs between \$5,000 and \$15,000. The State shall be solely responsible for the portion of the cost of repairs that exceed \$15,000.

Nothing contained in clauses G-120 and G-121 shall be construed as relieving Purchaser of responsibility for, or damage resulting from, Purchaser's operations or negligence, nor shall Purchaser be relieved from full responsibility for making good any defective work or materials. Authorization to haul does not warrant that Purchaser built roads are free from material defect and the State may require additional work, at Purchasers expense regardless of cost, to remedy deficiencies at any time.

G-140 Indemnity

To the fullest extent permitted by law, Purchaser shall indemnify, defend and hold harmless State, agencies of State and all officials, agents and employees of State, from and against all claims arising out of or resulting from the performance of the contract. "Claim" as used in this contract means any financial loss, claim, suit, action, damage, or expense, including but not limited to attorneys' fees, attributable for bodily injury, sickness, disease or death, or injury to or destruction of tangible property including loss of use resulting therefrom. Purchasers' obligations to indemnify, defend, and hold harmless includes any claim by Purchasers' agents, employees, representatives, or any subcontractor or its employees. Purchaser expressly agrees to indemnify, defend, and hold harmless State for any claim arising out of or incident to Purchasers' or any subcontractors' performance or failure to perform the contract. Purchasers' obligation to indemnify, defend, and hold harmless State shall not be eliminated or reduced by any actual or alleged concurrent negligence of State or its agents, agencies, employees and officials. Purchaser waives its immunity under Title 51 RCW to the extent it is required to indemnify, defend and hold harmless State and its agencies, officials, agents or employees.

G-150 Insurance

Purchaser shall, at its cost and expense, buy and maintain insurance of the types and amounts listed below. Failure to buy and maintain the required insurance may result in a breach and/or termination of the contract at State's option. State may suspend Purchaser operations until required insurance has been secured.

All insurance and surety bonds should be issued by companies admitted to do business within the State of Washington and have a rating of A-, Class VII or better in the most recently published edition of Best's Reports. If an insurer is not admitted, all insurance policies and procedures for issuing the insurance policies must comply with Chapter 48.15 RCW and 284-15 WAC.

The State of Washington, Department of Natural Resources region office of sale origin shall be provided written notice before cancellation or non-renewal of any insurance referred to therein, in accord with the following specifications:

1. Insurers subject to Chapter 48.18 RCW (admitted and regulated by the Insurance Commissioner): The insurer shall give the State 45 days advance notice of cancellation or non-renewal. If cancellation is due to non-payment of premium, the State shall be given 10 days advance notice of cancellation.
2. Insurers subject to Chapter 48.15 RCW (surplus lines): The State shall be given 20 days advance notice of cancellation. If cancellation is due to non-payment of premium, the State shall be given 10 days advance notice of cancellation.

Before starting work, Purchaser shall furnish State of Washington, Department of Natural Resources with a certificate(s) of insurance, executed by a duly authorized representative of each insurer, showing compliance with the insurance requirements specified in the contract. Insurance coverage shall be obtained by the Purchaser prior to operations commencing and continually maintained in full force until all contract obligations have been satisfied or an operating release has been signed by the State.

Purchaser shall include all subcontractors as insured under all required insurance policies, or shall furnish separate certificates of insurance and endorsements for each subcontractor. Subcontractor(s) must comply fully with all insurance requirements stated herein. Failure of subcontractor(s) to comply with insurance requirements does not limit Purchaser's liability or responsibility.

The State of Washington, Department of Natural Resources, its elected and appointed officials, agents and employees shall be named as an additional insured on all general liability, excess, umbrella, and property insurance policies.

All insurance provided in compliance with this contract shall be primary as to any other insurance or self-insurance programs afforded to or maintained by State. Purchaser waives all rights against State for recovery of damages to the extent these damages are covered by general liability or umbrella insurance maintained pursuant to this contract.

By requiring insurance herein, State does not represent that coverage and limits will be adequate to protect Purchaser and such coverage and limits shall not limit Purchaser's liability under the indemnities and reimbursements granted to State in this contract.

The limits of insurance, which may be increased as deemed necessary by State of Washington, Department of Natural Resources, shall not be less than as follows:

Commercial General Liability (CGL) Insurance. Purchaser shall maintain general liability (CGL) insurance, and, if necessary, commercial umbrella insurance with a limit of not less than \$1,000,000.00 per each occurrence. If such CGL insurance contains aggregate limits, the General Aggregate limit shall be at least twice the "each occurrence" limit. CGL insurance shall have products-completed operations aggregate limit of at least two times the "each occurrence" limit. CGL coverage shall include a Logging and Lumbering Endorsement (i.e. Logger's Broad-Form) to cover the events

that include, but are not limited to, fire suppression expenses, accidental timber trespasses, and wildfire property damage with limits of not less than \$2,000,000.00 each occurrence.

CGL insurance shall be written on Insurance Services Office (ISO) occurrence form CG 00 01 (or a substitute form providing equivalent coverage). All insurance shall cover liability arising out of premises, operations, independent contractors, products completed operations, personal injury and advertising injury, and liability assumed under an insured contract (including the tort liability of another party assumed in a business contract), and contain separation of insured (cross liability) condition.

Employer's Liability "Stop Gap" Insurance. Purchaser shall buy employers liability insurance, and, if necessary, commercial umbrella liability insurance with limits not less than \$1,000,000.00 each accident for bodily injury by accident or \$1,000,000.00 each employee for bodily injury by disease.

Workers' Compensation Coverage. Purchaser shall comply with all State of Washington workers' compensation statutes and regulations. Workers' compensation coverage shall be provided for all employees of Purchaser and employees of any subcontractor or sub-subcontractor. Coverage shall include bodily injury (including death) by accident or disease, which exists out of or in connection with the performance of this contract. Except as prohibited by law, Purchaser waives all rights of subrogation against State for recovery of damages to the extent they are covered by workers' compensation, employer's liability, commercial general liability, or commercial umbrella liability insurance.

If Purchaser, subcontractor or sub-subcontractor fails to comply with all State of Washington workers' compensation statutes and regulations and State incurs fines or is required by law to provide benefits to or obtain coverage for such employees, Purchaser shall indemnify State. Indemnity shall include all fines, payment of benefits to Purchaser or subcontractor employees, or their heirs or legal representatives, and the cost of effecting coverage on behalf of such employees.

Business Auto Policy (BAP). Purchaser shall maintain business auto liability and, if necessary, commercial umbrella liability insurance with a limit not less than \$1,000,000.00 per accident. Such insurance shall cover liability arising out of "Any Auto". Business auto coverage shall be written on ISO form CA 00 01, or substitute liability form providing equivalent coverage. If necessary the policy shall be endorsed to provide contractual liability coverage and cover a "covered pollution cost or expense" as provided in the 1990 or later editions of CA 00 01. Purchaser waives all rights against State for the recovery of damages to the extent they are covered by business auto liability or commercial umbrella liability insurance.

G-160 Agents

The State's rights and duties will be exercised by the Region Manager at Enumclaw, Washington. The Region Manager will notify Purchaser in writing who is responsible for administering the contract. The Region Manager has sole authority to waive,

modify, or amend the terms of this contract in the manner prescribed in clause G-180. No agent, employee, or representative of the State has any authority to bind the State to any affirmation, representation, or warranty concerning the forest products conveyed beyond the terms of this contract.

Purchaser is required to have a person on site during all operations who is authorized to receive instructions and notices from the State. Purchaser shall inform the State in writing who is authorized to receive instructions and notices from the State, and any limits to this person's authority.

G-170 Assignment and Delegation

No rights or interest in this contract shall be assigned by Purchaser without prior written permission of the State. Any attempted assignment shall be void and ineffective for all purposes unless made in conformity with this paragraph. Purchaser may perform any duty through a delegate, but Purchaser is not thereby relieved of any duty to perform or any liability. Any assignee or delegate shall be bound by the terms of the contract in the same manner as Purchaser.

G-180 Modifications

Waivers, modifications, or amendments of the terms of this contract must be in writing signed by Purchaser and the State.

G-190 Contract Complete

This contract is the final expression of the Parties' agreement. There are no understandings, agreements, or representations, expressed or implied, which are not specified in this contract.

G-200 Notice

Notices required to be given under the following clauses shall be in writing and shall be delivered to Purchaser's authorized agent or sent by certified mail to Purchaser's post office address:

- G-210 Violation of Contract
- G-220 State Suspends Operations

All other notices required to be given under this contract shall be in writing and delivered to the authorized agent or mailed to the Party's post office address. Purchaser agrees to notify the State of any change of address.

G-210 Violation of Contract

- a. If Purchaser violates any provision of this contract, the Contract Administrator, by written notice, may suspend those operations in violation. If the violation is capable of being remedied, Purchaser has 30 days after receipt of a suspension notice to remedy the violation. If the violation cannot be remedied (such as a violation of WAC 240-15-015) or Purchaser fails to remedy the violation within 30 days after receipt of a suspension notice, the

State may terminate the rights of Purchaser under this contract and collect damages.

- b. If the contract expires pursuant to clause G-030 or G-031 without Purchaser having performed all its duties under this contract, Purchaser's right to operate is terminated and Purchaser shall not have the right to remedy the breach. This provision shall not relieve Purchaser of any payment obligations.
- c. The State has the right to remedy the breach in the absence of any indicated attempt by Purchaser or if Purchaser is unable, as determined by the State, to remedy the breach. Any expense incurred by the State shall be charged to Purchaser and shall be paid within 30 days of receipt of billing.
- d. If Purchaser's violation is a result of a failure to make a payment when due, in addition to a. and b. above, interest shall accrue on the unpaid balance at 12 percent per annum, beginning the date payment was due.

G-220 State Suspends Operation

The Contract Administrator may suspend any operation of Purchaser under this contract when the State is suffering, or there is a reasonable expectation the State will suffer environmental, monetary, or other damage if the operation is allowed to continue.

Purchaser shall be in breach of this contract if the operation continues after the suspension notice or if the operation resumes without prior approval and notice from the Contract Administrator.

Purchaser may request a modification of a suspension within 30 days of the start of suspension through the dispute resolution process in clause G-240. If this process results in a finding that the suspension exceeded the time reasonably necessary to stop or prevent damage to the State, Purchaser is entitled to request a contract term adjustment under clause G-040.

If it reasonably appears that the damage that the State is suffering, or can reasonably be expected to suffer if the operation is allowed to continue, will prevent harvest for a period that will exceed 6 months, and Purchaser has complied with this contract, the provisions of clause G-066 shall govern just as if the harvest was prevented by an applicable foreign or domestic governmental regulation or order.

G-230 Unauthorized Activity

Any cutting, removal, or damage of forest products by Purchaser, its employees, agents, or invitees, including independent contractors, in a manner inconsistent with the terms of this contract or State law, is unauthorized. Such activity may subject Purchaser to liability for triple the value of said forest products under RCW 79.02.320 or RCW 79.02.300 and may result in prosecution under RCW 79.02.330 or other applicable statutes.

G-240 Dispute Resolution

The following procedures apply in the event of a dispute regarding interpretation or administration of this contract and the parties agree that these procedures must be followed before a lawsuit can be initiated.

- a. In the event of a dispute, Purchaser must make a written request to the Region Manager for resolution prior to seeking other relief.
- b. The Region Manager will issue a written decision on Purchaser's request within ten business days.
- c. Within ten business days of receipt of the Region Manager's decision, Purchaser may make a written request for resolution to the Deputy Supervisor - Uplands of the Department of Natural Resources.
- d. Unless otherwise agreed, a conference will be held by the Deputy Supervisor - Uplands within 30 calendar days of the receipt of Purchaser's request for review of the Region Manager's written decision. Purchaser and the Region Manager will have an opportunity to present their positions. The Deputy Supervisor - Uplands will issue a decision within a reasonable time of being presented with both Parties' positions.

G-250 Compliance with All Laws

Purchaser shall comply with all applicable statutes, regulations and laws, including, but not limited to; chapter 27.53 RCW, chapter 68.50 RCW, WAC 240-15 and WAC 296-54. Failure to comply may result in forfeiture of this contract.

G-260 Venue

This contract shall be governed by the laws of the State of Washington. In the event of a lawsuit involving this contract, venue shall be proper only in Thurston County Superior Court.

G-270 Equipment Left on State Land

All equipment owned or in the possession of Purchaser, its employees, agents, or invitees, including independent contractors, shall be removed from the sale area and other State land by the termination date of this contract. Equipment remaining unclaimed on State land 60 days after the expiration of the contract period is subject to disposition as provided by law. Purchaser shall pay to the State all costs of moving, storing, and disposing of such equipment. The State shall not be responsible for any damages to or loss of the equipment or damage caused by the moving, storing or disposal of the equipment.

G-280 Operating Release

An operating release is a written document, signed by the State and Purchaser, indicating that Purchaser has been relieved of certain rights or responsibilities with regard to the entire or a portion of the timber sales contract. Purchaser and State may agree to an operating release for this sale, or portion of this sale, prior to the contract

expiration, when all contract requirements pertaining to the release area have been satisfactorily completed. Upon issuance of a release, Purchaser's right to cut and remove forest products on the released area will terminate.

G-310 Road Use Authorization

Purchaser is authorized to use the following State roads and roads for which the State has acquired easements and road use permits; A-Line, B-Line, B-1000, B-1300, B-1300 Reroute, B-1310, B-1400, B-1410, B-1430, B-1430A, B-1470, B-1490, B-1492 and the B-1045A roads. The State may authorize in writing the use of other roads subject to fees, restrictions, and prior rights.

G-330 Pre-work Conference

Purchaser shall arrange with the Contract Administrator to review this contract and to examine the sale area before beginning any operations. A plan of operations shall be developed and agreed upon by the Contract Administrator and Purchaser before beginning any operations. To the extent that the plan of operations is inconsistent with the contract, the terms of the contract shall prevail. State's acceptance and approval of Purchaser's plan of operations shall not be construed as any statement or warranty that the plan of operations is adequate for Purchaser's purposes or complies with applicable laws.

G-340 Preservation of Markers

Any legal land subdivision survey corners and witness objects are to be preserved. If such are destroyed or disturbed, the Purchaser shall, at the Purchaser's own expense, re-establish them through a licensed land surveyor in accordance with U.S. General Land Office standards. Corners and/or witness objects that must be disturbed or destroyed in the process of road construction or logging shall be adequately referenced and/or replaced in accordance with RCW 58.24.040(8). Such references must be approved by the Contract Administrator prior to removal of said corners and/or witness objects.

G-360 Road Use Reservation

The State shall have the right to use, without charge, all existing roads and any road constructed or reconstructed on State lands by Purchaser under this contract. The State may extend such rights to others. If the State grants such rights to others, the State shall require performance or payment, as directed by the State, for their proportionate share of maintenance based on their use.

G-370 Blocking Roads

Purchaser shall not block the A-line, B-line or B-1000 roads, unless authority is granted in writing by the Contract Administrator.

G-430 Open Fires

Purchaser shall not set, or allow to be set by Purchaser's employees, agents, invitees and independent contractors, any open fire at any time of the year without first obtaining permission, in writing, from the Contract Administrator.

G-450 Encumbrances

This contract and Purchaser's activities are subject to the following:

Easement, including the terms and provisions thereof,

For: Trail

In Favor of: WA State Department of Natural Resources

Disclosed by Application No.: 50-070357

Granted: 4/13/1998; Expires: 01/31/2047

Agreement, including the terms and provisions thereof,

For: Access

In Favor of: Squaxin Island Tribe

Disclosed by Application No.: 92-091977

Granted: 10/3/2014; Expires: 10/2/2016

Lease, including the terms and provisions thereof,

For: Minor Forest Products

In Favor of: WA State Department of Natural Resources

Disclosed by Application No.: 35-CP0009

Granted: 7/1/2009; Expires: Indefinite

Lease, including the terms and provisions thereof,

For: Minor Forest Products

In Favor of: WA State Department of Natural Resources

Disclosed by Application No.: 35-CP0011

Granted: 1/1/2010; Expires: Indefinite

Lease, including the terms and provisions thereof,

For: Minor Forest Products

In Favor of: WA State Department of Natural Resources

Disclosed by Application No.: 35-SPSGH02

Granted: 1/1/2015; Expires: Indefinite

Lease, including the terms and provisions thereof,

For: Minor Forest Products

In Favor of: WA State Department of Natural Resources

Disclosed by Application No.: 35-SPSTC01

Granted: 1/1/2015; Expires: Indefinite

Section P: Payments and Securities

P-011 Initial Deposit

Purchaser paid DATA MISSING initial deposit, which will be maintained pursuant to RCW 79.15.100(3). If the operating authority on this contract expires without Purchaser's payment of the full amount specified in Clause P-020, the initial deposit will be immediately forfeited to the State, and will be offset against Purchaser's remaining balance due. Any excess initial deposit funds not needed to ensure full

payment of the contract price, or not needed to complete any remaining obligations of the Purchaser existing after contract expiration, will be refunded to the Purchaser.

P-020 Payment for Forest Products

Purchaser agrees to pay the total, lump sum contract price of \$216,087.00. The total contract price consists of a \$0.00 contract bid price plus \$216,087.00 in fees. Fees collected shall be retained by the state unless the contract is adjusted via the G-066 clause. Purchaser shall be liable for the entire purchase price, and will not be entitled to any refunds or offsets unless expressly stated in this contract.

THE PURCHASE PRICE SHALL NOT BE AFFECTED BY ANY FACTORS, INCLUDING: the amount of forest products actually present within the contract area, the actual acreage covered by the contract area, the amount or volume of forest products actually cut or removed by purchaser, whether it becomes physically impossible or uneconomic to remove the forest products, and whether the subject forest products have been lost or damaged by fire or any other cause. The only situations Purchaser may not be liable for the full purchase price are governed by clause G-066, concerning governmental regulatory actions taken during the term of the contract.

P-045 Guarantee of Payment

Purchaser will pay for forest products prior to cutting or will guarantee payment by posting an approved payment security. The amount of cash or payment security shall be determined by the State and shall equal or exceed the value of the cutting proposed by Purchaser.

P-050 Billing Procedure

The State will compute and forward to Purchaser statements of charges provided for in the contract. Purchaser shall deliver payment to the State on or before the date shown on the billing statement.

P-080 Payment Account Refund

Advance payments made under P-045 or P-045.2 remaining on account above the value for the charges shall be returned to Purchaser within 30 days following the final report of charges. Refunds not made within the 30 day period will accrue interest at the interest rate, as established by WAC 332-100-030, computed on a daily basis until paid.

P-090 Performance Security

Purchaser agrees to furnish, within 30 days of the confirmation date, security acceptable to the State in the amount of \$100,000.00. The Security provided shall guarantee performance of all provisions of this contract and payment of any damages caused by operations under this contract or resulting from Purchaser's noncompliance with any rule or law. Acceptable performance security may be in the form of a performance bond, irrevocable letter of credit, cash, savings or certificate of deposit account assignments, and must name the State as the obligee or beneficiary. A letter of credit must comply with Title 62A RCW, Article 5. Performance security must remain in full force over the duration of the contract length. Surety bonds issued shall conform to the issuance and rating requirements in clause G-150. The State shall retain the

performance security pursuant to RCW 79.15.100. Purchaser shall not operate unless the performance security has been accepted by the State. If at any time the State decides that the security document or amount has become unsatisfactory, Purchaser agrees to suspend operations and, within 30 days of notification, to replace the security with one acceptable to the State or to supplement the amount of the existing security.

P-100 Performance Security Reduction

The State may reduce the performance security after an operating release has been issued if the State determines that adequate security exists for any remaining obligations of Purchaser.

Section H: Harvesting Operations

H-011 Certification of Fallers and Yarder Operators

All persons engaged in the felling and yarding of timber must receive certification in writing from the Contract Administrator. Certification may be revoked when the Contract Administrator determines that non-compliance of leave tree selection criteria or cut tree selection criteria is occurring, or excessive damage to leave trees or skid trails is occurring.

Excessive damage for leave trees is defined in clause H-012.

Excessive skid trail damage is defined in clause H-015 or H-016.

When leave tree damage exceeds the limits set forth in clause H-012, Purchaser shall be subject to liquidated damages (clause D-040 or D-041).

H-012 Leave Tree Damage Definition

Leave trees are trees required for retention within the sale boundary. Purchaser shall protect leave trees from being cut, damaged, or removed during operations.

Leave tree damage exists when more than 5 percent of the leave trees are damaged in a unit and when one or more of the following criteria occur as a result of Purchaser's operation, as determined by the Contract Administrator:

- a. A leave tree has one or more scars on its trunk exposing the cambium layer, which in total exceeds 25 square inches.
- b. A leave tree top is broken or the live crown ratio is reduced below 30 percent.
- c. A leave tree has more than 1/3 of the circumference of its root system injured such that the cambium layer is exposed.

If the Contract Administrator determines that a leave tree has been cut or damaged, the Purchaser may be required to pay liquidated damages for Excessive Leave Tree Damage as detailed in clause D-040.

H-013 Reserve Tree Damage Definition

Reserve trees are trees required and designated for retention within the sale boundary. Purchaser shall protect reserve trees from being cut, damaged, or removed during operations.

Reserve tree damage exists when one or more of the following criteria occur as a result of Purchaser's operation, as determined by the Contract Administrator:

- a. A reserve tree has one or more scars on its trunk exposing the cambium layer, which in total exceeds 100 square inches.
- b. A reserve tree top is broken or the live crown ratio is reduced below 30 percent.
- c. A reserve tree has more than 1/3 of the circumference of its root system injured such that the cambium layer is exposed.

If the Contract Administrator determines that a reserve tree has been cut or damaged, the Purchaser shall provide a replacement reserve tree of like condition, size, and species within the sale area, as approved by the Contract Administrator. Purchaser may be required to pay liquidated damages for Excessive Reserve Tree Damage as detailed in clause D-041.

Removal of designated reserve trees from the sale area is unauthorized, and may invoke the use of the G-230 'Trespass and Unauthorized Activity' clause. Purchaser is required to leave all cut or damaged reserve trees on site.

H-016 Skid Trail Requirements

A skid trail is defined as an area that is used for more than three passes by any equipment.

Purchaser shall comply with the following during the yarding operation:

- a. A skid trail will not exceed 12 feet in width, including rub trees.
- b. Skid trails shall not cover more than 10 percent of the total acreage on one unit.
- c. Location of the skid trails must be marked by Purchaser and approved by the Contract Administrator.
- d. Except for rub trees, skid trails shall be felled and yarded prior to the felling of adjacent timber.
- e. Rub trees shall be left standing until all timber tributary to the skid trail has been removed.

- f. Excessive soil damage is not permitted. Excessive soil damage is described in clause H-017.
- g. Purchaser will not have more than two skid trails open to active skidding at any one time. All other skid trails used for skidding timber will be closed.
- h. Once a skid trail is closed, Purchaser will not reopen a skid trail unless approved in writing by the Contract Administrator.
- i. Skid trails will be water barred at the time of completion of yarding, if required by the Contract Administrator.

Purchaser shall not deviate from the requirements set forth in this clause without prior written approval from the Contract Administrator.

H-017 Preventing Excessive Soil Disturbance

Operations may be suspended when soil rutting exceeds 12 inches as measured from the natural ground line. To reduce soil damage, the Contract Administrator may require water bars to be constructed, grass seed to be placed on exposed soils, or other mitigation measures. Suspended operations shall not resume unless approval to do so has been given, in writing, by the Contract Administrator.

H-035 Fall Trees Into Sale Area

Trees shall be felled into the sale area unless otherwise approved by the Contract Administrator.

H-040 Purchaser Harvest Plan

Purchaser shall, as part of the plan of operations, prepare an acceptable harvest plan for all units. The plan shall address the felling, yarding near wetlands (S-120 clause), and slash operations, which are part(s) of this contract. The harvest plan shall be approved by the Contract Administrator prior to beginning the harvest operation. Purchaser shall not deviate from the harvest plan without prior written approval by the Contract Administrator.

H-051 Branding and Painting

Purchaser shall provide a State of Washington registered log brand, acceptable to the State, unless the State agrees to furnish the brand. All purchased timber shall be branded in a manner that meets the requirements of WAC 240-15-030(2)(a)(i). All timber purchased under a contract designated as export restricted shall also be painted in a manner that meets the requirements of WAC 240-15-030(2)(a)(ii).

For pulp loads purchased under a contract designated as export restricted, Purchaser shall brand at least 3 logs with legible brands at one end. Also, 10 logs shall be painted at one end with durable red paint.

H-080 Snags Not to be Felled

Snags not required to be felled for safety reasons may be left standing. Snags felled for safety reasons shall not be removed and must remain where felled.

H-120 Harvesting Equipment

Forest products sold under this contract shall be harvested and removed using cable and ground based equipment. Ground based equipment shall be limited to tracked ground based equipment on sustained slopes of 45% and less. Non-tethered self-leveling equipment is limited to sustained slopes of 55% or less. Cable-tethered equipment is limited to sustained slopes of 75% or less. Use of tracked skidders shall be allowed for pole yarding only, unless authority to use other equipment is granted in writing by the State. unless authority to use other equipment is granted in writing by the State.

H-125 Log Suspension Requirements

Lead-end suspension is required for all yarding activities.

H-126 Tailholds on State Land

If Purchaser tailholds on State land, methods to minimize damage to live trees outside the sale area shall be employed and must be approved in writing by the Contract Administrator.

H-140 Special Harvest Requirements

Purchaser shall accomplish the following during the harvest operations:

- a. Cutting, yarding and timber haul on roads other than those listed in the H-131, will not be permitted from November 1st to April 30th in Units #1, #5, #6, #7, #9, #10 and #11, nor on weekends or state recognized holidays, unless authority to do so is granted in writing by the Contract Administrator. If permission is granted to operate from November 1 to April 30, the Purchaser shall comply with a "Winter Operating Plan" to include further protection of water, soil, roads, and other forest assets at the Purchaser's expense. All preventative measures shall be in place prior to commencing any winter operations.
- b. Purchaser shall take measures throughout operations to control soil erosion, water channelization, and prevent sediment delivery to streams or wetlands. Methods may include construction of water bars, "sweeping" with logs, silt traps, or other measures on skids trails, yarding corridors and haul roads.
- c. Equipment limitation zones are required within 30 feet of Type 5 streams.
- d. Any and all operations associated with this sale may be temporarily suspended when, in the opinion of the Contract Administrator, there is the potential for delivery to typed water.
- e. No equipment shall operate, or trees felled or damaged, outside the timber sale boundary.

- f. Purchaser shall cut all vine maple within the harvest unit(s), leaving a stump no more than 12 inches in height.
- g. The Purchaser shall notify all employees and contractors working on this sale that any danger tree marked or unmarked may be felled. Any marked danger tree will be replaced with a suitable tree of similar size and species as approved by the Contract Administrator.
- h. Within shovel logging areas, the shovel operator shall break up concentrations of logging debris greater than 10.5 feet by 10.5 feet to allow exposure of natural forest soils to ensure proper reforestation.

Permission to do otherwise must be granted in writing by the Contract Administrator.

H-141 Additional Harvest Requirements

Purchaser shall accomplish the following during the harvest operations:

- a. The hauling of forest products will not be permitted on the B-1045A and B-1430 (STA 12+71 to 21+15) from November 1st to April 30th
- b. Cutting, and yarding in Units #2, #3, #4 and #8, will not be permitted from November 1st to April 30th.
- c. Purchaser shall leave 2 down logs per acre. A log is defined as having a minimum diameter of 12 inches on the small end of the log and a minimum length of 20 feet or at least 100 board feet in Units #1, #2 and #5 through #10.
- d. Purchaser shall place down woody debris, consisting of 3 conifer and 3 hardwood logs, 24 inches in diameter (LE) by 20 feet long as part of abandonment of the B-1045A road at stations 4+80 to 5+40, per Road Plan section 11.
- e. No equipment may operate within, nor logs yarded through or over, leave tree clumps marked with yellow leave tree area tags, in Units #2 and #8.

Permission to do otherwise must be granted in writing by the State.

H-190 Completion of Settings

Operations begun on any setting of the sale area shall be completed before any operation begins on subsequent settings unless authorized in writing by the Contract Administrator.

H-220 Protection of Residual or Adjacent Trees

Unless otherwise specified by this contract, the Contract Administrator shall identify damaged adjacent or leave trees that shall be paid for according to clause G-230.

Section C: Construction and Maintenance**C-040 Road Plan**

Road construction and associated work provisions of the Road Plan for this sale, dated 4/4/2016 are hereby made a part of this contract.

C-050 Purchaser Road Maintenance and Repair

Purchaser shall perform work at their own expense on the B-1045, B-1045A, B-1300, B-1310, B-1400, B-1410, B-1430, B-1430A, B-1470 and B-1492 roads. All work shall be completed to the specifications detailed in the Road Plan.

C-060 Designated Road Maintainer

If required by the State, Purchaser shall perform maintenance and replacement work as directed by the Contract Administrator on all other roads used not covered in clause C-050. Purchaser shall furnish a statement in a form satisfactory to the State showing the costs incurred while performing this work. Costs shall be based on the rates set forth in the State current Equipment Rate Schedule on file at the region and Olympia offices. The State shall reimburse Purchaser for said costs within 30 days of receipt and approval of the statement.

C-080 Landing Locations Approved Prior to Construction

Landings shall be marked by Purchaser and approved by the Contract Administrator prior to construction.

C-140 Water Bars

Purchaser shall, as directed by the Contract Administrator, construct water bars across haul roads, skid trails and fire trails as necessary to control soil erosion and water pollution.

Section S: Site Preparation and Protection**S-001 Emergency Response Plan**

An Emergency Response Plan (ERP) shall be provided to the Contract Administrator containing but not limited to, valid contact numbers and procedures for medical emergencies, fire, hazardous spills, forest practice violations and any unauthorized or unlawful activity on or in the vicinity of the sale area. The Contract Administrator and the State shall be promptly notified whenever an incident occurs requiring an emergency response.

The ERP must be presented for inspection at the prework meeting and kept readily available to all personnel, including subcontractors, on site during active operations.

S-010 Fire Hazardous Conditions

Purchaser acknowledges that operations under this Contract may increase the risk of fire. Purchaser shall conduct all operations under this agreement following the requirements of WAC 332-24-005 and WAC 332-24-405 and further agrees to use the highest degree of care to prevent uncontrolled fires from starting.

In the event of an uncontrolled fire, Purchaser agrees to provide equipment and personnel working at the site to safely and effectively engage in first response fire suppression activity.

Purchaser's failure to effectively engage in fire-safe operations is considered a breach and may result in suspension of operations.

S-030 Landing Debris Clean Up

Landing debris shall be disposed of in a manner approved in writing by the Contract Administrator.

S-050 Cessation of Operations for Low Humidity

During the "closed season", when the humidity is 30 percent or lower on the sale area, all operations must cease unless authority to continue is granted by the State in writing.

S-060 Pump Truck or Pump Trailer

Purchaser shall provide a fully functional pump truck or pump trailer equipped to meet the specifications of WAC 332-24-005 and WAC 332-24-405 during the "closed season" or as extended by the State and shall provide trained personnel to operate this equipment on the sale area during all operating periods.

S-100 Stream Cleanout

Slash or debris which enters any streams as a result of operations under this contract and which is identified by the Contract Administrator shall be removed and deposited in a stable position. Removal of slash or debris shall be accomplished in a manner that avoids damage to the natural stream bed and bank vegetation.

S-120 Stream Protection

No timber shall be felled into, across, or yarded through all wetlands, including those less than 1/4 acre in size or any stream, except the B-1045A construction and Type 5 streams.

S-130 Hazardous Materials

a. Hazardous Materials and Waste - Regulatory Compliance

Purchaser is responsible for understanding and complying with all applicable local, state, and federal hazardous material/waste laws and regulations for operations conducted under this contract. Such regulations pertain to, but may not be limited to, hazardous material storage, handling and transport, personnel protection, release notification and emergency response, cleanup and waste disposal. Purchaser shall be responsible for restoring the site in the event of a spill.

b. Hazardous Materials Spill Prevention

All operations shall be conducted in a manner that avoids the release of hazardous materials, including petroleum products, into the environment (water, air or land).

c. Hazardous Materials Spill Containment, Control and Cleanup

If safe to do so, Purchaser shall take immediate action to contain and control all hazardous material spills. Purchaser shall ensure that enough quick response spill kits capable of absorbing 4 to 6 gallons of oil, coolant, solvent or contaminated water are available on site to quickly address potential spills from any piece of equipment at all times throughout active operations. If large quantities of bulk fuel/other hazardous materials are stored on site, Purchaser must be able to effectively control a container leak and contain & recover a hazmat spill equal to the largest single on site storage container volume. (HAZWOPER reg. 29CFR 1910.120 (j) (1) (vii)).

d. Hazardous Material Release Reporting

Releases of oil or hazardous materials to the environment must be reported according to the State Department of Ecology (ECY). It is the responsibility of the Purchaser to have all emergency contact information readily available and a means of remote communication for purposes of quick notification. In the event of a spill, the Purchaser is responsible for notifying the following:

Appropriate Department of Ecology regional office (contact information below).

DNR Contract Administrator

ECY - Northwest Region:

1-425-649-7000

(Island, King, Kitsap, San Juan, Skagit, Snohomish, and Whatcom counties)

ECY - Southwest Region:

1-360-407-6300

(Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, and Wahkiakum counties)

ECY - Central Region:

1-509-575-2490

(Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, and Yakima counties)

ECY - Eastern Region:

1-509-329-3400

(Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, and Whitman counties)

S-131 Refuse Disposal

As required by RCW 70.93, All Purchaser generated refuse shall be removed from state lands for proper disposal prior to termination of this contract. No refuse shall be burned, buried or abandoned on state forest lands. All refuse shall be transported in a manner such that it is in compliance with RCW 70.93 and all loads or loose materials shall be covered/secured such that these waste materials are properly contained during transport.

Section D: Damages

D-013 Liquidated Damages or Failure to Perform

The following clauses provide for payments by Purchaser to the State for breaches of the terms of this contract other than failure to perform. These payments are agreed to as liquidated damages and not as penalties. They are reasonable estimates of anticipated harm to the State, which will be caused by Purchaser's breach. These liquidated damages provisions are agreed to by the State and Purchaser with the understanding of the difficulty of proving loss and the inconvenience or infeasibility of obtaining an adequate remedy. These liquidated damages provisions provide greater certainty for the Purchaser by allowing the Purchaser to better assess its responsibilities under the contract.

Clause P-020 governs Purchaser's liability in the event Purchaser fails to perform any of the contract requirements other than the below liquidated damage clauses without written approval by the State. Purchaser's failure to pay for all or part of the forest products sold in this contract prior to expiration of the contract term results in substantial injury to the State. Therefore, Purchaser agrees to pay the State the full lump sum contract price in P-020 in the event of failure to perform.

D-040 Leave Tree Excessive Damage

When Purchaser's operations exceed the damage limits set forth in clause H-012, Leave Tree Damage Definition, the trees damaged result in substantial injury to the State. The value of the damaged leave trees at the time of the breach is not readily ascertainable. Therefore, Purchaser agrees to pay the State as liquidated damages at the rate of \$1,000.00 per tree for all damaged trees in VDT units #3 and #4.

D-041 Reserve Tree Excessive Damage

When Purchaser's operations exceed the damage limits set forth in clause H-013, Reserve Tree Damage Definition, and when the Contract Administrator determines that a suitable replacement for a damaged reserve tree is not possible, the damaged trees result in substantial injury to the State. The value of the damaged reserve trees at the time of the breach is not readily ascertainable. Therefore, the Purchaser agrees to pay the State as liquidated damages at the rate of \$1,000.00 per tree for all damaged reserve trees that are not replaced in VRH units #1, #2 and #5 through #10.

DRAFT

DRAFT

DRAFT

IN WITNESS WHEREOF, the Parties hereto have entered into this contract.

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

Purchaser

Art Tasker
South Puget Sound Region Manager

Date: _____
Address: _____

Date: _____

CORPORATE ACKNOWLEDGEMENT
(Required for both LLC and Inc. Entities)

STATE OF _____)

COUNTY OF _____)

On this _____ day of _____, 20____, before me personally appeared _____

_____ to me known to be the _____ of the corporation that executed the within and foregoing instrument and acknowledged said instrument to be the free and voluntary act and deed of the corporation, for the uses and purposes therein mentioned, and on oath stated that (he/she was) (they were) authorized to execute said instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written.

Notary Public in and for the State of

My appointment expires _____



WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES

FOREST EXCISE TAX ROAD SUMMARY SHEET

Region:

Timber Sale Name:

Application Number:

EXCISE TAX APPLICABLE ACTIVITIES

Construction: linear feet
Road to be constructed (optional and required) but not abandoned

Reconstruction: linear feet
Road to be reconstructed (optional and required) but not abandoned

Abandonment: linear feet
Abandonment of existing roads not reconstructed under the contract

Decommission: linear feet
Road to be made undriveable but not officially abandoned.

Pre-Haul Maintenance: linear feet
Existing road to receive maintenance work (specifically required by the contract) prior to haul

EXCISE TAX EXEMPT ACTIVITIES

Temporary Optional Construction: linear feet
Optional roads to be constructed and then abandoned

Temporary Optional Reconstruction: linear feet
Optional roads to be reconstructed and then abandoned

New Abandonment: linear feet
Abandonment of roads constructed or reconstructed under the contract

All parties must make their own assessment of the taxable or non-taxable status of any work performed under the timber sale contract. The Department of Revenue bears responsibility for determining forest road excise taxes. The Department of Natural Resources developed this form to help estimate the impact of forest excise taxes. However, the information provided may not precisely calculate the actual amount of taxes due. The Department of Revenue is available for consultation by calling 1.800.548.8829.

(Revised 6/13)

PRE-CRUISE NARRATIVE

Sale Name: Rams Horn	Region: South Puget Sound
Agreement #: 30-093253	District: Black Hills
Contact Andy Ritter Forester:	Phone/ Location: (360)-902-1447 Ext: /
Alternate Andrew Reed Contact:	Phone/ Location: (360)-902-1447 Ext: /

Type of Sale (lump sum, mbf scale, tonnage scale or contract harvest): Lump Sum
 Required or Optional removal of utility as pulp:
 Evaluated for RFRS Implementation?: Yes
 Percentage cable (specify downhill vs uphill): 75% uphill
 Percentage ground based: 25%
 Species Onsite: RC, DF, WH, RA, BC, BLM, NF, SF, SS, Other:(Please List)

UNIT ACREAGES AND METHOD OF DETERMINATION:

Unit #	Harvest R/W or RMZ WMZ	Legal Description Sec/Twp/Rng	Grant	Gross Traversed Acres	Deductions from Gross Acres (No harvest acres)			Net Harvest Acres	Acreage Determination (List method and error of closure if applicable)
					RMZ/WMZ Acres	Leave Tree Acres	Existing Road Acres		
1		Sec 03/ T17 N/ R 04 W	06	55.2		2.8	1.2	51.2	GPS
2		Sec 03/ T17 N/ R 04 W	06	13.6		0.8		12.8	GPS
3(VDT)		Sec 03/ T17 N/ R 04 W	06	1.3				1.3	GPS
4(VDT)		Sec 03/ T17 N/ R 04 W	06	2.0				2.0	GPS
5		Sec 03/ T17 N/ R 04 W	06	15.0		1.0		14.0	GPS
6		Sec 02/ T17 N/ R 04 W Sec 03/ T17 N/ R 04 W	06	89.9		3.8		86.1	GPS
7		Sec 02/ T17 N/ R 04 W Sec 03/ T17 N/ R 04 W	03,06	29.6		1.5		28.1	GPS
8		Sec 02/ T17 N/ R 04 W Sec 35/ T17 N/ R 04 W	03	6.9		0.9		6.0	GPS
9		Sec 02/ T17 N/ R 04 W	03	5.2		0.5		4.7	GPS
10		Sec 02/ T17 N/ R 04 W Sec 34/ T18 N/ R 04 W Sec 35/ T18 N/ R 04 W	02,03	53.3		3.3	0.9	49.1	GPS
11 (Rock Pit)		Sec 02/ T17 N/ R 04 W	03	1.3				1.3	GPS
12 (ROW)		Sec 03/ T17 N/ R 04 W	06	0.6				0.6	GPS
13 (ROW)		Sec 02/ T17 N/ R 04 W	03	1.1				1.1	GPS
TOTAL ACRES				275		14.6	2.1	258.3	

HARVEST PLAN AND SPECIAL CONDITIONS:

Unit #	Harvest Prescription: (Mark leave, take, paint color, tags, flagging etc.)	Special Management areas:	Other conditions (# leave trees, etc.)
1	Variable Retention Harvest: Boundaries are marked with white "Timber Sale Boundary" tags and pink flagging. Clumped leave trees are marked with yellow "Leave Tree Area" tags and pink flagging.	N/A	8 leave trees per acre
2	Variable Retention Harvest: Boundaries are marked with white "Timber Sale Boundary" tags and pink flagging. Clumped leave trees are marked with yellow "Leave Tree Area" tags and pink flagging.	N/A	8 leave trees per acre
3 VDT	Variable Density Thinning: Boundaries are marked with white "Timber Sale	Take trees are banded with Red paint.	

	Area” tags and pink flagging (inner zone), and blue “Special Area Management” tags.		
4 VDT	Variable Density Thinning: Boundaries are marked with white “Timber Sale Area” tags and pink flagging (inner zone), and blue “Special Area Management” tags.	Take trees are banded with Red paint.	
5	Variable Retention Harvest: Boundaries are marked with white “Timber Sale Boundary” tags and pink flagging. Clumped leave trees are marked with yellow “Leave Tree Area” tags and pink flagging.	N/A	8 leave trees per acre
6	Variable Retention Harvest: Boundaries are marked with white “Timber Sale Boundary” tags and pink flagging. Clumped leave trees are marked with yellow “Leave Tree Area” tags and pink flagging.	N/A	8 leave trees per acre
7	Variable Retention Harvest: Boundaries are marked with white “Timber Sale Boundary” tags and pink flagging. Clumped leave trees are marked with yellow “Leave Tree Area” tags and pink flagging.	N/A	8 leave trees per acre
8	Variable Retention Harvest: Boundaries are marked with white “Timber Sale Boundary” tags and pink flagging. Clumped leave trees are marked with yellow “Leave Tree Area” tags and pink flagging.	N/A	8 leave trees per acre
9	Variable Retention Harvest: Boundaries are marked with white “Timber Sale Boundary” tags and pink flagging. Clumped leave trees are marked with yellow “Leave Tree Area” tags and pink flagging.	N/A	8 leave trees per acre
10	Variable Retention Harvest: Boundaries are marked with white “Timber Sale Boundary” tags and pink flagging. Clumped leave trees are marked with yellow “Leave Tree Area” tags and pink flagging.	N/A	8 leave trees per acre
11 (Rock Pit)	Larch Pillar Rock Pit Expansion: Boundaries are marked with white “Timber Sale Boundary” tags and pink flagging.	N/A	
12 ROW	Right of way marked with orange “Right of Way” tags.	N/A	
13 ROW	Right of way marked with orange “Right of Way” tags.	N/A	

OTHER PRE-CRUISE INFORMATION:

Unit #	Estimated Volume	Access information (Gates, locks, etc.)	Photos, traverse maps required
1	See Cruise		Traverse map with contours, roads and leave trees. (Scale 1” to 400’)
2	See Cruise		Traverse map with contours, roads and leave trees. (Scale 1” to 400’)
3 VDT	See Cruise		Traverse map with contours, roads and leave trees. (Scale 1” to 400’)
4 VDT	See Cruise		Traverse map with

			contours, roads and leave trees. (Scale 1" to 400')
5	See Cruise		Traverse map with contours, roads and leave trees. (Scale 1" to 400')
6	See Cruise		Traverse map with contours, roads and leave trees. (Scale 1" to 400')
7	See Cruise		Traverse map with contours, roads and leave trees. (Scale 1" to 400')
8	See Cruise		Traverse map with contours, roads and leave trees. (Scale 1" to 400')
9	See Cruise		Traverse map with contours, roads and leave trees. (Scale 1" to 400')
10	See Cruise		Traverse map with contours, roads and leave trees. (Scale 1" to 400')
11 Rock Pit	See Cruise		Traverse map with contours, roads and leave trees. (Scale 1" to 400')
12 ROW	See Cruise		Traverse map with contours, roads and leave trees. (Scale 1" to 400')
13 ROW	See Cruise		Traverse map with contours, roads and leave trees. (Scale 1" to 400')

REMARKS:

Unit 11 is associated with the expansion of the Larch Pillar Pit and has already been previously cruised (see cruise data on TSDC). The entire sale was part of a large thinning previously, due to this the entire harvest area has all residual trees banded in blue paint throughout.

Prepared By: Andrew Reed Date: 4/15/2016	Title: Forester	CC:
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Revised 2/23/2007 (PSLD)

REQUIRED CRUISE MAPS TO SUBMIT WITH PRE-CRUISE NARRATIVE

- 1"=400' Map include the following:
 - Units, including R/W units, showing boundary markings,
 - Unit numbers,
 - GPS traverse points with corresponding labels,
 - leave tree clump locations,
 - contours (from Quick Data Loader, Topography, contours use LiDAR DEM 2-meter, either 10 foot or 40 foot) & elevation bands labeled
 - may need to change contour line symbol to narrower line and lighter color,
 - new & existing road locations with labels
- Driving map, include the following:
 - Unit polygons and numbers
 - Access route with distances indicators and mileages
 - Road names
 - Gates and lock type
 - Nearest main town
- Location of GPS points

Cruise Narrative

Sale Name: Rams Horn	Region: South Puget Sound
Agree. #: 30-093253	District: Black Hills
Lead cruiser: John Piety	Completion date: 5-16-16
Other cruisers on sale: none	

Unit acreage specifications:

Unit #	Cruised acres	Cruised acres agree with sale acres? Yes/No	If acres do not agree explain why.
1	51.2	Yes	
2	12.8	Yes	
3	1.3	Yes	
4	2.0	Yes	
5	14.0	Yes	
6	86.1	Yes	
7	28.1	Yes	
8	6.0	Yes	
9	4.7	Yes	
10	49.1	Yes	
11 pit	1.3	Yes	
RW12	0.6	Yes	
RW13	1.1	Yes	
Total	258.3	Yes	

Unit cruise specifications:

Unit #	Sample type (VP, FP, ITS, 100%)	Expansion factor (BAF, full/half)	Sighting height (4.5 ft, 16 ft.)	Grid size (Plot spacing or % of area)	Plot ratio (cruise:count)	Total number of plots
1	VP	40 BAF	4.5	330' X 330'	1:1	22
2	VP	46.91 BAF	4.5	330' X 330'	1:1	4
3	VP	20 BAF	4.5	150' X 150'	1:1	3
4	ITS	WH 3.9286 DF 100%	N/A	N/A	N/A	1
5	VP	40 BAF	4.5	330' X 330'	1:1	5
6	VP	40 BAF	4.5	330' X 330'	1:1	34
7	VP	40 BAF	4.5	330' X 330'	1:1	9

8	VP	40 BAF	4.5	225' X 225'	1:1	5
9	VP	40 BAF	4.5	225' X 225'	1:1	4
10	VP	46.91 BAF	4.5	330' X 330'	1:1	17
11 pit	VP	27.78 BAF	4.5	99' X 99'	1:1	5
RW12	VP	40 BAF	4.5	350' along centerline	100%	2
RW13	VP	40 BAF	4.5	325' along centerline	100%	2

Sale/Cruise Description:

Minor species cruise intensity:	100% up to 5 trees per species					
Minimum cruise spec:	<p>HA - Logs meeting the following criteria: Surface characteristics for a high quality A sort will have sound tight knots not to exceed 1 1/2" in diameter, numbering not more than an average of one per foot of log length. May include logs with not more than two larger knots. Knots and knot indicators 1/2" in diameter and smaller shall not be a determining factor. Logs will have a growth ring count of 6 or more rings per inch in the outer third top end of the log. (High Quality sort. Grades SM, 2S, 3S. Lengths 16ft-40ft, 2ft multiples min TDIB 8". Max butt 27")</p> <p>HB - Logs meeting the following criteria: Surface characteristics for an Intermediate B sort will have sound tight knots not to exceed 1 1/2" in diameter. May include logs with not more than two larger knots up to 2 1/2" in diameter. Logs will have a growth ring count of 6 or more rings per inch in the outer third to end of the log. (Intermediate sort. Grades 2S, 3S. Lengths 16ft-40ft, 2ft multiples min TDIB 8". Max butt 27").</p> <p>D - Domestic quality logs that do not meet high quality or intermediate definitions. (Domestic sort. Grades 2S, 3S, 4S and utility. Lengths 16ft-40ft, min TDIB 2in.)</p> <p>O- Logs exceeding 27" on the large end. (Oversize sort. Grade 2S. Lengths 16ft-40ft, 2ft multiples butt diameter min dia. 27 in. +)</p> <p>R - Logs meeting the following criteria: Surface characteristics for a rough log sort will not meet the requirements for a domestic 2S, but still be in limitations for a domestic 3S. Meaning logs will contain excessive knots in excess of 2 1/2" and not exceeding 3" with a recovery of less than 65% of the net scale and greater than 33% of the gross scale. (Rough oversize sort. Grade 3S. Lengths 16ft-40ft, 2ft multiples TDIB 12"+)</p>					
Avg ring count by sp:	DF =	6	WH =	7		
Leave/take tree description:	Leave trees are tagged out with yellow leave tree tags.					
Other conditions	Units 3 and 4 are VDTs the trees banded with red paint are to be removed. Most of these units have blue banded trees, this does not indicate anything.					

Field observations:

Most of these units have had previous harvest activity. They are a mixture of DF and WH. Unit # 10 has a large component of RA. I did see about 2 acres in unit # 7 that had a mix of NF or SF, I did not pick up any of these in my cruise. The trees are fairly decent quality logs.

Grants: 02, 03, 06

Prepared by:

John Piety

Title:

Cruiser

CC:

TC PSPCSTGR		Species, Sort Grade - Board Foot Volumes (Project)																					
T17N R04W S02 Ty0007 THRU T17N R04W S02 Ty0011			Project: RAMSHORN Acres 258.30					Page 1 Date 5/16/2016 Time 11:47:34AM															
Spp	S T	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent of Net Board Foot Volume								Average Log				Logs Per /Acre		
					Def%	Gross	Net		Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft	CF/ Lf			
									2-4	5-7	8-11	12+	12-20	21-30	31-35	36-99							
DF	HA	2S			12	12	3										40	15	360	1.82	.0		
DF	HA	3S			95	95	25										40	10	151	0.89	.6		
DF	HB	2S		9	1.4	1,207	1,190	307									40	14	292	1.68	4.1		
DF	HB	3S		1	1.4	253	250	64									40	10	158	0.91	1.6		
DF	D	2S		35	1.8	4,986	4,898	1,265						2			40	14	279	1.62	17.6		
DF	D	3S		29	1.7	4,067	3,999	1,033			100			0	2	3	39	9	121	0.80	33.0		
DF	D	4S		10		1,487	1,487	384		97	3			11	28	5	30	6	39	0.36	38.1		
DF	D	UT				19	19	5		16	16	68					25	2	2	0.16	8.1		
DF	OS	2S		15	2.9	2,186	2,122	548									40	19	618	3.21	3.4		
DF	RO	2S		1		6	6	2									40	12	200	1.48	.0		
DF Totals				45	1.7	14,318	14,077	3,636		10	31	59		1	4	1	93	35	9	132	0.91	106.6	
WH	D	2S		46	3.0	7,421	7,197	1,859									40	13	256	1.52	28.1		
WH	D	3S		34	1.4	5,182	5,111	1,320									39	9	119	0.78	42.8		
WH	D	4S		14	.7	2,157	2,142	553			92	3	5	14	17	3	31	5	39	0.39	55.2		
WH	D	UT		2	10.4	350	313	81	50					12			28	3	15	0.22	20.5		
WH	OS	2S		4	6.0	606	570	147									40	21	721	3.70	.8		
WH Totals				49	2.4	15,716	15,333	3,961		1	13	34	52		2	3	3	93	35	8	104	0.77	147.4
RA	D	2S		18	1.5	348	343	88									36	13	231	1.56	1.5		
RA	D	3S		38		705	705	182									34	10	123	0.88	5.7		
RA	D	4S		44		796	796	206			69	31		18	13	46	27	6	41	0.40	19.6		
RA	D	UT															17	2		0.17	1.2		
RA Totals				6	.3	1,849	1,843	476		30	52	19		8	11	34	47	28	7	66	0.59	27.9	
RC	D	3S		37	9.9	8	7	2									36	9	83	0.92	.1		
RC	D	4S		63		12	12	3			100			13	2		32	5	38	0.44	.3		
RC Totals				0	3.9	20	19	5		63	29	9		8	2	9	82	33	6	48	0.55	.4	
Totals					2.0	31,902	31,273	8,078		1	13	34	53		2	4	4	90	34	8	111	0.81	282.3

TC PSTATS		PROJECT STATISTICS							PAGE	1	
		PROJECT RAMSHORN							DATE	5/16/2016	
TWP	RGE	SC	TRACT	TYPE		ACRES	PLOTS	TREES	CuFt	BdFt	
17N	04	02	RAMS HORN	0007	THR	258.30	113	607	S	W	
17N	04W	02	CANDY MOUNT	0011							
			PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL			113	607	5.4						
CRUISE DBH COUNT			65	347	5.3	32,457	1.1				
REFOREST COUNT			47	254	5.4						
BLANKS			1								
100 %											
STAND SUMMARY											
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC	
WHEMLOCK	170	68.1	16.2	77	24.2	97.1	15,716	15,333	3,899	3,899	
DOUG FIR	151	42.2	19.0	88	19.1	83.3	14,318	14,077	3,406	3,406	
R ALDER	21	15.1	13.9	57	4.3	15.9	1,849	1,843	465	465	
WR CEDAR	5	.3	13.3	44	0.1	.3	20	19	7	7	
TOTAL	347	125.7	16.9	78	47.8	196.7	31,902	31,273	7,777	7,777	
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL	68.1	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	63.5	4.9		294	309	324					
DOUG FIR	72.1	5.9		388	412	436					
R ALDER	71.7	16.0		140	166	193					
WR CEDAR	97.2	48.3		52	100	148					
TOTAL	73.6	3.9		329	342	356	216	110	54		
CL	68.1	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	115.7	10.9		61	68	75					
DOUG FIR	114.5	10.8		38	42	47					
R ALDER	326.2	30.7		10	15	20					
WR CEDAR	590.5	55.5		0	0	1					
TOTAL	80.3	7.5		116	126	135	257	131	64		
CL	68.1	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	97.4	9.2		88	97	106					
DOUG FIR	107.4	10.1		75	83	92					
R ALDER	329.1	30.9		11	16	21					
WR CEDAR	546.3	51.3		0	0	0					
TOTAL	65.4	6.1		185	197	209	171	87	43		
CL	68.1	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	100.3	9.4		13,887	15,333	16,779					
DOUG FIR	111.0	10.4		12,609	14,077	15,546					
R ALDER	344.8	32.4		1,246	1,843	2,441					
WR CEDAR	569.2	53.5		9	19	30					
TOTAL	69.2	6.5		29,241	31,273	33,306	191	97	48		

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT RAMSHORN				DATE	5/16/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
17N	04W	03	RAMS HORN	0001	51.20	22	110	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES	TREES			
TOTAL	22	110	5.0							
CRUISE	12	57	4.8		3,162		1.8			
DBH COUNT										
REFOREST										
COUNT	10	49	4.9							
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
WHEMLOCK	33	38.4	17.7	83	15.6	65.5	10,257	9,790	2,642	2,641
DOUG FIR	21	21.9	18.8	85	9.7	42.0	6,869	6,731	1,673	1,673
WR CEDAR	2	1.1	12.6	44	0.3	1.0	70	66	25	25
R ALDER	1	.3	16.8	65	0.1	.5	58	58	16	16
TOTAL	57	61.8	18.0	83	25.7	109.0	17,254	16,645	4,357	4,356
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	SAMPLE TREES - BF					# OF TREES REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	51.2	8.9	279	306	333					
DOUG FIR	56.3	12.6	418	478	538					
WR CEDAR	54.4	50.9	32	65	98					
R ALDER										
TOTAL	62.7	8.3	329	359	388	157	80	39		
CL: 68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	87.3	19.0	31	38	46					
DOUG FIR	129.8	28.3	16	22	28					
WR CEDAR	339.1	73.9	0	1	2					
R ALDER	469.0	102.2	0	0	1					
TOTAL	60.0	13.1	54	62	70	151	77	38		
CL: 68.1 %	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	88.8	19.4	53	66	78					
DOUG FIR	111.9	24.4	32	42	52					
WR CEDAR	323.7	70.6	0	1	2					
R ALDER	469.0	102.2	0	1	1					
TOTAL	60.6	13.2	95	109	123	153	78	38		
CL: 68.1 %	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	89.8	19.6	7,875	9,790	11,706					
DOUG FIR	108.2	23.6	5,143	6,731	8,318					
WR CEDAR	325.4	70.9	19	66	113					
R ALDER	469.0	102.2	0	58	118					
TOTAL	59.7	13.0	14,479	16,645	18,812	149	76	37		

TC TSTATS				STATISTICS				PAGE	1	
PROJECT				RAMSHORN				DATE	5/16/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
17N	04W	03	RAMS HORN	0002	12.80	4	20	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES	TREES			
TOTAL	4	20	5.0							
CRUISE	3	13	4.3	2,801		.5				
DBH COUNT										
REFOREST										
COUNT	1	5	5.0							
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
WHEMLOCK	10	186.1	13.6	78	50.9	187.6	28,462	28,462	7,161	7,161
DOUG FIR	1	7.5	24.0	98	4.8	23.5	4,329	4,329	953	953
R ALDER	2	25.3	13.0	54	6.5	23.5	2,475	2,475	590	590
TOTAL	<i>13</i>	<i>218.8</i>	<i>14.0</i>	<i>76</i>	<i>62.6</i>	<i>234.5</i>	<i>35,266</i>	<i>35,266</i>	<i>8,704</i>	<i>8,704</i>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	58.0	19.3	180	223	266					
DOUG FIR										
R ALDER	38.6	36.1	70	110	150					
TOTAL	<i>68.3</i>	<i>19.7</i>	<i>187</i>	<i>233</i>	<i>279</i>	<i>202</i>	<i>103</i>	<i>50</i>		
CL: 68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	49.7	28.4	133	186	239					
DOUG FIR	115.5	66.0	3	7	12					
R ALDER	200.0	114.3		25	54					
TOTAL			<i>219</i>	<i>219</i>	<i>219</i>					
CL: 68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	40.8	23.3	144	188	231					
DOUG FIR	115.5	66.0	8	23	39					
R ALDER	200.0	114.3		23	50					
TOTAL			<i>235</i>	<i>235</i>	<i>235</i>					
CL: 68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	37.3	21.3	22,388	28,462	34,535					
DOUG FIR	115.5	66.0	1,473	4,329	7,186					
R ALDER	200.0	114.3		2,475	5,303					
TOTAL			<i>35,266</i>	<i>35,266</i>	<i>35,266</i>					

T17N R04W S03 T0003									T17N R04W S03 T0003				
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt				
17N	04W	03	RAMS HORN	0003	1.30	3	23	S	W				

Spp	S T	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre		
									Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft		CF/ Lf	
									2-4	5-7	8-11	12+	12-20	21-30	31-35	36-99						
WH		DM	2S	31	.5	4,810	4,785	6	100				100				40	14	280	1.67	17.1	
WH		DM	3S	48	.9	7,499	7,433	10	100				100				39	9	126	0.78	59.0	
WH		DM	4S	21	2.8	3,247	3,156	4	100				7	20	73		32	6	41	0.37	77.6	
WH		DM	UT														21	2	0.13		21.1	
WH	Totals			71	1.2	15,557	15,375	20	21	48	31	1	4	95		34	7	88	0.66	174.8		
DF		HA	3S	15		818	818	1	100				100				40	11	180	1.03	4.5	
DF		HB	2S	12	5.0	699	664	1	100				100				40	12	190	1.28	3.5	
DF		DM	2S	26	5.9	1,514	1,425	2	100				100				40	15	343	2.13	4.2	
DF		DM	3S	33		1,749	1,749	2	100				14 86				38	9	107	0.74	16.3	
DF		DM	4S	14		755	755	1	100				26	26 49		29	5	35	0.38	21.4		
DF		DM	UT														21	2	0.15		6.4	
DF	Totals			25	2.2	5,536	5,412	7	14	47	39	4	8 88		33	7	96	0.77	56.3			
RC		DM	3S	36		334	334	0	100				100				32	14	230	1.52	1.5	
RC		DM	4S	64		584	584	1	100				10				90	38	6	57	0.51	10.2
RC	Totals			4		918	918	1	64	36		6 36 57		37	7	79	0.62	11.7				
Type Totals					1.4	22,010	21,705	28	21	46	33	2	3	4	91	34	7	89	0.69	242.8		

TC TSTATS		STATISTICS					PAGE	1			
		PROJECT RAMSHORN					DATE	5/16/2016			
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
17N	04W	03	RAMS HORN	0003	1.30	3	23	S	W		
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES					
TOTAL		3	23	7.7							
CRUISE		3	23	7.7	139	16.5					
DBH COUNT											
REFOREST											
COUNT											
BLANKS											
100 %											
STAND SUMMARY											
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC	
WHEMLOCK	15	73.7	15.8	78	25.2	100.0	15,557	15,375	3,916	3,916	
DOUG FIR	6	23.2	17.8	78	9.5	40.0	5,536	5,412	1,437	1,437	
WR CEDAR	2	10.2	15.5	51	3.4	13.3	918	918	266	266	
TOTAL	23	107.1	16.2	76	38.1	153.3	22,010	21,705	5,619	5,619	
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL: 68.1 %	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.			
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10			
WHEMLOCK	44.2	11.8	221	250	279						
DOUG FIR	55.7	24.8	212	282	352						
WR CEDAR	90.0	84.3	26	165	304						
TOTAL	49.3	10.5	225	251	277	101	52	25			
CL: 68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.			
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10			
WHEMLOCK	25.6	17.7	61	74	87						
DOUG FIR	153.4	106.2		23	48						
WR CEDAR	173.2	119.8		10	22						
TOTAL	32.8	22.7	83	107	131	62	32	15			
CL: 68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.			
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10			
WHEMLOCK	20.0	13.8	86	100	114						
DOUG FIR	132.3	91.5	3	40	77						
WR CEDAR	173.2	119.8		13	29						
TOTAL	39.8	27.6	111	153	196	91	47	23			
CL: 68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.			
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10			
WHEMLOCK	25.3	17.5	12,685	15,375	18,064						
DOUG FIR	127.0	87.9	657	5,412	10,167						
WR CEDAR	173.2	119.8		918	2,019						
TOTAL	26.5	18.3	17,730	21,705	25,680	40	21	10			

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT RAMSHORN				DATE	5/16/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
17N	04W	03	RAMS HORN	0004	2.00	1	21	S	W	
			TREES	ESTIMATED	PERCENT					
			PER PLOT	TOTAL	SAMPLE					
			TREES	TREES	TREES					
TOTAL	1	21	21.0							
CRUISE	1	21	21.0	62			33.9			
DBH COUNT										
REFOREST										
COUNT										
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
WHEMLOCK	14	27.5	17.3	83	10.8	44.9	7,209	7,170	1,800	1,800
DOUG FIR	7	3.5	20.1	100	1.7	7.7	1,375	1,340	327	327
TOTAL	21	31.0	17.6	85	12.5	52.6	8,584	8,510	2,128	2,128
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	45.4	12.6	228	261	293					
DOUG FIR	35.9	14.6	327	383	439					
TOTAL	44.8	10.0	271	301	332	84	43	21		

TC TSTATS				STATISTICS				PAGE	1	
PROJECT				RAMSHORN				DATE	5/16/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
17N	04W	03	RAMS HORN	0005	14.00	5	22	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES				
TOTAL	5	22	4.4							
CRUISE	3	12	4.0	1,535			.8			
DBH COUNT										
REFOREST										
COUNT	2	10	5.0							
BLANKS										
100 %										
STAND SUMMARY										
SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET	
TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC	
DOUG FIR	5	50.7	18.6	100	22.2	96.0	18,721	18,364	4,289	4,289
WHEMLOCK	7	58.9	15.8	81	20.1	80.0	12,527	11,831	3,213	3,211
TOTAL	12	109.6	17.2	90	42.5	176.0	31,248	30,195	7,502	7,500
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7			10
DOUG FIR	48.3	24.0	316	416	516					
WHEMLOCK	40.2	16.4	196	234	273					
TOTAL	54.3	16.3	259	310	361	128	65			32
CL: 68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7			10
DOUG FIR	44.6	22.2	39	51	62					
WHEMLOCK	67.5	33.6	39	59	79					
TOTAL	38.3	19.0	89	110	130	72	37			18
CL: 68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7			10
DOUG FIR	47.5	23.6	73	96	119					
WHEMLOCK	35.4	17.6	66	80	94					
TOTAL	25.9	12.9	153	176	199	33	17			8
CL: 68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7			10
DOUG FIR	48.9	24.3	13,898	18,364	22,830					
WHEMLOCK	42.9	21.3	9,310	11,831	14,352					
TOTAL	31.2	15.5	25,511	30,195	34,879	48	25			12

TC TSTATS				STATISTICS				PAGE 1		
				PROJECT RAMSHORN				DATE 5/16/2016		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
17N	04W	03	RAMS HORN	0006	86.10	34	184	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
TOTAL	34	184	5.4							
CRUISE	17	88	5.2		10,184		9			
DBH COUNT										
REFOREST										
COUNT	16	96	6.0							
BLANKS	1									
100 %										
STAND SUMMARY										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
WHEMLOCK	41	63.1	17.5	84	25.3	105.9	18,331	17,900	4,467	4,467
DOUG FIR	44	49.2	19.8	89	23.6	104.7	17,586	17,240	4,242	4,242
R ALDER	3	6.0	13.4	47	1.6	5.9	360	360	105	105
TOTAL	88	118.3	18.3	85	50.6	216.5	36,276	35,499	8,814	8,814
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	61.2	9.6	318	351	385					
DOUG FIR	70.4	10.6	426	476	527					
R ALDER	78.6	54.4	35	77	118					
TOTAL	71.9	7.7	373	404	435	206	105	52		
CL: 68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	78.3	13.4	55	63	72					
DOUG FIR	85.3	14.6	42	49	56					
R ALDER	359.4	61.6	2	6	10					
TOTAL	49.5	8.5	108	118	128	98	50	24		
CL: 68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	77.2	13.2	92	106	120					
DOUG FIR	84.7	14.5	90	105	120					
R ALDER	340.3	58.3	2	6	9					
TOTAL	43.4	7.4	200	216	233	75	38	19		
CL: 68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	81.9	14.0	15,389	17,900	20,412					
DOUG FIR	87.1	14.9	14,667	17,240	19,812					
R ALDER	329.8	56.5	156	360	563					
TOTAL	46.9	8.0	32,649	35,499	38,350	88	45	22		

TC TSTATS		STATISTICS							PAGE	1
		PROJECT RAMSHORN							DATE	5/16/2016
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
17N	04W	02	RAMS HORN	0007	28.10	9	55	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES	TREES			
TOTAL		9	55	6.1						
CRUISE		5	31	6.2	3,966		.8			
DBH COUNT										
REFOREST										
COUNT		4	24	6.0						
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
DOUG FIR	13	73.0	17.7	93	29.6	124.4	23,373	23,061	5,402	5,402
WHEMLOCK	18	68.2	18.0	86	28.3	120.0	20,045	19,203	4,950	4,949
TOTAL	<i>31</i>	<i>141.1</i>	<i>17.8</i>	<i>90</i>	<i>57.9</i>	<i>244.4</i>	<i>43,417</i>	<i>42,264</i>	<i>10,352</i>	<i>10,351</i>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	SAMPLE TREES - BF					# OF TREES REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR	52.2	15.0	350	412	474					
WHEMLOCK	46.3	11.2	284	320	356					
TOTAL	<i>50.7</i>	<i>9.1</i>	<i>326</i>	<i>359</i>	<i>391</i>	<i>103</i>	<i>52</i>	<i>26</i>		
CL: 68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR	73.9	26.1	54	73	92					
WHEMLOCK	55.0	19.4	55	68	81					
TOTAL	<i>35.7</i>	<i>12.6</i>	<i>123</i>	<i>141</i>	<i>159</i>	<i>57</i>	<i>29</i>	<i>14</i>		
CL: 68.1 %	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR	63.2	22.3	97	124	152					
WHEMLOCK	55.3	19.5	97	120	143					
TOTAL	<i>30.0</i>	<i>10.6</i>	<i>219</i>	<i>244</i>	<i>270</i>	<i>40</i>	<i>21</i>	<i>10</i>		
CL: 68.1 %	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR	65.4	23.1	17,734	23,061	28,387					
WHEMLOCK	62.2	22.0	14,987	19,203	23,419					
TOTAL	<i>37.1</i>	<i>13.1</i>	<i>36,725</i>	<i>42,264</i>	<i>47,802</i>	<i>62</i>	<i>32</i>	<i>15</i>		

T17N R04W S02 T0008										T17N R04W S02 T0008			
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt				
17N	04W	02	RAMS HORN	0008	6.00	5	13	S	W				

Spp	S T	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre		
									Log Scale Dia.				Log Length				Ln	Dia	Bd		CF/ Lf	
									2-4	5-7	8-11	12+	12-20	21-30	31-35	36-99	Ft	In	Ft		Lf	
WH		DM	2S	57	1.3	12,107	11,945	72										40	13	245	1.41	48.7
WH		DM	3S	28		5,887	5,887	35			100							40	9	130	0.77	45.3
WH		DM	4S	15		3,046	3,046	18		100				14				34	6	45	0.43	67.3
WH		DM	UT															22	2		0.11	13.4
WH	Totals			59	.8	21,040	20,879	125		15	28	57		2			98	36	8	119	0.82	174.8
DF		HB	2S	46		6,803	6,803	41										40	15	331	1.80	20.6
DF		HB	3S	6		830	830	5			100							40	9	120	0.68	6.9
DF		DM	2S	20	3.5	3,129	3,018	18										40	14	271	1.63	11.2
DF		DM	3S	11		1,604	1,604	10			100			7			93	37	8	91	0.76	17.6
DF		DM	4S	3		408	408	2		73	27			49	51			21	6	27	0.35	15.1
DF		DM	UT															23	2		0.19	11.0
DF		OS	2S	14		2,016	2,016	12									100	40	24	1010	4.91	2.0
DF	Totals			41	.7	14,789	14,678	88		2	17	81		2	1		96	34	10	174	1.21	84.3
Type Totals					.8	35,829	35,557	213		9	24	67		2	1		97	35	9	137	0.94	259.0

TC TSTATS				STATISTICS				PAGE	1	
PROJECT				RAMSHORN				DATE	5/16/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
17N	04W	02	RAMS HORN	0008	6.00	5	25	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES				
TOTAL	5	25	5.0							
CRUISE	3	13	4.3	573		2.3				
DBH COUNT										
REFOREST										
COUNT	2	12	6.0							
BLANKS										
100 %										
STAND SUMMARY										
SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET	
TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC	
WHEMLOCK	7	67.3	18.1	94	28.2	120.0	21,040	20,879	5,152	5,152
DOUG FIR	6	28.1	22.9	100	16.7	80.0	14,789	14,678	3,434	3,434
TOTAL	13	95.4	19.6	96	45.2	200.0	35,829	35,557	8,586	8,586
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	55.2	22.5	267	344	422					
DOUG FIR	67.5	30.0	449	642	834					
TOTAL	71.9	20.7	382	482	581	223	114	56		
CL: 68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	61.1	30.4	47	67	88					
DOUG FIR	16.6	8.2	26	28	30					
TOTAL	43.2	21.5	75	95	116	92	47	23		
CL: 68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	62.4	31.0	83	120	157					
DOUG FIR	35.4	17.6	66	80	94					
TOTAL	40.0	19.9	160	200	240	79	40	20		
CL: 68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	65.3	32.4	14,107	20,879	27,650					
DOUG FIR	36.7	18.3	11,999	14,678	17,358					
TOTAL	39.9	19.8	28,514	35,557	42,600	78	40	20		

TC TSTATS				STATISTICS				PAGE 1		
				PROJECT RAMSHORN				DATE 5/16/2016		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
17N	04W	02	RAMS HORN	0009	4.70	4	15	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES	TREES			
TOTAL	4	15	3.8							
CRUISE	2	6	3.0	292		2.1				
DBH COUNT										
REFOREST										
COUNT	2	9	4.5							
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
DOUG FIR	6	62.1	19.6	76	29.4	130.0	18,436	17,643	4,775	4,775
TOTAL	6	62.1	19.6	76	29.4	130.0	18,436	17,643	4,775	4,775
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	SAMPLE TREES - BF					# OF TREES REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR	73.0	32.5	251	372	492					
TOTAL	73.0	32.5	251	372	492	253	129	63		
CL: 68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR	50.9	29.1	44	62	80					
TOTAL	50.9	29.1	44	62	80	135	69	34		
CL: 68.1 %	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR	29.5	16.8	108	130	152					
TOTAL	29.5	16.8	108	130	152	45	23	11		
CL: 68.1 %	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR	20.6	11.8	15,570	17,643	19,716					
TOTAL	20.6	11.8	15,570	17,643	19,716	22	11	6		

TC TSTATS		STATISTICS						PAGE	1	
		PROJECT RAMSHORN						DATE	5/16/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
17N	04W	35	RAMS HORN	0010	49.10	17	86	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		17	86	5.1						
CRUISE		9	47	5.2	9,353	.5				
DBH COUNT										
REFOREST										
COUNT		8	39	4.9						
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
WHEMLOCK	15	89.7	13.8	57	25.2	93.8	13,534	13,468	3,357	3,357
DOUG FIR	20	39.2	19.0	83	17.7	77.2	13,099	12,969	3,084	3,084
R ALDER	12	61.7	14.0	59	17.7	66.2	8,286	8,259	2,068	2,068
TOTAL	47	190.5	15.1	63	61.0	237.3	34,919	34,697	8,509	8,509
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	SAMPLE TREES - BF			# OF TREES REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK	112.0	29.9		247	352	457				
DOUG FIR	63.9	14.7		414	485	556				
R ALDER	74.4	22.4		140	181	221				
TOTAL	89.4	13.0		317	365	412	319	163	80	
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK	101.1	25.2		67	90	112				
DOUG FIR	118.4	29.6		28	39	51				
R ALDER	126.2	31.5		42	62	81				
TOTAL	50.7	12.7		166	190	215	109	56	27	
CL:	68.1 %	COEFF	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK	98.4	24.6		71	94	117				
DOUG FIR	109.3	27.3		56	77	98				
R ALDER	127.8	31.9		45	66	87				
TOTAL	36.6	9.1		216	237	259	57	29	14	
CL:	68.1 %	COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK	101.3	25.3		10,059	13,468	16,877				
DOUG FIR	109.1	27.2		9,437	12,969	16,502				
R ALDER	126.7	31.7		5,645	8,259	10,873				
TOTAL	39.8	9.9		31,248	34,697	38,145	67	34	17	

T17N RO4W S02 T0011										T17N RO4W S02 T0011			
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt				
17N	O4W	02	CANDY MOUNT	0011	1.30	5	20	S	W				

S Spp	So T	Gr rt ad	%	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre					
								Net BdFt	Def%	Gross	Net	Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft	CF/ Lf	
												2-4	5-7	8-11	12+	12-20	21-30	31-35						36-99
DF	DM	3S	55	3.1	9,277	8,989	12	100				100				39	8	99	0.69	91.2				
DF	DM	4S	37		6,001	6,001	8	100				24	9	67		29	5	35	0.32	171.2				
DF	DM	UT	8		1,225	1,225	2	49	51	100				30	4	23	0.30	52.1						
DF	Totals		100	1.7	16,503	16,216	21	41	59	9	3	88		32	6	52	0.45	314.5						
Type Totals				1.7	16,503	16,216	21	41	59	9	3	88		32	6	52	0.45	314.5						

TC TSTATS				STATISTICS				PAGE 1		
PROJECT RAMSHORN				DATE 5/16/2016						
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
17N	O4W	02	CANDY MOUNTA	0011	1.30	5	30	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES	TREES			
TOTAL	5	30	6.0	245		8.2				
CRUISE	3	20	6.7							
DBH COUNT										
REFOREST										
COUNT	2	10	5.0							
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
DOUG FIR	20	188.2	12.7	52	46.7	166.7	16,503	16,216	4,512	4,512
TOTAL	20	188.2	12.7	52	46.7	166.7	16,503	16,216	4,512	4,512
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	SAMPLE TREES - BF					# OF TREES REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR	41.1	9.4	88	98	107					
TOTAL	41.1	9.4	88	98	107	71	36	18		
CL: 68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR	22.9	11.4	167	188	210					
TOTAL	22.9	11.4	167	188	210	26	13	6		
CL: 68.1 %	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR	16.7	8.3	153	167	180					
TOTAL	16.7	8.3	153	167	180	14	7	3		
CL: 68.1 %	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR	16.5	8.2	14,889	16,216	17,543					
TOTAL	16.5	8.2	14,889	16,216	17,543	13	7	3		

TC TSTATS				STATISTICS				PAGE	1	
PROJECT				RAMSHORN				DATE	5/16/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
17N	04W	03	RAMS HORN	RW12	0.60	2	8	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES	TREES			
TOTAL	2	8	4.0							
CRUISE	2	8	4.0	60		13.4				
DBH COUNT										
REFOREST										
COUNT										
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
WHEMLOCK	4	42.2	18.6	85	18.5	80.0	12,367	12,367	3,210	3,210
R ALDER	3	38.9	16.8	68	14.6	60.0	8,342	8,342	2,046	2,046
WR CEDAR	1	18.7	14.0	37	5.3	20.0	748	748	459	459
TOTAL	8	99.8	17.1	69	38.6	160.0	21,457	21,457	5,715	5,715
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	34.2	19.5	256	318	379					
R ALDER	53.4	37.0	145	230	315					
WR CEDAR										
TOTAL	54.3	20.5	199	250	301	134	68	34		
CL: 68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	23.7	22.2	33	42	52					
R ALDER	141.4	132.4		39	90					
WR CEDAR	141.4	132.4		19	43					
TOTAL	71.6	67.1	33	100	167	360	184	90		
CL: 68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK			80	80	80					
R ALDER	141.4	132.4		60	139					
WR CEDAR	141.4	132.4		20	46					
TOTAL	70.7	66.2	54	160	266	351	179	88		
CL: 68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	11.5	10.8	11,029	12,367	13,704					
R ALDER	141.4	132.4		8,342	19,388					
WR CEDAR	141.4	132.4		748	1,739					
TOTAL	53.3	49.9	10,756	21,457	32,157	199	102	50		

T17N R04W S02 TRW13										T17N R04W S02 TRW13			
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt				
17N	04W	02	RAMS HORN	RW13	1.10	2	8	S	W				

S Twp	So Rge	Gr Sec	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre						
								Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft		CF/ Lf					
								2-4	5-7	8-11	12+	12-20	21-30	31-35	36-99										
WH	DM	2S	44	8,136	8,136	9																			
WH	DM	3S	47	8,654	8,654	10																			
WH	DM	4S	9	1,560	1,560	2																			
WH	DM	UT																							
WH	Totals		71	18,349	18,349	20		8	47	44		1			99		37	9	135	0.94					136.4
DF	HA	2S	37	2,778	2,778	3																			
DF	DM	2S	33	2.2	2,495	2,441	3																		
DF	DM	3S	25		1,863	1,863	2							38	62										
DF	DM	4S	5		340	340	0		100				32	68											
DF	Totals		29	.7	7,476	7,421	8		5	25	70		1	13	86		33	10	188	1.28					39.4
Type Totals				.2	25,825	25,771	28		7	41	52		1	4	95		36	9	147	1.01					175.8

TC TSTATS				STATISTICS				PAGE 1		
				PROJECT RAMSHORN				DATE 5/16/2016		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
17N	04W	02	RAMS HORN	RW13	1.10	2	8	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES	TREES			
TOTAL	2	8	4.0							
CRUISE	2	8	4.0	85		9.5				
DBH COUNT										
REFOREST										
COUNT										
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
WHEMLOCK	6	63.8	18.6	81	27.8	120.0	18,349	18,349	4,700	4,700
DOUG FIR	2	13.1	23.6	104	8.2	40.0	7,476	7,421	1,668	1,668
TOTAL	8	76.9	19.5	85	36.2	160.0	25,825	25,771	6,368	6,368
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	SAMPLE TREES - BF					# OF TREES REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	56.9	25.3	255	342	428					
DOUG FIR	7.4	7.0	530	570	610					
TOTAL	49.2	18.5	325	399	473	110	56	27		
CL: 68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	25.5	23.9	49	64	79					
DOUG FIR	24.7	23.1	10	13	16					
TOTAL	25.3	23.7	59	77	95	45	23	11		
CL: 68.1 %	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK			120	120	120					
DOUG FIR			40	40	40					
TOTAL			160	160	160					
CL: 68.1 %	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	3.5	3.3	17,749	18,349	18,950					
DOUG FIR	17.4	16.3	6,214	7,421	8,629					
TOTAL	7.5	7.0	23,963	25,771	27,578	4	2	1		

Species Summary - Trees, Logs, Tons, CCF, MBF

T17N R04W S02 Ty0007	28.1
T17N R04W S02 Ty0008	6.0
T17N R04W S02 Ty0001	1.3

Project RAMSHORN
Acres 258.30

Page No 1
Date: 5/16/2016
Time 11:47:34AM

Species	Total	Total	Total	Net Cubic Ft/		CF/ LF	Total CCF		Total MBF	
	Trees	Logs	Tons	Tree	Log		Gross	Net	Gross	Net
WHEMLOCK	17,580	38,061	32,230	57.29	26.46	0.77	10,072	10,071	4,059	3,961
DOUG FIR	10,888	27,545	25,070	80.79	31.94	0.91	8,796	8,796	3,698	3,636
R ALDER	3,906	7,217	3,304	30.76	16.65	0.58	1,201	1,201	477	476
WR CEDAR	83	106	45	23.01	18.11	0.55	19	19	5	5
Totals	32,457	72,928	60,649	61.89	27.55	0.81	20,089	20,088	8,240	8,078

Wood Type Species	Total	Total	Total	Net Cubic Ft/		CF/ LF	Total CCF		Total MBF	
	Trees	Logs	Tons	Tree	Log		Gross	Net	Gross	Net
C	28,551	65,711	57,345	66.15	28.74	0.83	18,888	18,887	7,763	7,602
H	3,906	7,217	3,304	30.76	16.65	0.58	1,201	1,201	477	476
Totals	32,457	72,928	60,649	61.89	27.55	0.81	20,089	20,088	8,240	8,078



FPA/N No: 2418793

Effective Date: 8/27/2016

Expiration Date: 8/27/2019

Shut Down Zone: 651 N

EARR Tax Credit: Eligible Non-eligible

Reference: Rams Horn 30-093253

Forest Practices Application/Notification Notice of Decision

Decision

- Notification Operations shall not begin before the effective date.
- Approved This Forest Practices Application is subject to the conditions listed below.
- Disapproved This Forest Practices Application is disapproved for the reasons listed below.
- Closed Applicant has withdrawn approved FPA/N

FPA/N Classification

Number of Years Granted on Multi-Year Request

- Class II
- Class III
- Class IVG
- Class IVS
- 4 yrs
- 5 yrs

Conditions on Approval / Reasons for Disapproval

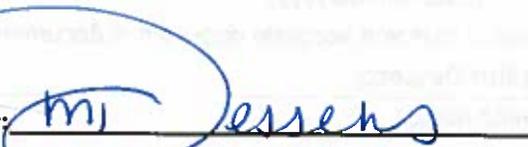
Issued By: Kris Knutzen

Region: South Puget Sound

Title: Resource Protection Forester

Date: 8/25/2016

Copies to: Landowner, Timber Owner and Operator.

Issued in person: Landowner Timber Owner Operator By: 

Appeal Information

You have thirty (30) days to appeal this Decision and any related State Environmental Policy Act determinations to the Pollution Control Hearings Board in writing at the following addresses:

Physical address: 1111 Israel Rd. SW, Ste 301, Tumwater, WA 98501

Mailing address: P.O. BOX 40903, OLYMPIA, WA 98504-0903

Information regarding the Pollution Control Hearings Board can be found at: <http://www.eho.wa.gov/>

At the same time you file an appeal with the Pollution Control Hearings Board, also send a copy of the appeal to the Department of Natural Resources' region office and the Office of the Attorney General at the following addresses:

Office of the Attorney General
Natural Resources Division
1125 Washington Street SE
PO Box 40100
Olympia, WA 98504-0100

And

Department Of Natural Resources
South Puget Sound Region
950 Farman Ave. N
Enumclaw, WA 98022

Other Applicable Laws

Operating as described in this application/notification does not ensure compliance with the Endangered Species Act, or other federal, state, or local laws.

Hydraulic Project Approval (HPA) (Chapter 77.55RCW and WAC 222-50-020(2))

The Department of Fish and Wildlife (WDFW), as the jurisdictional agency issuing HPAs, has final authority for approving water crossing structures in Type S and F waters. WDFW continues to have authority on Type N waters and may exercise that authority on some Type N waters.

Notice: The HPA water crossing requirements supersede what is indicated on the FPA. Landowners are required by law to follow the provisions as directed on the HPA.

Transfer of Forest Practices Application/Notification (WAC 222-20-010)

Use the "Notice of Transfer of Approved Forest Practices Application/Notification" form. This form is available at region offices and on the Forest Practices website: : http://file.dnr.wa.gov/publications/fp_form_fpantransfer.pdf. Notify DNR of new Operators within 48 hours.

Continuing Forest Land Obligations (RCW 76.09.060, RCW 76.09.070, RCW 76.09.390, and WAC 222-20-055)

Obligations include reforestation, road maintenance and abandonment plans, conversions of forest land to non-forestry use and/or harvest strategies on perennial non-fish habitat (Type Np) waters in Eastern Washington.

Before the sale or transfer of land or perpetual timber rights subject to continuing forest land obligations, the seller must notify the buyer of such an obligation on a form titled "Notice of Continuing Forest Land Obligation". The seller and buyer must both sign the "Notice of Continuing Forest Land Obligation" form and send it to the DNR Region Office for retention. This form is available at DNR region offices.

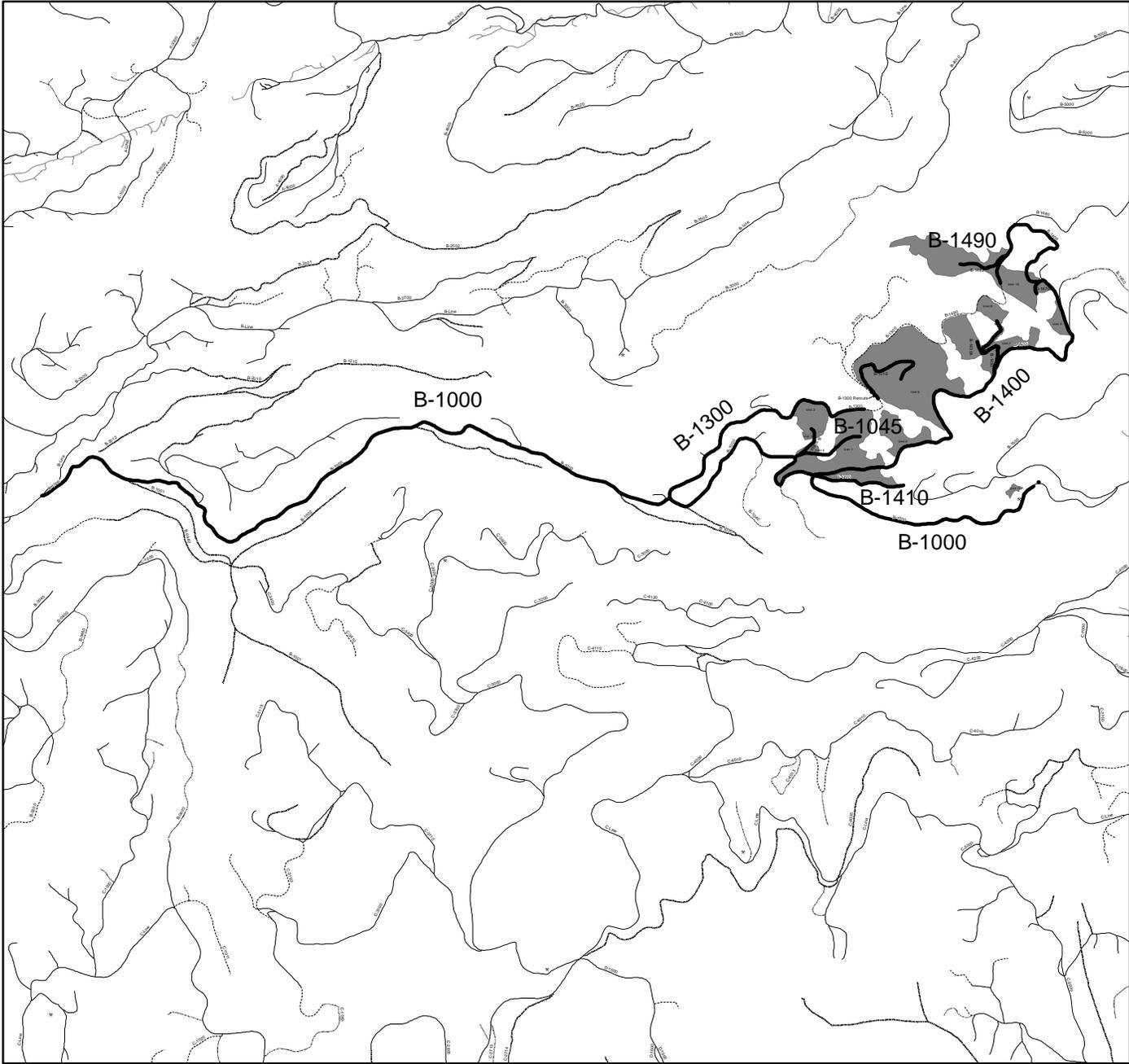
If the seller fails to notify the buyer about the continuing forest land obligation, the seller must pay the buyer's costs related to continuing forest land obligations, including all legal costs and reasonable attorneys' fees incurred by the buyer in enforcing the continuing forest land obligation against the seller.

Failure by the seller to send the required notice to the DNR at the time of sale will be prima facie evidence in an action by the buyer against the seller for costs related to the continuing forest land obligation prior to sale.

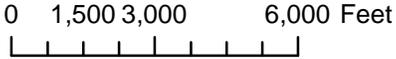
DNR affidavit of mailing:

On this day <u>8/27/2016</u>	, I placed in the United States mail at <u>Enumclaw</u>	, WA,
(date mm/dd/yyyy)	(post office location)	
postage paid, a true and accurate copy of this document. Notice of Decision FPA # <u>2418793</u>		
<u>Meredith Dessens</u>	_____	
(Printed name)	(Signature)	

Road Plan Vicinity Map Ram's Horn Timber Sale Page 1 of 8



Legend



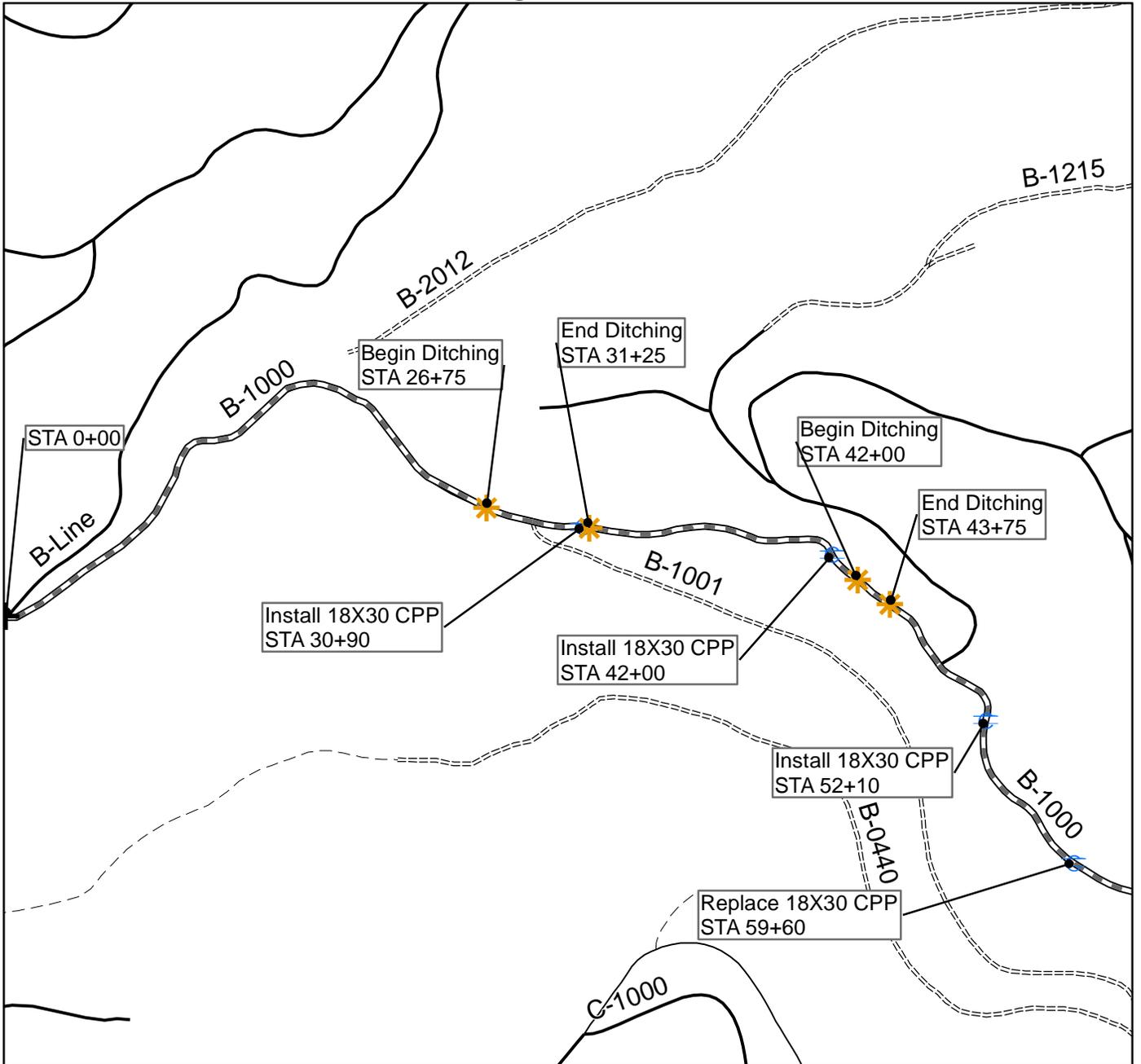
- ⌘
Rockpit

Decommissioned
- Rams_Horn_Units
- Active/driveable
- Non-driveable
- Orphaned
- FP Abandoned

Road Plan Detail Map

Ram's Horn Timber Sale

Page 2 of 8



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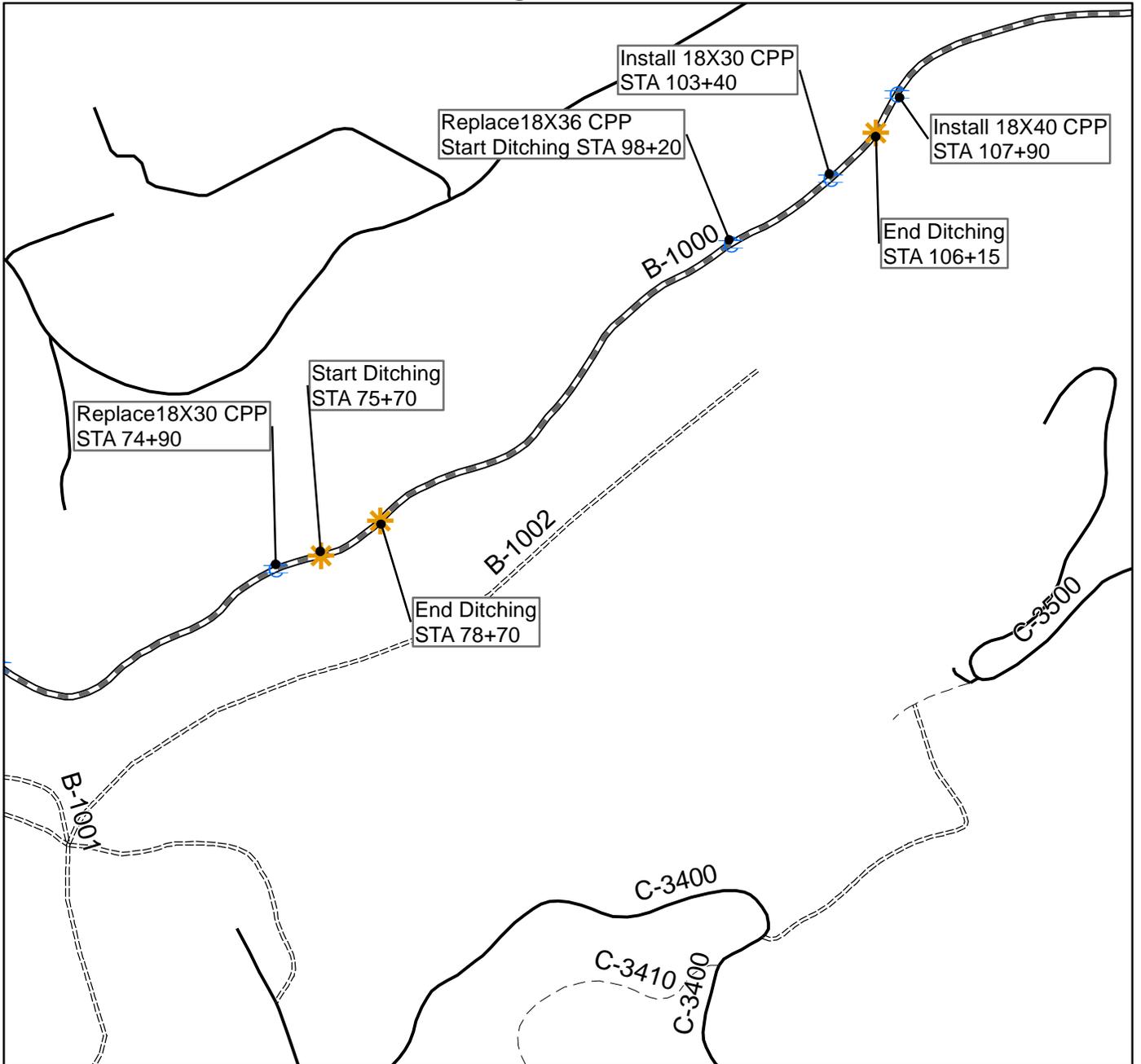


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| <ul style="list-style-type: none"> Road Work Stationing Culvert Required Construction Optional Construction Required Decommissioning Prehaul Maintenance | <ul style="list-style-type: none"> Rockpit Rams_Horn_Units Active/driveable Non-driveable Orphaned Decommissioned |
|--|---|

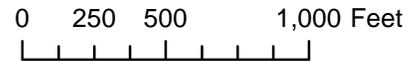
Road Plan Detail Map

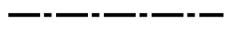
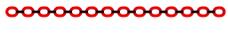
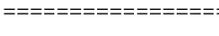
Ram's Horn Timber Sale

Page 3 of 8



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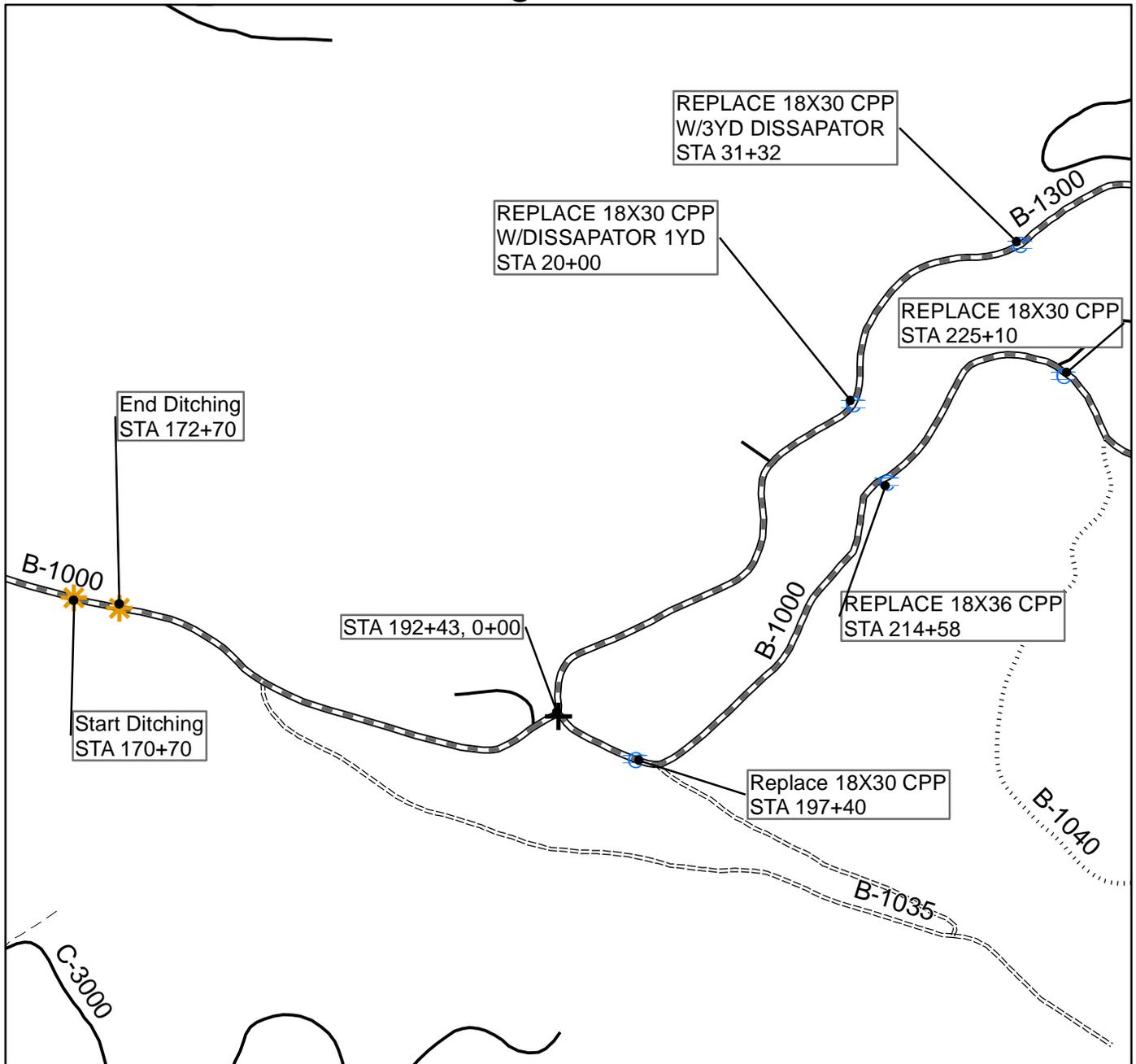


	Road Work		Rockpit
	Culvert		Rams_Horn_Units
	Required Construction		Active/driveable
	Optional Construction		Non-driveable
	Required Decommissioning		Orphaned
	Prehaul Maintenance		Decommissioned

Road Plan Detail Map

Ram's Horn Timber Sale

Page 5 of 8

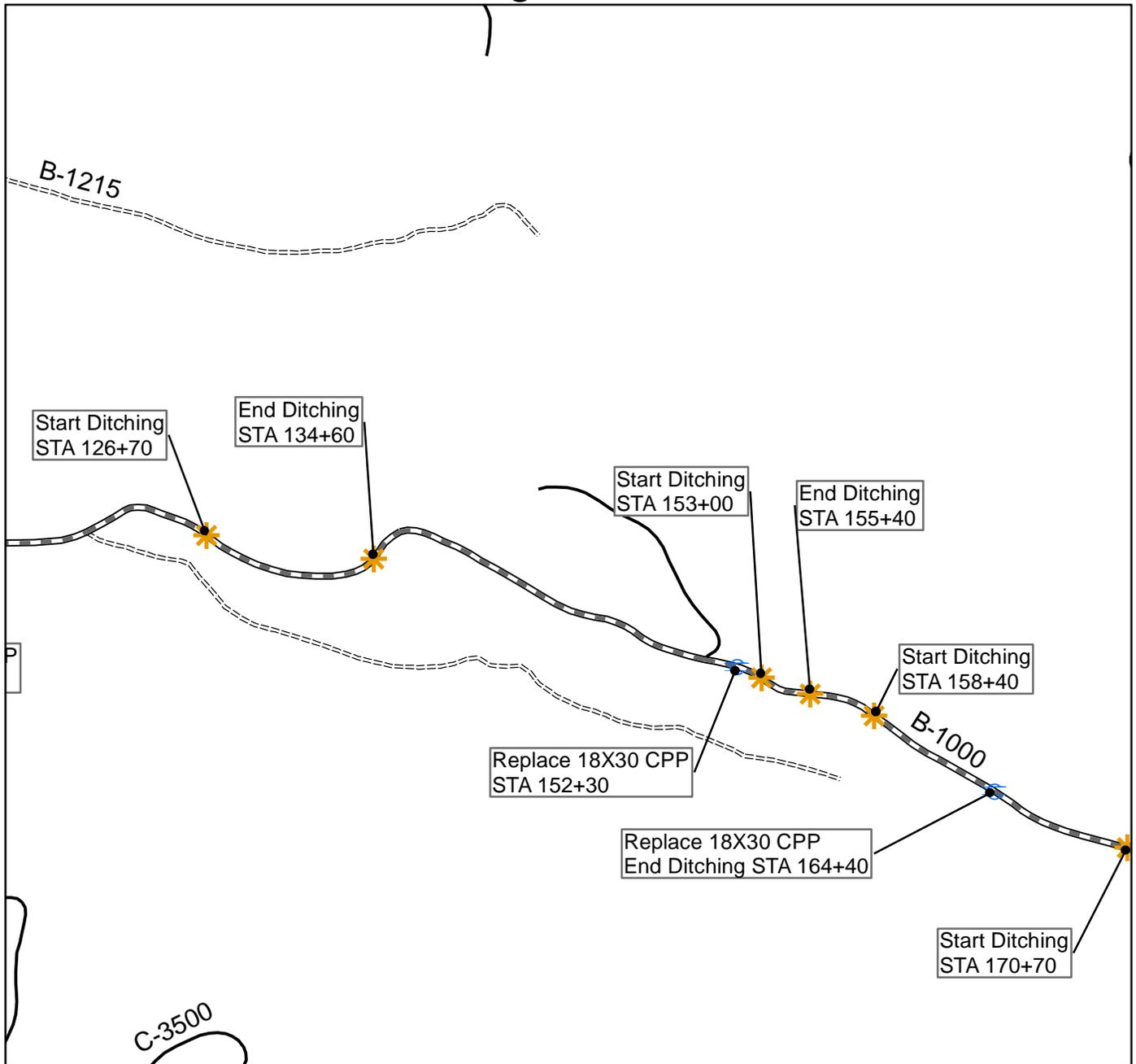


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0 250 500 1,000 Feet

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|--|--------------------------|--|------------------|
| | Road Work | | Rockpit |
| | Stationing | | Rams_Horn_Units |
| | Culvert | | Active/driveable |
| | Required Construction | | Orphaned |
| | Optional Construction | | FP Abandoned |
| | Required Decommissioning | | Decommissioned |
| | Prehaul Maintenance | | |

Road Plan Detail Map Ram's Horn Timber Sale Page 4 of 8



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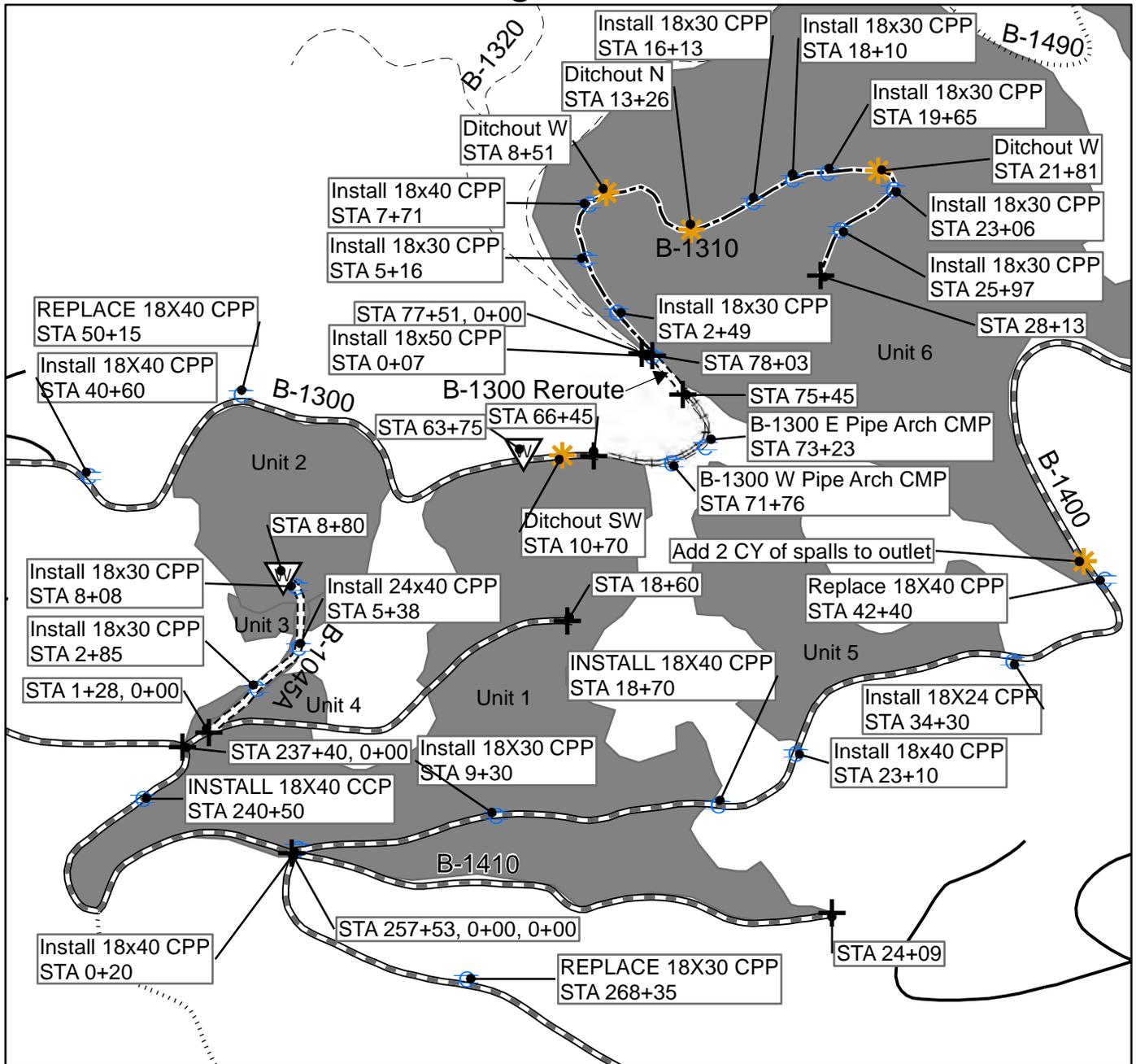


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| <ul style="list-style-type: none"> Road Work Culvert Required Construction Optional Construction Required Decommissioning Prehaul Maintenance | <ul style="list-style-type: none"> Rockpit Rams_Horn_Units Active/driveable Orphaned |
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Road Plan Detail Map

Ram's Horn Timber Sale

Page 6 of 8



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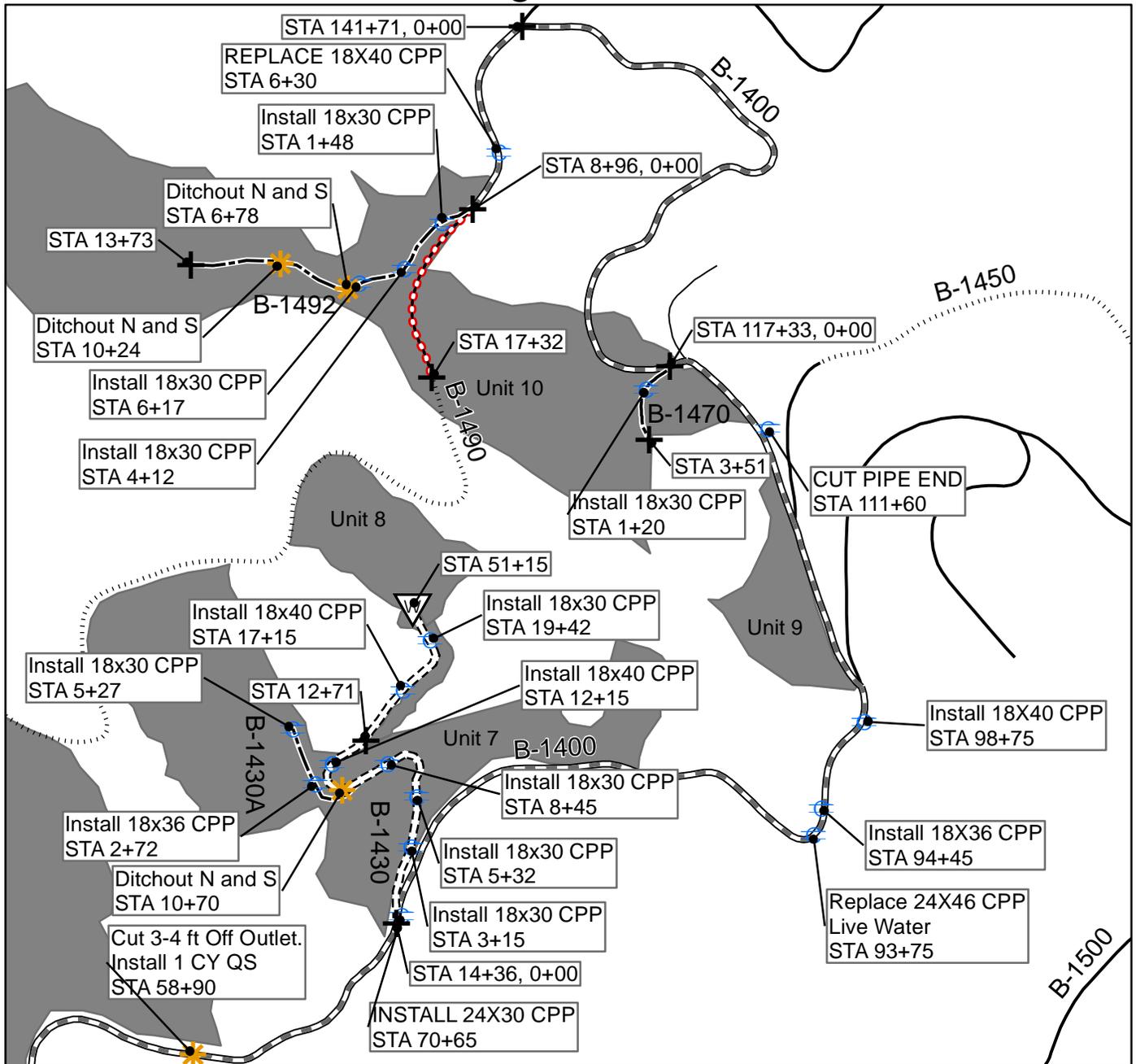


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|--|--------------------------|--|---------------------|
| | Road Work | | Prehaul Maintenance |
| | Stationing | | Rockpit |
| | Waste Area | | Rams_Horn_Units |
| | Culvert | | Active/driveable |
| | Required Construction | | FP Abandoned |
| | Optional Construction | | Decommissioned |
| | Required Decommissioning | | |

Road Plan Detail Map

Ram's Horn Timber Sale

Page 7 of 8



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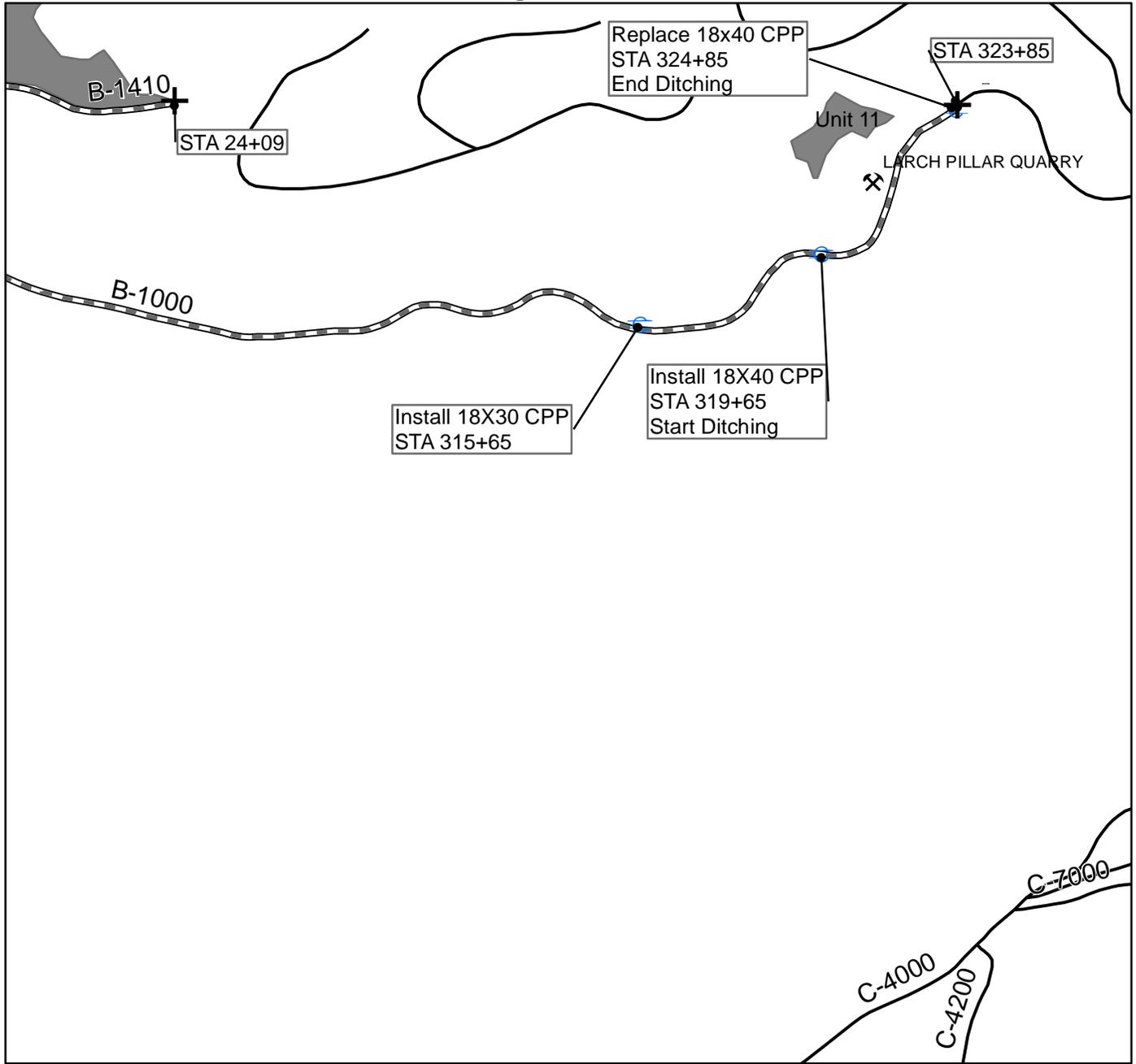


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|---|--------------------------|--|---------------------|
|  | Road Work |  | Prehaul Maintenance |
|  | Stationing |  | Rockpit |
|  | Waste Area |  | Rams_Horn_Units |
|  | Culvert |  | Active/driveable |
|  | Required Construction |  | Non-driveable |
|  | Optional Construction |  | FP Abandoned |
|  | Required Decommissioning | | |

Road Plan Detail Map

Ram's Horn Timber Sale

Page 8 of 8



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| <ul style="list-style-type: none"> + Stationing Culvert Required Construction Optional Construction Required Decommissioning Prehaul Maintenance | <ul style="list-style-type: none"> Rockpit Rams_Horn_Units Active/driveable |
|--|---|

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

RAM'S HORN TIMBER SALE ROAD PLAN
THURSTON COUNTY
DELPHI UNIT
BLACK HILLS DISTRICT

AGREEMENT NO.: 30-093253

STAFF ENGINEER: CHAD VANDEHEY

DATE: 04 APRIL 2016

DRAWN & COMPILED BY: CHAD VANDEHEY

SECTION 0 – SCOPE OF PROJECT

0-1 ROAD PLAN SCOPE

Clauses in this road plan apply to all road related work, including landings and rock source development, unless otherwise noted.

0-2 REQUIRED ROADS

The specified work on the following roads is required.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
B-1000	0+00 to 323+85	Prehaul Maintenance
B-1045A	0+00 to 8+80 0+00 to 8+80	Construction Abandonment
B-1300	0+00 to 66+45 66+45 to 75+45	Prehaul Maintenance Reconstruction
B-1300 Reroute	75+45 to 78+03	Construction
B-1400	0+00 to 141+71	Prehaul Maintenance
B-1410	0+00 to 24+09	Prehaul Maintenance
B-1430	0+00 to 21+15 12+71 to 21+15	Construction Decommission
B-1470	0+00 to 3+51	Decommission if Constructed
B-1490	0+00 to 8+96 8+96 to 17+32	Prehaul Maintenance Decommission, see Clause 0-11

0-3 OPTIONAL ROADS

The specified work on the following roads is not required. Any optional roads built by the Purchaser must meet all the specifications in the road plan.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
B-1310	0+00 to 28+13	Construction
B-1430A	0+00 to 6+36	Construction

B-1470	0+00 to 3+51	Construction
B-1492	0+00 to 13+73	Construction

0-4 CONSTRUCTION

Construction includes, but is not limited to:

- Clearing;
- Grubbing;
- Right-of-way debris disposal;
- Excavation and/or embankment to subgrade;
- Turnout and turnaround construction;
- Landing construction;
- Acquisition and installation of drainage structures;
- Acquisition, manufacture, and application of rock;
- Acquisition and installation of geotextile fabric;
- Acquisition and installation of chain link fencing;
- Single season use;
- Abandonment and Decommissioning;

0-5 RECONSTRUCTION

Reconstruction includes, but is not limited to:

- Clearing;
- Grubbing;
- Right-of-way debris disposal;
- Excavation and/or embankment to subgrade;
- Ditch construction;
- Acquisition and installation of drainage structures;
- Acquisition, manufacture, and application of rock.

0-6 PRE-HAUL MAINTENANCE

This project includes, but is not limited to the following pre-haul maintenance requirements:

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
B-1000	0+00 to 323+85	Desod, grade and crown road surface. Brush roadsides. Ditch reconstruction. Clean culvert inlets\outlets. Acquisition, installation, and replacement of culverts.
B-1045	0+00 to 18+60	Desod, grade and crown road surface. Brush roadsides. Clean culvert inlets\outlets.
B-1300	0+00 to 66+75	Clean ditches, clean culvert inlets/outlets. Desod, grade and

		crown road surface. Brush roadsides. Acquisition, installation, and replacement of culverts.
B-1400	0+00 to 147+36	Desod, grade and crown road surface. Brush roadsides. Ditch reconstruction. Clean culvert inlets\outlets. Acquisition, installation, and replacement of culverts.
B-1410	0+00 to 24+09	Clean culvert inlets/outlets. Desod, grade and crown road surface.
B-1490	0+00 to 8+96	Clean ditches, clean culvert inlets/outlets. Desod, grade and crown road surface. Brush roadsides. Acquisition and replacement of culvert.

0-7 POST-HAUL MAINTENANCE

This project includes post-haul road maintenance listed in Clause 9-5 POST-HAUL MAINTENANCE.

0-9 DECOMMISSIONING

This project includes decommissioning listed in Clause 9-20 ROAD DECOMMISSIONING.

0-10 ABANDONMENT

This project includes abandonment listed in Clause 9-21 ROAD ABANDONMENT.

0-11 ABANDONMENT AND DECOMMISSIONING BEFORE TIMBER REMOVAL

Purchaser shall abandon or decommission the following road(s) at the start of the timber sale contract, before the removal of timber.

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
B-1490	8+96 to 17+32	Decommissioning

0-12 DEVELOP ROCK SOURCE

Purchaser shall develop an existing rock source. Rock source development will involve reducing oversize material, Clearing, Stripping, Drilling, Blasting, and Crushing. Work for developing rock sources is listed in Section 6 ROCK AND SURFACING.

0-13 STRUCTURES

Purchaser shall provide and install two pipe arch structures. Requirements for these structures are listed in Section 7 STRUCTURES.

SECTION 1 – GENERAL

1-1 ROAD PLAN CHANGES

If the Purchaser desires a change from this road plan including, but not limited to, relocation, extension, change in design, or adding roads; a revised road plan must be submitted in writing to the Contract Administrator for consideration. Before work begins, Purchaser shall obtain approval from the State for any submitted plan that changes the scope of work or environmental condition from the original road plan.

1-2 UNFORESEEN CONDITIONS

Quantities established in this road plan are minimum acceptable values. Additional quantities required by the state due to unforeseen conditions, or Purchaser's choice of construction season or techniques will be at the Purchaser's expense. Unforeseen conditions include, but are not limited to, solid subsurface rock, subsurface springs, saturated ground, and unstable soils.

1-3 ROAD DIMENSIONS

Purchaser shall perform road work in accordance with the dimensions shown on the TYPICAL SECTION SHEET and the specifications within this road plan, unless controlled by construction stakes or design data (plan, profile, and cross-sections).

1-4 ROAD TOLERANCES

Purchaser shall perform road work within the tolerances listed below. The tolerance class for each road is listed on the TYPICAL SECTION SHEET.

<u>Tolerance Class</u>	<u>A</u>	<u>B</u>	<u>C</u>
Road and Subgrade Width (feet)	+1.5	+1.5	+2.0
Subgrade Elevation (feet +/-)	0.5	1.0	2.0
Centerline alignment (feet lt./rt.)	1.0	1.5	3.0

1-6 ORDER OF PRECEDENCE

Any conflict or inconsistency in the road plan will be resolved by giving the documents precedence in the following order:

1. Addenda.
2. Designs or Plans. On designs and plans, figured dimensions shall take precedence over scaled dimensions.
3. Road Plan Clauses.
4. Typical Section Sheet.
5. Standard Lists.
6. Standard Details.

In case of any ambiguity or dispute over interpreting the road plan, the Contract Administrator's or designee's decision will be final.

1-7 TEMPORARY ROAD CLOSURE

Purchaser shall notify the Contract Administrator a minimum of 5 calendar days before the closure of any road. Construction may not close the following roads for more than the specified number of days.

<u>Road</u>	<u>Number of Allowable Closed Days</u>
A-Line	No closure without written permission from Contract Administrator.
B-Line	
B-1000	

1-8 REPAIR OR REPLACEMENT OF DAMAGED MATERIALS

Purchaser shall repair or replace all materials, roadway infrastructure, and road components damaged during road work or operation activities. The Contract Administrator will direct repairs and replacements. Repairs to structural materials must be made in accordance with the manufacturer’s recommendation, and may not begin without written approval from the Contract Administrator.

1-9 DAMAGED METALLIC COATING

Any damaged galvanized or aluminized coating on existing or new bridge components, culverts, downspouts, and flumes must be cleaned and treated with a minimum of two coats of zinc rich paint.

SUBSECTION ROAD MARKING

1-15 ROAD MARKING

Purchaser shall perform road work in accordance with the state’s marked location. All road work is marked as follows:

- Pre-haul activities: 2 in. x 48 in. wooden lath with station and activity
- Construction: Orange ribbon tied eye-height along centerline, w/orange pin flags or wooden lath marking centerline

1-16 CONSTRUCTION STAKES SET BY STATE

Purchaser shall perform work in accordance with the construction stakes and/or reference points set in the field for grade and alignment. Reconstruction of existing road grades must conform to the original location except where construction staked or designed.

1-18 REFERENCE POINT DAMAGE

Purchaser shall reset reference points (RPs) that were moved or damaged at any time during construction to their original locations. Excavation and embankment may not proceed on road segments controlled by said RPs until Purchaser resets all moved or damaged RPs.

SUBSECTION TIMING

1-20 COMPLETE BY DATE

Purchaser shall complete pre-haul road work before the start of timber haul.

1-21 HAUL APPROVAL

Purchaser shall not use roads under this road plan for any hauling, other than timber cut on the right-of-way, without written approval from the Contract Administrator.

1-22 WORK NOTIFICATIONS

Purchaser shall notify the Contract Administrator a minimum of 3 calendar days before work begins.

1-23 ROAD WORK PHASE APPROVAL

Purchaser shall obtain written approval from the Contract Administrator upon completion of each of the following phases of road work:

- Drainage installation
- Subgrade compaction
- Rock compaction

SUBSECTION RESTRICTIONS

1-25 ACTIVITY TIMING RESTRICTION

The specified activities are not allowed during the listed closure period(s) unless authorized in writing by the Contract Administrator.

<u>Activity</u>	<u>Closure Period</u>
The construction and/or reconstruction of any roads	October 1 to April 30

The specified activities are only allowed during the listed period(s) unless authorized in writing by the Contract Administrator and in consultation with Region Biologist.

<u>Road</u>	<u>Stations</u>	<u>Activity</u>	<u>Operating Period</u>
B-1045A	0+00 to 8+80	Construct and abandon road in one operating period	July 1 to August 31
B-1430	12+71 to 21+15	Construct and abandon road in one operating period	May 1 to September 30

1-26 OPERATING DURING CLOSURE PERIOD

If permission is granted to operate during a closure period listed in Clause 1-25 ACTIVITY TIMING RESTRICTION, Purchaser shall provide a maintenance plan to include further protection of state resources. Purchaser shall obtain written approval from the Contract Administrator for the maintenance plan, and shall put preventative measures in place before operating during the closure period. Purchaser is required to maintain all haul roads at their own expense including those listed in Contract Clause C-060 DESIGNATED ROAD MAINTAINER. If other operators are using, or desire to use these designated maintainer roads, a joint operating plan must be developed. All parties shall follow this plan.

1-29 SEDIMENT RESTRICTION

Purchaser shall not allow silt-bearing runoff to enter any streams. Purchaser shall accomplish sediment removal through silt traps, silt fences, settling ponds, or other methods as approved, in writing by the Contract Administrator.

1-30 CLOSURE TO PREVENT DAMAGE

In accordance with Contract Clause G-220 STATE SUSPENDS OPERATION, the Contract Administrator will suspend road work or hauling right-of-way timber, forest products, or rock under the following conditions:

- Wheel track rutting exceeds 6 inches on jaw run roads.
- Wheel track rutting exceeds 4 inches on crushed rock roads.
- Surface or base stability problems persist.

Operations must stop unless authority to continue working or hauling is granted in writing by the Contract Administrator. In the event that surface or base stability problems persist, Purchaser shall cease operations, or perform corrective maintenance or repairs, subject to specifications within this road plan.

1-32 BRIDGE AND ASPHALT SURFACE RESTRICTION

The use of metal tracked equipment is not allowed on bridge or asphalt surfaces at any time. If Purchaser must run equipment on bridge or asphalt surfaces, then rubber tired equipment or other methods, approved in writing by Contract Administrator, must be used.

If tracked equipment is used on bridge or asphalt surfaces, Purchaser shall immediately cease all operations. Purchaser shall remove any dirt, rock, or other material tracked or spilled on the bridge or asphalt surface(s) and have surface(s) evaluated for any damage caused by transporting equipment. Any damage to the surface(s) will be repaired, at the Purchaser's expense, as directed by the Contract Administrator.

1-33 SNOW PLOWING RESTRICTION

Snowplowing will be allowed after the execution of a SNOW PLOWING AGREEMENT, which is available from the Contact Administrator upon request. Purchaser shall request

a SNOW PLOWING AGREEMENT each time plowing occurs. If damage occurs while plowing, further permission to plow may be revoked by the Contract Administrator.

SUBSECTION OTHER INFRASTRUCTURE

1-40 ROAD APPROACHES TO COUNTY ROADS AND STATE HIGHWAYS

Purchaser shall immediately remove any mud, dirt, rock, or other material tracked or spilled on to county roads and state highways.

If additional damage to the surface, signs, guardrails, etc. occurs then the damage will be repaired, at the Purchaser’s expense, as directed by the Contract Administrator when authorized by the county or WSDOT.

1-43 ROAD WORK AROUND UTILITIES

Road work is in close proximity to a utility. Known utilities are listed, but it is the Purchaser’s responsibility to identify any utilities not listed. Purchaser shall work in accordance with all applicable laws or rules concerning utilities. Purchaser is responsible for all notification, including “call before you dig”, and liabilities associated with the utilities and their rights-of-way.

SECTION 2 – MAINTENANCE

2-1 GENERAL ROAD MAINTENANCE

Purchaser shall maintain all roads used under this contract in accordance with the FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS for the entire term of this contract. Maintenance is required even during periods of inactivity.

2-2 ROAD MAINTENANCE – PURCHASER MAINTENANCE

Purchaser shall perform maintenance on roads listed in Contract Clause C-050 PURCHASER ROAD MAINTENANCE AND REPAIR in accordance with FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS.

2-3 ROAD MAINTENANCE – DESIGNATED MAINTAINER

Purchaser may be required to perform maintenance on roads listed in Contract Clause C-060 DESIGNATED ROAD MAINTAINER as directed by the Contract Administrator. Purchaser shall maintain roads in accordance with FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS.

2-4 PASSAGE OF LIGHT VEHICLES

Purchaser shall maintain the following road(s) in a condition that will allow the passage of light administrative vehicles.

<u>Road</u>	<u>Stations</u>
B-1000	0+00 to 323+85

2-5 MAINTENANCE GRADING – EXISTING ROAD

On the following road(s), Purchaser shall use a grader to shape the existing surface before rock application, if rock application is required. If rock application is not required, Purchaser shall use a grader to shape the existing surface before hauling of timber. Purchaser shall accomplish all grading using a motor grader.

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
B-1000	179+42 to 323+85	Desod, grade and crown road surface.
B-1045	0+00 to 18+60	Desod, grade and crown road surface.
B-1300	0+00 to 66+45	Desod, grade and crown road surface.
B-1400	0+00 to 147+36	Desod, grade and crown road surface.
B-1410	0+00 to 24+09	Desod, grade and crown road surface.
B-1490	0+00 to 8+96	Desod, grade and crown road surface.

2-6 CLEANING CULVERTS

On the following road(s), Purchaser shall clean the inlets and outlets of all culverts :

<u>Road</u>	<u>Stations</u>
B-1000	0+00 to 323+85
B-1045	0+00 to 18+60
B-1300	0+00 to 66+75
B-1400	0+00 to 147+36
B-1410	0+00 to 24+09
B-1490	0+00 to 8+96

2-7 CLEANING DITCHES, HEADWALLS, AND CATCH BASINS

On the following road(s), Purchaser shall clean ditches, headwalls, catchbasins, and outlets. Work must be completed before the application of rock and/or timber haul and must be done in accordance with the TYPICAL SECTION SHEET and CULVERT AND DRAINAGE SPECIFICATION DETAIL. Pulling ditch material across the road or mixing in with the road surface is not allowed.

<u>Road</u>	<u>Stations</u>	<u>Comment</u>
B-1000	0+00 to 323+85	Spot ditch reconstruction.
B-1300	0+00 to 66+75	Spot ditch reconstruction.
B-1400	0+00 to 147+36	Spot ditch reconstruction.
B-1490	0+00 to 8+96	Spot ditch reconstruction.

SECTION 3 – CLEARING, GRUBBING, AND DISPOSAL

SUBSECTION BRUSHING

3-1 BRUSHING

On the following road(s), Purchaser shall cut vegetative material up to 3 inches in diameter, including limbs, as shown on the BRUSHING DETAIL. Brushing must be achieved by manual or mechanical cutting of brush, trees, and branches. Root systems and stumps of cut vegetation may not be disturbed unless directed by the Contract Administrator. Purchaser shall remove brushing debris from the road surface, ditchlines, and culvert inlets and outlets.

<u>Road</u>	<u>Stations</u>
B-1000	233+40 to 235+15 241+10 to 248+60
B-1045	0+00 to 18+60
B-1300	0+00 to 66+75
B-1400	0+00 to 147+36
B-1490	0+00 to 8+96

SUBSECTION CLEARING

3-5 CLEARING

Purchaser shall fall all vegetative material larger than 2 inches DBH or over 5 feet high between the marked right-of-way boundaries or if not marked in the field, between the clearing limits specified on the TYPICAL SECTION SHEET. Clearing must be completed before starting excavation and embankment.

3-8 PROHIBITED DECKING AREAS

Purchaser shall not deck right-of-way timber in the following areas:

- Within the grubbing limits.
- Within 50 feet of any stream.
- In locations that interfere with the construction of the road prism.
- In locations that impede drainage.
- Against standing trees unless approved by the Contract Administrator.

SUBSECTION GRUBBING

3-10 GRUBBING

Purchaser shall remove all stumps between the grubbing limits specified on the TYPICAL SECTION SHEET and within waste and debris areas, EXCEPT as stated in 3-11. Purchaser shall also remove stumps with undercut roots outside the grubbing limits. Grubbing must be completed before starting excavation and embankment.

3-11 GRUBBING EXCEPTION WITHIN FORESTED WETLAND AND BUFFER

On the following road, Purchaser shall NOT grub and remove stumps through the forested wetland. See SECTION 11 for “grubbing” method in forested wetland.

<u>Road</u>	<u>Stations</u>
B-1045A	4+80 to 5+40

On the following roads, stumps removed on the B-1045A and B-1430 outside the forested wetland shall be set aside for placement on the same road segment as removed from during road decommissioning and abandonment.

<u>Road</u>	<u>Stations</u>
B-1045A	0+00 to 4+80
B-1045A	5+40 to 8+80
B-1430	12+71 to 21+15

SUBSECTION ORGANIC DEBRIS

3-20 ORGANIC DEBRIS DEFINITION

Organic debris is defined as all vegetative material not eligible for removal by Contract Clause G-010 PRODUCTS SOLD AND SALE AREA or G-011 RIGHT TO REMOVE FOREST PRODUCTS AND CONTRACT AREA, that is larger than one cubic foot in volume within the grubbing limits as shown on the TYPICAL SECTION SHEET.

3-21 DISPOSAL COMPLETION

Purchaser shall remove organic debris from the road surface, ditchlines, and culvert inlets and outlets. Purchaser shall complete all disposal of organic debris, before the application of rock and/or timber haul.

3-23 PROHIBITED DISPOSAL AREAS

Purchaser shall not place organic debris in the following areas:

- Within 50 feet of a cross drain culvert.
- Within 100 feet of a live stream, or wetland.
- On road subgrades, or excavation and embankment slopes.
- On slopes greater than 55%.
- Within the operational area for cable landings where debris may shift or roll.
- On locations where brush can fall into the ditch or onto the road surface.
- Against State owned standing timber.

3-24 BURYING ORGANIC DEBRIS RESTRICTED

Purchaser shall not bury organic debris unless otherwise stated in this plan.

3-25 SCATTERING ORGANIC DEBRIS

Purchaser shall scatter organic debris outside of the clearing limits in natural openings. Where natural openings are unavailable or restrictive, alternate debris disposal methods are subject to the written approval of the Contract Administrator.

SECTION 4 – EXCAVATION

4-2 PIONEERING

Pioneering may not extend past construction that will be completed during the current construction season. In addition, the following actions must be taken as pioneering progresses:

- Drainage must be provided on all uncompleted construction as approved, in writing, by the Contract Administrator.
- Road pioneering operations may not undercut the final cut slope, deposit excavated material outside the grubbing limits, or restrict drainage.
- Culverts at live stream crossings must be installed during pioneering operations

4-3 ROAD GRADE AND ALIGNMENT STANDARDS

Purchaser shall follow these standards for road grade and alignment except as designed:

- Grade and alignment must have smooth continuity, without abrupt changes in direction.
- Maximum grades may not exceed 18 percent favorable and 15 percent adverse.
- Minimum curve radius is 60 feet at centerline.
- Maximum grade change for sag vertical curves is 5% in 100 feet.
- Maximum grade change for crest vertical curves is 4% in 100 feet.

4-4 SWITCHBACK STANDARDS

A switchback is defined as a curved segment of road between a beginning and end of the same curve, where the change of traffic travel direction is greater than 90 degrees.

Purchaser shall follow these standards for switchbacks:

- Maximum adverse grades for switchbacks is 12%.
- Maximum favorable grades for switchbacks is 14%.
- Maximum transition grades entering and leaving switchbacks is a 5% grade change.
- Transition grades required to meet switchback grade limitations must be constructed on the tangents preceding and departing from the switchbacks.

4-5 CUT SLOPE RATIO

Purchaser shall construct excavation slopes no steeper than shown on the following table:

<u>Material Type</u>	<u>Excavation Slope Ratio</u>	<u>Excavation Slope Percent</u>
Common Earth (on side slopes up to 55%)	1:1	100
Common Earth (56% to 70% side slopes)	¾:1	133
Common Earth (on slopes over 70%)	½:1	200
Fractured or loose rock	½:1	200
Hardpan or solid rock	¼:1	400

4-6 EMBANKMENT SLOPE RATIO

Purchaser shall construct embankment slopes no steeper than shown on the following table:

<u>Material Type</u>	<u>Embankment Slope Ratio</u>	<u>Embankment Slope Percent</u>
Sandy Soils	2:1	50
Common Earth and Rounded Gravel	1½:1	67
Angular Rock	1¼:1	80

4-7 SHAPING CUT AND FILL SLOPE

Purchaser shall construct excavation and embankment slopes to a uniform line and left rough for easier revegetation.

4-8 CURVE WIDENING

The minimum widening placed on the inside of curves is:

- 6 extra feet for curves of 60 to 79 feet radius.
- 4 extra feet for curves of 80 to 100 feet radius.

4-9 EMBANKMENT WIDENING

The minimum embankment widening is:

- 2 feet for embankment heights at centerline of less than 6 feet.
- 4 feet for embankment heights at centerline of 6 feet or greater.

Purchaser shall apply embankment widening equally to both sides of the road to achieve the required width.

4-12 FULL BENCH CONSTRUCTION

Where side slopes exceed 45%, Purchaser shall use full bench construction for the entire subgrade width except as construction staked or designed.

4-21 TURNOUTS

Purchaser shall construct turnouts as designated on the TURNOUT LIST. Locations may be adjusted to fit the final subgrade alignment and sight distances. Minimum dimensions are shown on the TURNOUT LIST.

4-22 TURNAROUNDS

Turnarounds must be no larger than 30 feet long and 30 feet wide.

SUBSECTION DITCH CONSTRUCTION

4-25 DITCH CONSTRUCTION AND RECONSTRUCTION

Purchaser shall construct or reconstruct ditches into the subgrade as specified on the TYPICAL SECTION SHEET. Ditches must be constructed concurrently with construction of the subgrade.

<u>Road</u>	<u>Stations</u>
B-1000	0+00 to 323+85 (Reconstruction as marked on Road Work Maps)
B-1300	0+00 to 66+75
B-1400	0+00 to 147+36
B-1490	0+00 to 8+96

4-27 DITCH WORK – MATERIAL USE PROHIBITED

Purchaser shall not pull ditch material across the road or mix in with the road surface. Excavated material must be scattered outside the grubbing limits.

4-28 DITCH DRAINAGE

Ditches shall be constructed concurrently with construction of the subgrade. Ditches must drain to cross-drain culverts or ditchouts.

4-29 DITCHOUTS

Purchaser shall construct ditchouts as identified in maps, in field, and as directed by the Contract Administrator. Ditchouts must be constructed in a manner that diverts ditch water onto the forest floor and must have excavation backslopes no steeper than a 1:1 ratio.

SUBSECTION WASTE MATERIAL (DIRT)

4-35 WASTE MATERIAL DEFINITION

Waste material is defined as all dirt, rock, mud, or related material that is extraneous or unsuitable for construction material. Waste material, as used in Section 4 EXCAVATION, is not organic debris.

4-36 DISPOSAL OF WASTE MATERIAL

Purchaser may sidecast waste material on side slopes up to 55% if the waste material is compacted and free of organic debris.

4-37 WASTE AREA LOCATION

Purchaser shall deposit waste material in the listed designated areas. Additional waste areas may also be identified or approved by the Contract Administrator. The amount of material allowed in a waste area is at the discretion of the Contract Administrator.

<u>Road</u>	<u>Waste Area Location</u>	<u>Comments</u>
B-1045A	Landing	Build up landing with excess material
B-1300 Reroute	B-1300 STA 63+75	Dump and push.

B-1430	Landing	Build up landing with excess material
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4-38 PROHIBITED WASTE DISPOSAL AREAS

Purchaser shall not deposit waste material in the following areas, except as otherwise specified in this plan:

- Within 50 feet of a cross drain culvert.
- Within 100 feet of a live stream or wetland.
- On side slopes steeper than 55%.
- In locations that interfere with the construction of the road prism.
- In locations that impede drainage.
- Within the operational area for cable landings.
- Against State owned standing timber.

SUBSECTION BORROW

4-46 COMMON BORROW

Common borrow consists of soil, and/or aggregate that is non-plastic and contains no more than 5% clay, organic debris, or trash by volume. The material is considered non-plastic if the fines in the sample cannot be rolled, between the hand and a smooth surface, into a thread at any moisture content.

4-47 NATIVE MATERIAL

Native material consists of naturally occurring material that is free of organic debris, trash, and rocks greater than 6 inches in any dimension.

4-48 BORROW MATERIAL

Borrow material may not contain more than 5% organic debris, or trash by volume.

4-49 BORROW SOURCE

Purchaser shall obtain borrow material from borrow sources identified or approved by the Contract Administrator. Development of the borrow source must be in accordance with a written BORROW SOURCE DEVELOPMENT PLAN to be submitted by the Purchaser and approved in writing by the Contract Administrator.

SUBSECTION SHAPING

4-55 ROAD SHAPING

Purchaser shall shape each lift of the subgrade and surface as shown on the TYPICAL SECTION SHEET. The subgrade and surface shape must ensure runoff in an even, un-concentrated manner, and must be uniform, firm, and rut-free.

4-56 DRY WEATHER SHAPING

At any time of year, the Contract Administrator may require the application of water to facilitate shaping activities. The method of water application is subject to written approval by the Contract Administrator.

SUBSECTION COMPACTION

4-60 FILL COMPACTION

Purchaser shall compact all embankment and waste material in accordance with the COMPACTION LIST by routing equipment over the entire width of each lift. Waste material may be placed by end-dumping or sidecasting until sufficiently wide enough to support the equipment.

4-61 SUBGRADE COMPACTION

Purchaser shall compact constructed subgrades in accordance with the COMPACTION LIST by routing equipment over the entire width except ditch. On fills deeper than 5 feet at the road shoulder Purchaser shall compact fill material in lifts no greater than 18 inches. Purchaser shall obtain written approval from the Contract Administrator for subgrade compaction before rock application.

4-62 DRY WEATHER COMPACTION

At any time of year, the Contract Administrator may require the application of water to facilitate compaction activities. The method of water application is subject to written approval by the Contract Administrator.

4-63 EXISTING SURFACE COMPACTION

Purchaser shall compact maintained road surfaces in accordance with the COMPACTION LIST by routing equipment over the entire width.

4-70 SUBGRADE REINFORCEMENT

On the following road, Purchaser shall provide and install geotextile fabric with chainlink fence, tree tops, geotextile fabric and rock on top. Subgrade reinforcement must be installed to a width that is 2 feet more than the subgrade width, including turnouts. Geotextile fabric must overlap by a minimum of 2 feet at all joints. The geotextile fabric must be covered with a minimum of 12 inches of truck compacted 4-inch jaw run ROCK. Purchaser shall apply rock in one-foot lift(s) over the geotextile in accordance with the manufacturer’s specifications. Geotextile fabric must meet the specifications in Clause 10-3 GEOTEXTILE FOR STABILIZATION.

<u>Road</u>	<u>Stations</u>
B-1045A	4+80 to 5+40

SECTION 5 – DRAINAGE

5-1 REMOVAL OF SHOULDER BERMS

Purchaser shall remove berms from road shoulders to permit escape of runoff.

SUBSECTION CULVERTS

5-5 CULVERTS

Purchaser shall install culverts as part of this contract. Culverts must be installed concurrently with subgrade work and must be installed before subgrade compaction and rock application. Culvert locations and the minimum requirements for culvert length and diameter are designated on the CULVERT AND DRAINAGE LIST. Culvert, downspout, and flume lengths may be adjusted to fit as-built conditions and may not terminate directly on unprotected soil. Culverts must be new material and meet the specifications in Clauses 10-15 through 10-23 except as provided in clause 5-6 USED CULVERT MATERIAL.

5-6 USED CULVERT MATERIAL

Purchaser may install used culverts on the following roads. All other roads must have new culverts installed.

<u>Road</u>	<u>Stations</u>
B-1430	12+71 to 21+15
B-1470	0+00 to 3+51
B-1045A	0+00 to 8+80

5-9 CULVERT MARKER INSTALLATION

Purchaser shall install culvert markers in accordance with the CULVERT MARKER DETAIL at all newly installed permanent culverts.

5-10 CONTINGENCY CULVERTS

The following culverts will be supplied by the Purchaser and are available for installation as directed by the Contract Administrator.

<u>Road</u>	<u>Size</u>
On any portion of road used for timber or rock haul	<ul style="list-style-type: none"> • 18"x30' culvert • 18" culvert band • 18" culvert band

5-11 UNUSED MATERIALS STATE PROPERTY

On required roads or listed in Clause 5-10, any materials listed on the CULVERT LIST that are not installed will become the property of the state. Purchaser shall stockpile materials at Mima Mounds Pit (SW ¼ NW ¼ Section 10, T16R03W).

SUBSECTION CULVERT INSTALLATION

5-15 CULVERT INSTALLATION

Culvert, downspout, flume and energy dissipator installation must be in accordance with the CULVERT AND DRAINAGE SPECIFICATION DETAIL and the Corrugated Polyethylene Pipe Association's "Recommended Installation Practices for Corrugated Polyethylene Pipe and Fittings".

5-17 CROSS DRAIN SKEW AND SLOPE

Cross drains, on road grades in excess of 3%, must be skewed at least 30 degrees from perpendicular to the road centerline, except where the cross drain is at the low point in the road culverts will not be skewed. Cross drain culverts must be installed at a slope steeper than the incoming ditch grade, but not less than 3% or more than 12%.

5-18 CULVERT DEPTH OF COVER

Cross drain culverts must be installed with a depth of cover of not less than 1 foot of compacted subgrade over the top of the culvert at the shallowest point. Stream crossing culverts must be installed with a depth of cover recommended by the culvert manufacturer for the type and size of the pipe.

SUBSECTION ENERGY DISSIPATERS

5-20 ENERGY DISSIPATERS

Purchaser shall install energy dissipaters in accordance with the CULVERT AND DRAINAGE SPECIFICATION DETAIL at all culverts on the CULVERT LIST that specify the placement of rock. Energy dissipater installation is subject to approval by the Contract Administrator.

The type of energy dissipater and the amount of material must be consistent with the specifications listed on the CULVERT LIST. Placement must be by zero-drop-height method only. No placement by end dumping or dropping of rock is allowed. LIGHT, LOOSE RIP RAP shall meet the specifications in Clause 6-50.

SUBSECTION CATCH BASINS, HEADWALLS, AND ARMORING

5-25 CATCH BASINS

Purchaser shall construct catch basins to resist erosion in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL. Minimum dimensions of catch basins are 2 feet wide and 4 feet long.

5-26 HEADWALLS FOR CULVERTS

Purchaser shall construct headwalls in accordance with the CULVERT AND DRAINAGE SPECIFICATION DETAIL at all culverts on the CULVERT LIST that specify the placement of rock.

5-27 ARMORING FOR STREAM CROSSING CULVERTS

At the following culvert(s), Purchaser shall place in conjunction with or immediately following construction of the embankment. Rock must be placed on shoulders, slopes, and around culvert inlets and outlets as designated on the ROCK LIST. Rock may not restrict the flow of water into culvert inlets or catch basins. QUARRY SPALLS must meet the specifications in Clause 6-43.

<u>Road</u>	<u>Stations</u>
B-1300	71+76
	73+23
B-1400	93+97

5-33 NATIVE SURFACE ROADS

If overwintered, native surface roads must be waterbarred by November 1. Purchaser shall construct waterbars according to the attached DRIVABLE WATERBAR DETAIL at a maximum spacing that will produce a vertical distance of no more than 10 feet between waterbars or between natural drainage paths, and with a maximum spacing of 300 feet.

SECTION 6 – ROCK AND SURFACING

SUBSECTION ROCK SOURCE

6-2 ROCK SOURCE ON STATE LAND

Rock used in accordance with the quantities on the ROCK LIST may be obtained from the following source(s) on state land at no charge to the Purchaser. Purchaser shall obtain written approval from the Contract Administrator for the use of material from any other source. If other operators are using, or desire to use the rock source(s), a joint operating plan must be developed. All parties shall follow this plan. Purchaser shall notify the Contract Administrator a minimum of 3 calendar days before starting any operations in the listed locations.

<u>Source</u>	<u>Location</u>
Larch Pillar Quarry	SE ¼ SW ¼ Sect. 2T17R04W

6-5 ROCK FROM COMMERCIAL SOURCE

Rock used in accordance with the quantities on the ROCK LIST may shall be obtained from any commercial source at the Purchaser's expense. Rock sources are subject to written approval by the Contract Administrator before their use.

SUBSECTION ROCK SOURCE DEVELOPMENT

6-10 ROCK SOURCE DEVELOPMENT PLAN BY STATE

Purchaser shall conduct rock source development and use at the following sources, in accordance with the written ROCK SOURCE DEVELOPMENT PLAN prepared by the state and included in this road plan. Upon completion of operations, the rock source must be left in the condition specified in the ROCK SOURCE DEVELOPMENT PLAN, and approved in writing by the Contract Administrator. Purchaser shall notify the Contract Administrator a minimum of 3 calendar days before starting any operations in the rock source.

<u>Source</u>	<u>Rock Type</u>
Larch Pillar Quarry	2 ½ inch minus, 4 Inch Jaw, Quarry Spalls, Light Loose Riprap

6-12 ROCK SOURCE SPECIFICATIONS

Rock sources must be in accordance with the following specifications , unless otherwise specified in the ROCK SOURCE DEVELOPMENT PLAN:

- Pit walls may not be undermined or over steepened. The maximum slope of the walls must be consistent with recognized engineering standards for the type of material being excavated in accordance with the following table:

Material	Maximum Slope Ratio (Horiz. :Vert.)	Maximum Slope Percent
Sand	2:1	50
Gravel	1.5:1	67
Common Earth	1:1	100
Fractured Rock	0.5:1	200
Solid Rock	0:1	vertical

- Pit walls must be maintained in a condition to minimize the possibility of the walls sliding or failing.
- The width of pit benches must be a minimum of 1.5 times the maximum length of the largest machine used.
- The surface of pit floors and benches must be uniform and free-draining at a minimum 2% outslope gradient.
- All operations must be carried out in compliance with all regulations of the Regulations and Standards Applicable to Metal and Nonmetal Mining and Milling Operations (30 CFR) U.S. Department of Labor, Mine Safety and Health Administration and Safety Standards for Construction Work (296-155 WAC), Washington Department of Labor and Industries.
- All vehicle access to the top of the pit faces must be blocked.

6-14 DRILL AND SHOOT

Rock drilling and shooting must meet the following specifications:

- Oversize material remaining in the rock source at the conclusion of the timber sale may not exceed 600 cubic yards.
- Oversize material is defined as rock fragments larger than two feet in any dimension.
- Oversized rock that exceeds the maximum allowable amount must be reduced to a smaller size within the rock source.
- Purchaser shall notify the Contract Administrator a minimum of 3 working days before blasting operations.
- Purchaser shall submit an informational drilling and shooting plan to the Contract Administrator 3 working days before any drilling. The drilling and shooting plan must include, at a minimum, the mapped location and spacing of all holes to be loaded, the type of blasting agent used, the powder factor calculated and the units of same, stem amount held per hole. After drilling, the type of rock encountered while drilling e.g. hard black, soft brown, etc shall be amended to submitted plan.
- All operations must be carried out in compliance with the Regulations and Standards Applicable to Metal and Nonmetal Mining and Milling Operations (30 CFR) U.S. Department of Labor, Mine Safety and Health Administration and the Safety Standards for Construction Work (296-155 WAC), Washington Department of Labor and Industries.
- Purchaser shall block access roads before blasting operations.

SUBSECTION ROCK MANUFACTURE

6-20 ROCK GRADATION TYPES

Purchaser shall manufacture rock in accordance with the types and amounts listed in the ROCK LIST. Rock must meet the following specifications for gradation and uniform quality when placed in hauling vehicles. Purchaser shall provide a sieve analysis upon request from the Contract Administrator.

6-22 FRACTURE REQUIREMENT FOR ROCK

A minimum of 50% by visual inspection of coarse aggregate must have at least one fractured face. Coarse aggregate is the material greater than 1/4-inch in size.

6-23 ROCK CRUSHING OPERATIONS

Rock crushing operations must conform to the following specifications:

- Operations and placement of oversize material must be conducted in or near the rock source site, as approved in writing by the Contract Administrator.
- The crushing operation must be concluded within 30 working days from the time it begins.

SUBSECTION ROCK GRADATION

6-32 2 ½-INCH MINUS CRUSHED ROCK

- % Passing 2 ½" square sieve 100%
- % Passing 1 ¼" square sieve 55 - 75%
- % Passing U.S. #4 sieve 20 - 45%

Of the fraction passing the No. 4 sieve, 40% to 60% must pass the No. 10 sieve.

The portion of aggregate retained on the No. 4 sieve may not contain more than 0.2 percent organic debris and trash. All percentages are by weight.

6-37 4-INCH JAW RUN ROCK

- % Passing 4" square sieve 95%
- % Passing U.S. #40 sieve 16% maximum
- % Passing U.S. #200 sieve 5% maximum

The portion of aggregate retained on the No. 4 sieve may not contain more than 0.2 percent organic debris and trash. All percentages are by weight.

6-43 QUARRY SPALLS

- % Passing 8" square sieve 100%
- % Passing 3" square sieve 40% maximum
- % Passing 3/4" square sieve 10% maximum

Rock may not contain more than 5 percent vegetative debris or trash. All percentages are by weight.

6-50 LIGHT LOOSE RIP RAP

Rip rap must consist of angular, hard, sound, and durable stone. It must be free from segregation, seams, cracks, and other defects. Light loose rip rap must be free of rock fines, soil, organic debris or other extraneous material, and must meet the following requirements:

<u>At Least/Not More Than</u>	<u>Size Range</u>
20% / 90%	20" - 36"
80% / --	12" - 30"
10% / 20%	3" - 8"

SUBSECTION ROCK MEASUREMENT

6-55 ROCK APPLICATION MEASURED BY COMPACTED DEPTH

Measurement of specified rock depths, are defined as the compacted depth(s) using the compaction methods required in this road plan. Estimated quantities specified in the ROCK LIST are compacted yards. Purchaser shall apply adequate amounts of rock to

meet the specified rock depths. Specified rock depths are minimum requirements and are not subject to reduction.

SUBSECTION ROCK APPLICATION

6-70 APPROVAL BEFORE ROCK APPLICATION

Purchaser shall obtain written approval from the Contract Administrator for subgrade including: ditches, headwalls, catch basins, culverts, energy dissipaters, ditch-outs, subgrade shaping and compacting before rock application.

6-71 ROCK APPLICATION

Purchaser shall apply rock in accordance with the specifications and quantities shown on the ROCK LIST. Rock must be spread, shaped, and compacted full width concurrent with rock hauling operations. The Contract Administrator will direct locations for rock that is to be applied as spot patching. Road surfaces must be compacted in accordance with the COMPACTION LIST by routing equipment over the entire width.

6-73 ROCK FOR WIDENED PORTIONS

Purchaser shall apply rock to turnarounds, turnouts, and areas with curve widening to the same depth and specifications as the traveled way.

SECTION 7 – STRUCTURES

SUBSECTION STREAM CROSSING STRUCTURES GENERAL

7-5 STRUCTURE DEBRIS

Purchaser shall not allow debris from the installation or removal of structures to enter any stream. Purchaser shall maintain a clean jobsite, with all materials stored away from the high water mark or other area presenting a risk of the materials entering a stream. Debris entering any stream must be removed immediately, and placed in the site(s) designated for stockpiling or disposal. Purchaser shall retrieve all material carried downstream from the jobsite.

7-6 STREAM CROSSING INSTALLATION

Purchaser shall install stream crossing structures in accordance with the manufacturer's requirements, see B-1300 CULVERT DETAILS.

7-7 BANK PROTECTION FOR STREAM CROSSING STRUCTURES

Bank protection must be designed and constructed to prevent the undermining of the structure.

SUBSECTION ACCEPTANCE

7-16 STRUCTURE ACCEPTANCE

The Region Engineer or designee will inspect the structure upon delivery. Acceptance will be issued if the structure meets all specifications and certifications. Structures that are not accepted may not be installed.

SUBSECTION LARGE CULVERTS

7-55 LARGE CULVERT INSTALLATION

Purchaser shall provide and install large culverts in accordance with the B-1300 CULVERT DETAILS Installation Plan. Culvert designs must meet or exceed the following specifications:

<u>Road</u>	<u>B-1300</u>	<u>B-1300</u>
<u>Station</u>	71+76	73+23
<u>Type</u>	Pipe Arch CMP	Pipe Arch CMP
<u>Material and Coating Type*</u>	Aluminized Steel	Aluminized Steel
<u>Span (in.)</u>	66	73
<u>Rise (in.)</u>	51	55
<u>Length (ft.)</u>	42	68
<u>Corrugations</u>	3"x1"	3"x1"
<u>Gauge</u>	12 ga	12 ga

* See Clause 10-15 CORRUGATED STEEL CULVERT

7-56 STEEL PIPE, PIPE ARCH, AND STRUCTURAL PLATE INSTALLATION

Purchaser shall install steel pipe, pipe arches, and structural plate culverts in accordance with the National Corrugated Steel Pipe Association "Installation Manual for Corrugated Steel Pipe, Pipe Arches, and Structural Plate." Installation is subject to the inspection and approval of the Contract Administrator before placement and backfill. The latest edition of the NCSA Installation Manual can be found at www.ncspa.org.

7-57 CULVERT SHAPE CONTROL

Purchaser shall monitor the culvert shape during backfill and compaction. Special attention must be paid to maintaining the structure's rise dimensions, concentricity, and smooth uniform curvature. If compaction methods are resulting in peaking or deflection of the culvert, Purchaser shall modify the compaction method to achieve the appropriate end result.

SECTION 8 – EROSION CONTROL

8-2 PROTECTION FOR EXPOSED SOIL

On the following road(s), Purchaser shall provide and evenly spread a layer of straw to all exposed soils. Soils may not sit exposed during any rain event.

<u>Road</u>	<u>Location</u>
B-1300	71+76
	73+23

SUBSECTION REVEGETATION

8-15 REVEGETATION

On the following road(s), Purchaser shall spread grass seed on all exposed soils resulting from road work activities. Cover all exposed soils using hand method. Other methods of covering must be approved in writing by the Contract Administrator.

<u>Road</u>	<u>Location</u>
B-1000	89+25
B-1045A	0+00 to 8+80
B-1300	0+00 to 75+45
B-1300 Reroute	75+45 to 78+08
B-1310	0+00 to 28+13
B-1430	0+00 to 21+15
B-1430a	0+00 to 6+36
B-1470	0+00 to 3+51
B-1490	0+00 to 8+96
B-1492	0+00 to 13+73

8-16 REVEGETATION SUPPLY

The Purchaser shall provide the seed mixture.

8-17 REVEGETATION TIMING

Purchaser shall revegetate immediately after road work is completed unless alternative plan approved in writing by the Contract Administrator. Soils may not be allowed to sit exposed for longer than one month without receiving revegetation treatment unless otherwise approved in writing by the Contract Administrator.

8-18 PROTECTION FOR SEED

Purchaser shall provide a protective cover for seed if revegetation occurs between July 1 and March 31. The protective cover may consist of an even layer of straw or Contract Administrator approved alternative. Seed may not be allowed to sit exposed during any rain event.

8-19 ASSURANCE FOR SEEDED AREA

Purchaser shall ensure the growth of a uniform and dense crop (at least 50% coverage) of 3-inch tall grass. Purchaser shall reapply the grass seed in areas that have failed to germinate or have been damaged through any cause. Restore eroded or disturbed

areas, clean up and properly dispose of eroded materials, and reapply the grass seed at no addition cost to the state.

8-25 GRASS SEED

Purchaser shall evenly spread the seed mixture listed below on all soil specified in CLAUSE 8-15 REVEGETATION at a rate of 50 pounds per acre of exposed soil. Grass seed must meet the following specifications:

1. Weed seed may not exceed 0.5% by weight.
2. All seed species must have a minimum 90% germination rate, unless otherwise specified.
3. Seed must be certified.
4. Seed must be furnished in standard containers showing the following information:
 - a. Common name of seed.
 - b. Net weight.
 - c. Percent of purity.
 - d. Percentage of germination.
 - e. Percentage of weed seed and inert material.
5. Seed must conform to the following mixture unless a comparable mix is approved in writing by the Contract Administrator.

<u>Kind and Variety of Seed in Mixture</u>	<u>% by Weight</u>
Perennial Rye	35-45
Red Fescue	35-45
Highland Bent	5-15
White Clover	5-15
Inert and Other Crop	0.5

SECTION 9 – POST-HAUL ROAD WORK

SUBSECTION STRUCTURES

9-1 BARRICADE DETAIL

On the following road(s), Purchaser shall construct barricades in accordance with the BARRICADE DETAIL.

<u>Road</u>	<u>Stations</u>	<u>Comments</u>
B-1045A	0+00	Install
B-1430	12+71	Install
B-1470	0+00	Install
B-1490	8+96	Install

9-3 CULVERT MATERIAL REMOVED FROM STATE LAND

Culverts removed from roads become the property of the Purchaser and must be removed from state land.

SUBSECTION POST-HAUL MAINTENANCE

9-5 POST-HAUL MAINTENANCE

Purchaser shall perform post-haul maintenance in accordance with the FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS.

SUBSECTION POST-HAUL LANDING MAINTENANCE

9-10 LANDING DRAINAGE

Purchaser shall provide for drainage of the landing surface.

SUBSECTION DECOMMISSIONING AND ABANDONMENT

9-20 ROAD DECOMMISSIONING

Purchaser shall decommission the following roads before the termination of this contract.

<u>Road</u>	<u>Stations</u>
B-1430	12+71 to 21+15
B-1470	0+00 to 3+51
B-1490	8+96 to 17+32

9-21 ROAD ABANDONMENT

Purchaser shall abandon the following roads before the termination of this contract.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
B-1045A	0+00 to 4+80	See clause 9-22
B-1045A	4+80 to 5+40	See clause 9-23 Forested Wetland Abandonment
B-1045A	5+40 to 8+80	See clause 9-22

9-22 DECOMMISSIONING AND ABANDONMENT

- Construct non-drivable waterbars according to the attached NON-DRIVABLE WATERBAR DETAIL at a maximum spacing that will produce a vertical drop of no more than 10 feet between waterbars or between natural drainage paths and with a maximum spacing of 100 feet, or as marked in the field.
- Block roads with earthen barricades in accordance with the attached BARRICADE DETAIL.

- Skew waterbars at least 30 degrees from perpendicular to the road centerline on roads in excess of 3 per cent grade.
- Key waterbars into the cut-slope to intercept the ditch. Waterbars must be outsloped to provide positive drainage. Outlets must be on stable locations.
- Remove culverts from State Land.
- Remove ditch cross drain culverts and leave the resulting trench open.
- Slope all trench walls and approach embankments no steeper than 1.5:1.
- Apply grass seed concurrently with abandonment at a rate of 50 lbs/acre, except through the forested wetland abandonment area.
- On B-1430 and B-1045A Roads only: Replacement of stumps with attached root wads that were removed from same location during grubbing.

9-23 FORESTED WETLAND ABANDONMENT

- Construct non-drivable waterbars according to the attached NON-DRIVABLE WATERBAR DETAIL at a maximum spacing that will produce a vertical drop of no more than 10 feet between waterbars or between natural drainage paths and with a maximum spacing of 100 feet, or as marked in the field.
- Skew waterbars at least 30 degrees from perpendicular to the road centerline on roads in excess of 3 per cent grade.
- Key waterbars into the cut-slope to intercept the ditch. Waterbars must be outsloped to provide positive drainage. Outlets must be on stable locations.
- DO NOT APPLY GRASS SEED
- Remove all geotextile and chainlink from state land.
- Rock shall be pulled back out of the wetland area.
- Placement of 6 logs; 3 conifer and 3 hardwood, 24 inches in diameter (large end) by 20 feet long on the abandoned road prism.

SECTION 10 MATERIALS

SUBSECTION GEOTEXTILES

10-3 GEOTEXTILE FOR STABILIZATION

Geotextiles must meet the following minimum requirements for strength and property qualities, and must be designed by the manufacturer to be used for stabilization or reinforcement, and filtration. Material must be free of defects, cuts, and tears.

	<u>ASTM Test</u>	<u>Requirements</u>
Type	--	Woven
Apparent opening size	D 4751	No. 40 max
Water permittivity	D 4491	0.10 sec ⁻¹
Grab tensile strength	D 4632	315 lb
Grab tensile elongation	D 4632	<50%
Puncture strength	D 6241	620 lb
Tear strength	D 4533	112 lb

Ultraviolet stability	D 4355	50% retained after 500 hours of exposure
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SUBSECTION CULVERTS

10-15 CORRUGATED STEEL CULVERT

Metallic coated steel culverts must meet AASHTO M-36 (ASTM A-760) specifications. Culverts must be aluminized (aluminum type 2 coated meeting AASHTO M-274).

10-17 CORRUGATED PLASTIC CULVERT

Polyethylene culverts must meet AASHTO M-294 specifications, or ASTM F-2648 specifications for recycled polyethylene. Culvert segments not specifically labeled as downspouts must be Type S – double walled with a corrugated exterior and smooth interior.

10-22 PLASTIC BAND

Plastic coupling and end bands must meet the AASHTO specification designated for the culvert. Only fittings supplied or recommended by the culvert manufacturer may be used. Couplings must be split coupling band. Split coupling bands must have a minimum of four corrugations, two on each side of the pipe joint.

SECTION 11 SPECIAL NOTES

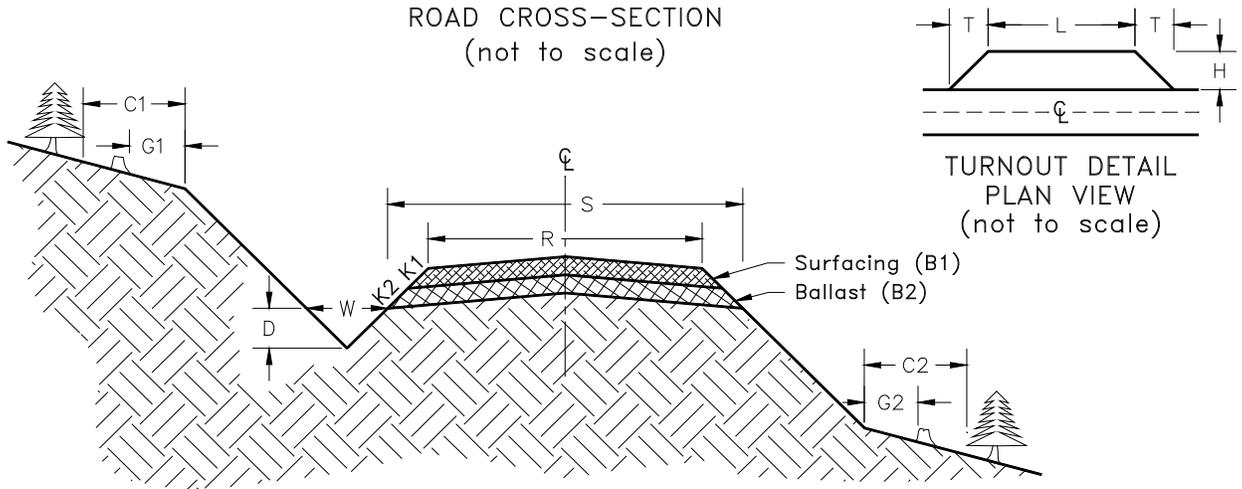
11-1 WETLAND MANAGEMENT AREA CROSSING

On the following road(s), Purchaser shall flush cut vegetation with the ground, install geotextile fabric, chainlink fencing, tree tops, geotextile fabric and rock, in that order, using the specifications directed in clause 4-70 SUBGRADE REINFORCEMENT.

Before completion of contract, Purchaser shall pull up all materials placed, and place downed woody debris. Woody debris shall consist of 6 logs; 3 conifer and 3 hardwood, 24 inches in diameter (large end) by 20 feet long. Pulled materials must comply with clause 9-23 FORESTED WETLAND ABANDONMENT. Purchaser shall minimize disturbance to Wetland Management Area crossing.

<u>Road</u>	<u>Stations</u>
B-1045A	4+80 to 5+40

TYPICAL SECTION SHEET



Road Number	From Station	To Station	Tolerance Class	Subgrade Width (feet)	Road Width (feet)	Ditch		Crown in. @ CL	Grubbing Limits (feet)		Clearing Limits (feet)		Cut Slope Ratio	Fill Slope Ratio
						Width (feet)	Depth (feet)		G1	G2	C1	C2		
				S	R	W	D		G1	G2	C1	C2	Clause	Clause
B-1000	0+00	323+85	A	-	14	3	1	4	-	-	-	-	4-5	4-6
B-1045A	0+00	4+80	C	16	12	3	1	4	2	2	tags		4-5	4-6
B-1045A	4+80	5+40	C	16	12	-	-	4	0	0	tags		4-5	4-6
B-1045A	5+40	8+30	C	16	12	3	1	4	2	2	tags		4-5	4-6
B-1045A	8+30	8+80	C	16	12	3	1	4	2	2	5	5	4-5	4-6
B-1300	0+00	75+45	B	16	12	3	1	4	2	2	5	5	4-5	4-6
B-1300 Reroute	75+45	78+03	B	16	12	3	1	4	2	2	5	5	4-5	4-6
B-1310	0+00	28+13	C	16	12	3	1	4	2	2	5	5	4-5	4-6
B-1400	0+00	147+36	A	-	14	3	1	4	-	-	-	-	4-5	4-6
B-1410	0+00	24+09	C	-	14	3	1	4	-	-	-	-	4-5	4-6
B-1430	0+00	12+71	A	16	12	3	1	4	2	2	5	5	4-5	4-6
B-1430	12+71	21+75	A	16	12	3	1	4	2	2	tags		4-5	4-6
B-1430A	0+00	6+36	C	16	12	3	1	4	2	2	5	5	4-5	4-6
B-1470	0+00	3+51	C	16	12	3	1	4	2	2	5	5	4-5	4-6
B-1490	0+00	17+32	B	16	12	3	1	4	-	-	-	-	4-5	4-5

Road Number	From Station	To Station	Tolerance Class	Subgrade Width (feet)	Road Width (feet)	Ditch		Crown in. @ CL	Grubbing Limits (feet)		Clearing Limits (feet)		Cut Slope Ratio	Fill Slope Ratio
						Width (feet)	Depth (feet)							
B-1492	0+00	13+73	C	16	12	3	1	4	2	2	5	5	4-5	4-6

ROCK LIST Ballast

Road Number	From Station	To Station	Rock Slope	Compacted Rock Depth	C.Y./ Station	# of Stations	C.Y. Subtotal	Rock Source	Turnout		
									Length	Width	Taper
			K2	B2	4 Inch Jaw Run				L	H	T
B-1045A	0+00	8+80	1½ : 1	12"	52	8.80	453	Larch Pillar Quarry			
B-1300	66+45	75+45	1½ : 1	6"	26	9.00	234	Larch Pillar Quarry			
B-1300 Reroute	75+45	78+03	1½ : 1	6"	26	2.58	67	Larch Pillar Quarry			
B-1310*	0+00	28+13	1½ : 1	12"	52	28.13	1463	Larch Pillar Quarry	50	12	25
B-1430	0+00	21+15	1½ : 1	12"	52	21.15	1100	Larch Pillar Quarry	50	12	25
B-1430A*	0+00	6+36	1½ : 1	12"	52	6.36	331	Larch Pillar Quarry			
B-1470*	0+00	3+51	1½ : 1	12"	52	3.51	183	Larch Pillar Quarry			
B-1492*	0+00	13+73	1½ : 1	12"	52	13.73	714	Larch Pillar Quarry	50	12	25
Live Stream Replacements					10 Per Culvert	2 Culverts	20	Larch Pillar Quarry			
Turnouts and Turnarounds					36 Per Culvert	3	108	Larch Pillar Quarry			
					Light loose Riprap			Larch Pillar Quarry			
B-1300 Live Stream Culverts (see detail)						2 CMP Pipe Arch	80	Larch Pillar Quarry			
					Quarry Spalls			Larch Pillar Quarry			
All Culverts Except Live Stream					2.5 per culvert	58 culverts	150	Larch Pillar Quarry			
Live Stream Culverts					10 per culvert	2 culverts	20	Larch Pillar Quarry			

4 Inch Jaw Total 4,673 Cubic Yards
 Light Loose Riprap Total 80 Cubic Yards
 Quarry Spalls Total 170 Cubic Yards
 Ballast Total 4,923 Cubic Yards

*Optional Rock: If Purchaser elects to haul on optional rock roads in wet weather, the depth listed above is recommended but not required.

ROCK LIST

Surfacing

Road Number	From Station	To Station	Rock Slope	Compacted Rock Depth	C.Y./ Station	# of Stations	C.Y. Subtotal	Rock Source	Turnout		
									Length	Width	Taper
			K2	B2	2½ inch minus				L	H	T
B-1000	193+48	261+21	1½ : 1	6"	26	67.73	1761	Larch Pillar Quarry			
B-1300	0+00	75+45	1½ : 1	6"	26	75.45	1962	Larch Pillar Quarry			
B-1300 Reroute	75+45	78+03	1½ : 1	6"	26	2.58	67	Larch Pillar Quarry			
B-1300 Live Stream Culverts Widening	72+50	74+00	1½ : 1	6"	26	1.50	39	Larch Pillar Quarry			
B-1400	0+00	122+28	1½ : 1	6"	26	122.28	3179	Larch Pillar Quarry			
B-1490	0+00	8+96	1½ : 1	6"	26	8.96	233	Larch Pillar Quarry			
Existing Road Culvert Installation					10 Per Culvert	35 Culverts	350	Larch Pillar Quarry			
Live Stream Replacements					10 Per Culvert	2 Culverts	20	Larch Pillar Quarry			
B-1300 Live Stream Culverts Bedding							50	Larch Pillar Quarry			

2½ Inch Minus Total 7,661 Cubic Yards
Surfacing Total 7,661 Cubic Yards

NOTE: Yardages are estimated on a compacted (In-Place) basis. Compliance of required rock will be based on compacted depth measurement. **Apply appropriate factors to determine loose amounts for estimating purposes.** Roads and rock quantities are designed for dry weather use. If Purchaser elects to haul in wet weather additional rock may be obtained from the rock pits listed in Section 6 at the Purchaser's expense and with prior written approval from the Contract Administrator.

*Optional Rock: If Purchaser elects to haul on optional rock roads in wet weather, the depth listed above is recommended but not required

TURNOUT LIST

Road Number	Begin L- Station	End L- Station	Turnout Width (H)	Full Width Length (L)	Taper Length (T)	Comments
B-1310	10+55	11+35	12'	30'	25'	Turnout Left
	21+56	22+36	12'	30'	25'	Turnout Left
B-1492	9+20	10+00	12'	30'	25'	Turnout Left

CULVERT AND DRAINAGE LIST, pg 1 of 2

Road Number	Location	Culvert		Length (ft)			Riprap (C.Y.)			Backfill Material*	Placement Method*	Const. Staked*	Remarks
		Dia. (in)	Type	Culvert	Downspt	Flume	Inlet	Outlet	Type				
B-1000	30+72	18	PD	30			1	1.5	QS	NT			Install
	41+98	18	PD	30			1	1.5	QS	NT			Install
	52+19	18	PD	30			1	1.5	QS	NT			Install
	59+74	18	PD	30			1	1.5	QS	NT			Replace
	65+68	18	PD	30			1	1.5	QS	NT			Install
	73+65	18	PD	30			1	1.5	QS	NT			Replace
	98+25	18	PD	36			1	1.5	QS	NT			Replace
	103+40	18	PD	30			1	1.5	QS	NT			Install
	108+00	18	PD	40			1	1.5	QS	NT			Install
	114+55	18	PD	30			1	1.5	QS	NT			Install
	151+95	18	PD	30			1	1.5	QS	NT			Replace
	164+36	18	PD	30			1	1.5	QS	NT			Replace
	197+28	18	PD	30			1	1.5	QS	NT			Replace
	214+58	18	PD	36			1	1.5	QS	NT			Replace
	225+10	18	PD	30			1	1.5	QS	NT			Install
	240+50	18	PD	40			1	1.5	QS	NT			Install, seep
	268+35	18	PD	30			1	1.5	QS	NT			Replace
	315+65	18	PD	30			1	1.5	QS	NT			Install
	319+65	18	PD	40			1	1.5	QS	NT			Install
	324+85	18	PD	40			1	1.5	QS	NT			Install
B-1045A	2+85	18	Temp	30						NT			Install temp
	8+08	18	Temp	30						NT			Install temp
B-1300	20+00	18	PD	30			1	2.5	QS	NT			Replace, add dissapator
	31+32	18	PD	30			1	4.5	QS	NT			Replace, add dissapator
	40+60	18	PD	40			1	1.5	QS	NT			Install
	50+15	18	PD	40			1	1.5	QS	NT			Replace
	66+36	24	PD	30			5	5	QS	NT			Install, live water
	71+76	66x 51	APA	42									See Detail
	73+23	73x 55	APA	68									See Detail
B-1310	0+07	18	PD	50			1	1.5	QS	NT			Install
	2+49	18	PD	30			1	1.5	QS	NT			Install
	5+16	18	PD	30			1	1.5	QS	NT			Install
	7+71	18	PD	40		5	1	1.5	QS	NT			Install with downspout
	8+51												Ditchout W
	13+26												Ditchout N
	16+13	18	PD	30			1	1.5	QS	NT			Install
	18+10	18	PD	30			1	1.5	QS	NT			Install
	19+65	18	PD	30			1	1.5	QS	NT			Install
	21+81												Ditchout W
	23+06	18	PD	30			1	1.5	QS	NT			Install

Road Number	Location	Culvert		Length (ft)			Riprap (C.Y.)			Backfill Material*	Placement Method*	Const. Staked*	Remarks
		Dia. (in)	Type	Culvert	Downspt	Flume	Inlet	Outlet	Type				
B-1400	25+97	18	PD	30			1	1.5	QS	NT		Install	
	0+20	18	PD	40			1	1.5	QS	NT		Install	
	9+30	18	PD	30			1	1.5	QS	NT		Install	
	18+70	18	PD	40			1	1.5	QS	NT		Install	
	23+10	18	PD	40			1	1.5	QS	NT		Replace	
	34+30	18	PD	24			1	1.5	QS	NT		Install	
	42+40	18	PD	40			1	3.5	QS	NT		Install, add dissapator	
	58+90												Cut outlet flush
	70+65	24	PD	30			1	1.5	QS	NT			Install
	93+75	24	PD	46			5	5	QS	NT			Replace, live water
B-1410	94+45	18	PD	36			1	1.5	QS	NT		Install	
	98+75	18	PD	40			1	1.5	QS	NT		Install	
	111+60											Cut pipe end	
	0+00											Reset driveway pipe to drain North	
	B-1430	3+15	18	PD	30			1	1.5	QS	NT		Install
		5+32	18	PD	30			1	1.5	QS	NT		Install
		8+45	18	PD	30			1	1.5	QS	NT		Install
		10+70											Ditchout SW
		12+15	18	PD	40			1	1.5	QS	NT		Install
		17+15	18	Temp	40			1	1.5	QS	NT		Install
B-1430A	19+42	18	Temp	30			1	1.5	QS	NT		Install	
	2+72	18	PD	36			1	1.5	QS	NT		Install	
	5+27	18	PD	30			1	1.5	QS	NT		Install	
B-1470	1+20	18	Temp	30			1	1.5	QS	NT		Install	
B-1490	6+30	18	PD	40			1	1.5	QS	NT		Replace	
B-1492	1+48	18	PD	30			1	1.5	QS	NT		Install	
	4+12	18	PD	30			1	1.5	QS	NT		Install	
	6+17	18	PD	30			1	1.5	QS	NT		Install	
	6+78											Ditchout N and S	
	10+24											Ditchout N and S	
	As Directed By C.A.		18	PD	30			1	1.5	QS	NT		Contingency
		18	PD	30			1	1.5	QS	NT		Contingency	
		18	PD	30			1	1.5	QS	NT		Contingency	
		18	PD	30			1	1.5	QS	NT		Contingency	
		18	PD	30			1	1.5	QS	NT		Contingency	
		18	Poly	Band								Contingency	
		18	Poly	Band								Contingency	

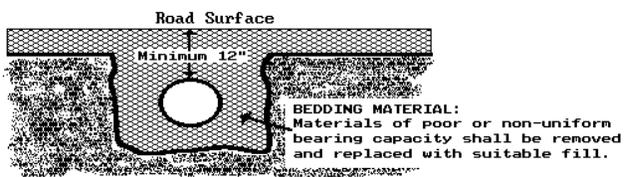
* SEE CULVERT AND DRAINAGE SPECIFICATION DETAIL

- PD = Polyethylene Pipe Dual Wall AASHTO No. M294 Type S or ASTM F2648
- TEMP = Temporary Culvert
- APA = Aluminized Steel Pipe Arch

Key:

- QS - Quarry Spalls
- LL - Light Loose Riprap
- SR - Shot Rock
- NT - Native (bank run)
- SL - Select Fill
- Flume - Half round pipe
- Downspout - Full round pipe

CULVERT BACKFILL AND BASE PREPARATION
 (For culverts less than 36")

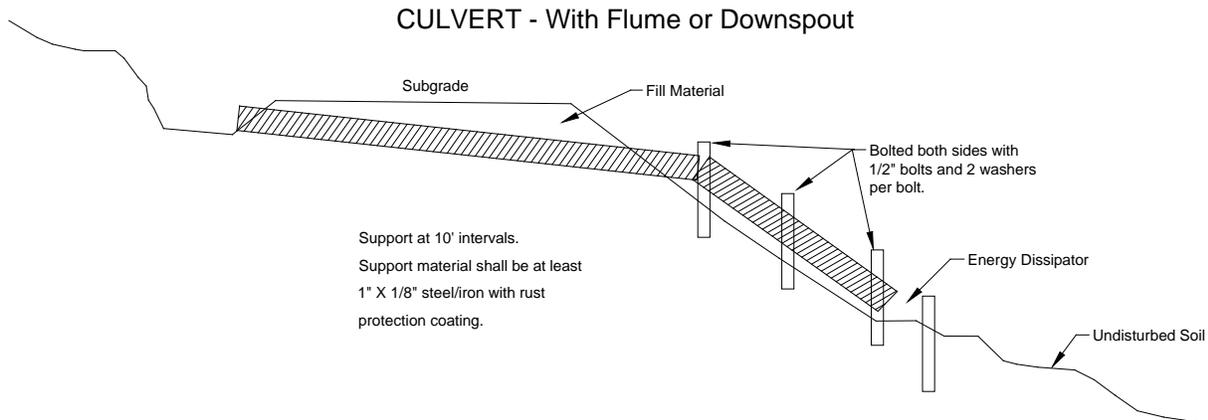
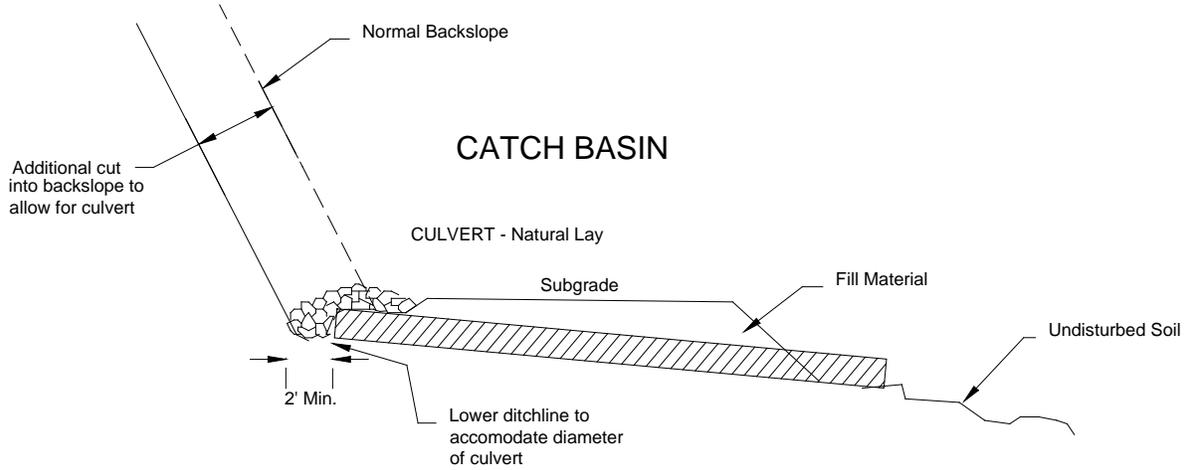


COMPACTION LIST

Road	From Station	To Station	Type	Max Depth Per Lift (inches)	Equipment Type	Equipment Weight (lbs)	Minimum Number of Passes	Maximum Operating Speed (mph)
B-1000	0+00	323+85	Culvert Install, Prehaul Maintenance, Surfacing	8"	Smooth Drum Vibratory Roller	14,000	2 low freq. vibrate on	3.5
B-1045A	0+00	4+80	New Construction, Culvert Install, Geotextile Install	8"	Smooth Drum Vibratory Roller	14,000	2 low freq. vibrate on	3.5
	4+80	5+40	Geotextile Install	12"	Truck		2	5
	5+40	8+80	New Construction, Culvert Install	8"	Smooth Drum Vibratory Roller	14,000	2 low freq. vibrate on	3.5
B-1300	0+00	66+45	Culvert Install, Prehaul Maintenance, Surfacing	8"	Smooth Drum Vibratory Roller	14,000	2 low freq. vibrate on	3.5
	66+45	75+45	Live Stream Pipe Arch Installs	12"	Jumping Jack Compactor	170	2 low freq. vibrate on	3.5
			Reconstruction	8"	Smooth Drum Vibratory Roller	14,000	2 low freq. vibrate on	3.5
B-1300 Reroute	75+45	78+03	New Construction	8"	Smooth Drum Vibratory Roller	14,000	2 low freq. vibrate on	3.5
B-1310	0+00	28+23	New Construction, Culvert Install	8"	Smooth Drum Vibratory Roller	14,000	2 low freq. vibrate on	3.5
B-1400	0+00	147+36	Prehaul Maintenance, Culvert Install	8"	Smooth Drum Vibratory Roller	14,000	2 low freq. vibrate on	3.5
B-1410	0+00	24+09	New Construction, Culvert Install	8"	Smooth Drum Vibratory Roller	14,000	2 low freq. vibrate on	3.5
B-1430	0+00	21+15	New Construction, Culvert Install	8"	Smooth Drum Vibratory Roller	14,000	2 low freq. vibrate on	3.5
B-1430A	0+00	6+36	New Construction, Culvert Install	8"	Smooth Drum Vibratory Roller	14,000	2 low freq. vibrate on	3.5
B-1470	0+00	3+51	New Construction, Culvert Install	8"	Smooth Drum Vibratory Roller	14,000	2 low freq. vibrate on	3.5
B-1490	0+00	8+96	Prehaul Maintenance, Culvert Install	8"	Smooth Drum Vibratory Roller	14,000	2 low freq. vibrate on	3.5
B-1492	0+00	13+73	New Construction. Culvert Install	8"	Smooth Drum Vibratory Roller	14,000	2 low freq. vibrate on	3.5

CULVERT AND DRAINAGE SPECIFICATION DETAIL

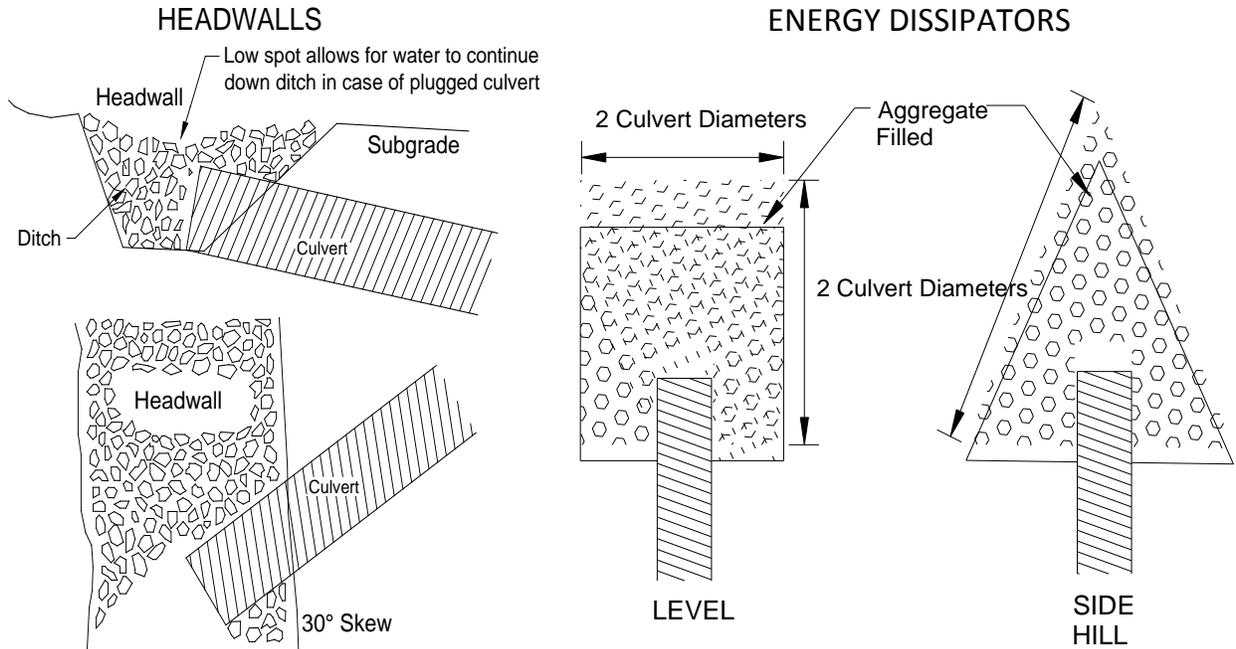
(Page 1 of 3)



CULVERT AND DRAINAGE SPECIFICATION DETAIL

(Page 2 of 3)

Proper preparation of foundation and placement of bedding material shall precede the installation of all culvert pipe. This includes necessary leveling of the native trench bottom and compaction of required bedding material to form a uniform dense unyielding base. The backfill material shall be placed so that the pipe is uniformly supported along the barrel.



Headwalls to be constructed of material that will resist erosion.

Dissipator Specifications:
Depth: 1 culvert diameter
Aggregate: as specified in the CULVERT LIST.

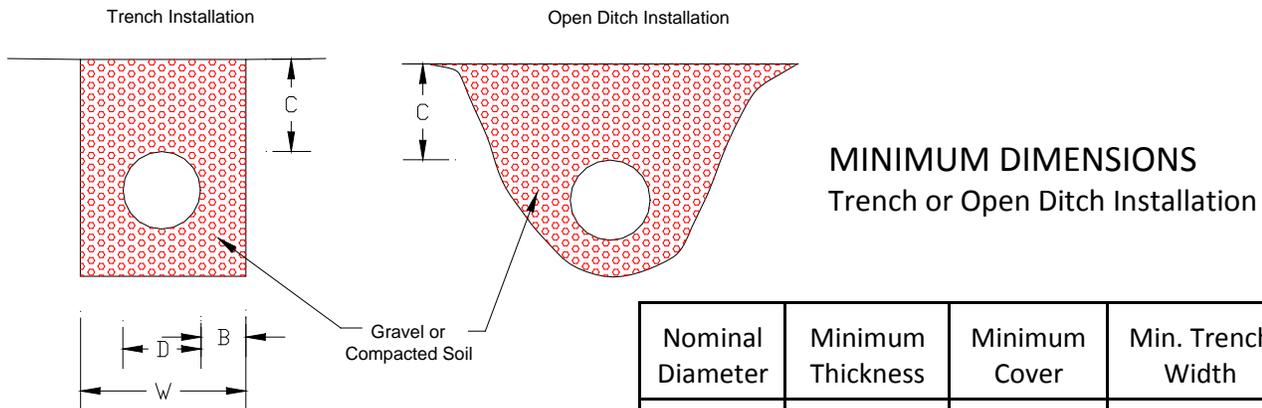
CULVERT AND DRAINAGE SPECIFICATION DETAIL

(Page 3 of 3)

POLYETHYLENE PIPE INSTALLATION

INSTALLATION REQUIREMENTS:

1. Crushed stone, gravel, or compacted soil backfill material shall be used as the bedding and envelope material around the culvert. The aggregate size shall not exceed 1/6 pipe diameter or 4" diameter, whichever is smaller.
2. The corrugated pipe shall be laid on grade, on a layer of bedding material as shown for the two types of installations. If native soil is used as the bedding and backfill material, it shall be well compacted in six inch layers under the haunches, around the sides and above the pipe to the recommended minimum height of cover.
3. Either crushed aggregate or flexible (asphalt) pavement may be laid as part of the minimum cover requirements.
4. Site conditions and availability of bedding materials often dictate the type of installation method used.
5. The load bearing capability of flexible conduits is dependent on the type of backfill material used and the degree of compaction achieved. Crushed stone and gravel backfill materials typically reach a compaction level of 90-95% AASHTO standard density without compaction. When native soils are used as backfill material, a compaction level of 85% is required. This minimum compaction can be achieved by either hand or mechanical tamping.



FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS

Page 1 of 2

Cuts and Fills

- Maintain slope lines to a stable gradient compatible with the construction materials. Remove slides up to 100 cubic yards in volume from ditches and the roadway. Repair fill-failures with selected material or material approved by the Contract Administrator. Remove overhanging material from the top of cut slopes.
- Waste material from slides or other sources shall be placed and compacted in stable locations identified in the road plan or approved by the Contract Administrator, so that sediment will not deliver to any streams or wetlands.
- Slide material and debris shall not be mixed into the road surface materials, unless approved by the Contract Administrator.

Surface

- Grade and shape the road surface, turnouts, and shoulders to the original shape on the TYPICAL SECTION SHEET to provide a smooth, rut-free traveled surface and maintain surface water runoff in an even, unconcentrated manner.
- Blading shall not undercut the backslope or cut into geotextile fabric on the road.
- If required by the Contract Administrator, water shall be applied as necessary to control dust and retain fine surface rock.
- Surface material shall not be bladed off the roadway. Replace surface material when lost or worn away, or as directed by the Contract Administrator.
- Remove shoulder berms, created by grading, to facilitate drainage, except as marked or directed by the Contract Administrator.
- For roads with geotextile fabric: spread surface aggregate to fill in soft spots and wheel ruts (barrel spread) to prevent damage to the geotextile fabric.

Drainage

- Prevent silt bearing road surface and ditch runoff from delivering sediment to any streams or wetlands.
- Maintain rolling dips and drivable waterbars as needed to keep them functioning as intended.
- Maintain headwalls to the road shoulder level with material that will resist erosion.
- Maintain energy dissipaters at culvert outlets with non-erodible material or rock.
- Keep ditches, culverts, and other drainage structures clear of obstructions and functioning as intended.
- Inspect and clean culverts at least monthly, with additional inspections during storms and periods of high runoff. This shall be done even during periods of inactivity.

FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS

Page 2 of 2

Preventative Maintenance

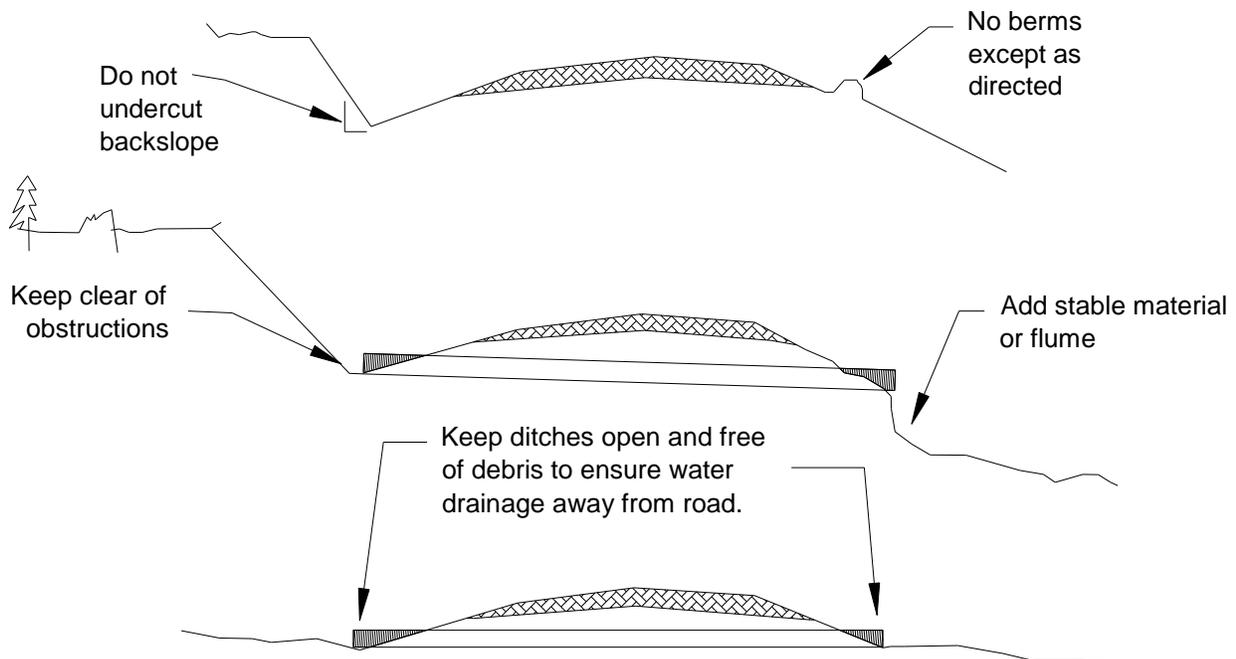
- Perform preventative maintenance work to safeguard against storm damage, such as blading to ensure correct runoff, ditch and culvert cleaning, and waterbar maintenance.

Termination of Use or End of Season

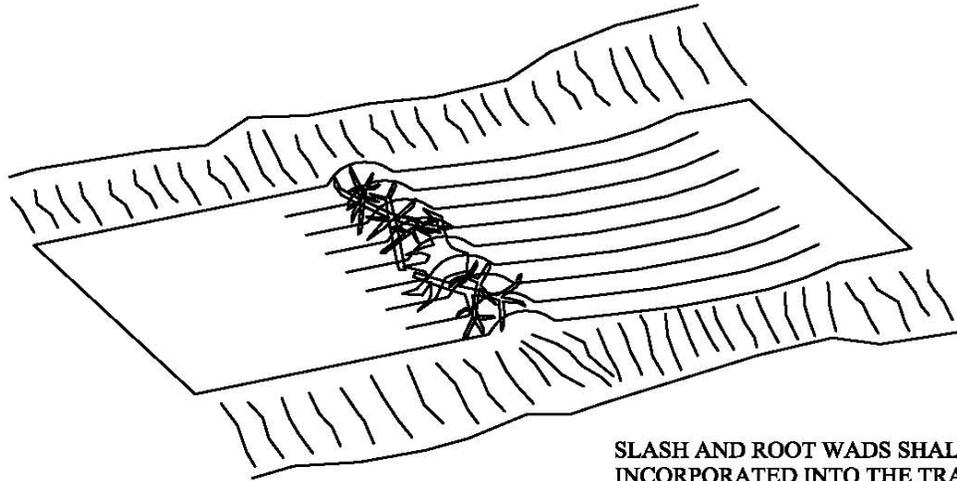
- At the conclusion of logging operations, ensure all conditions of these specifications have been met.

Debris

- Remove fallen timber, limbs, and stumps from the slopes, roadway, ditchlines, and culvert inlets.



BARRICADE DETAIL

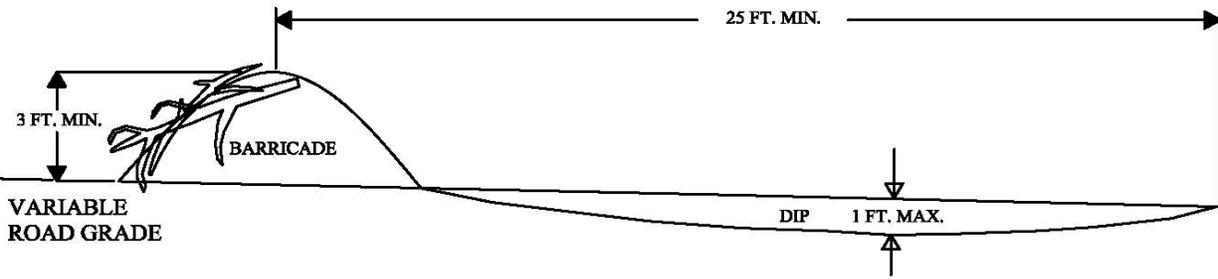


SLASH AND ROOT WADS SHALL BE INCORPORATED INTO THE TRAFFIC SIDE OF THE BARRICADE.

PLAN VIEW

TRAFFIC SIDE OF BARRICADE

CLOSED SIDE OF BARRICADE

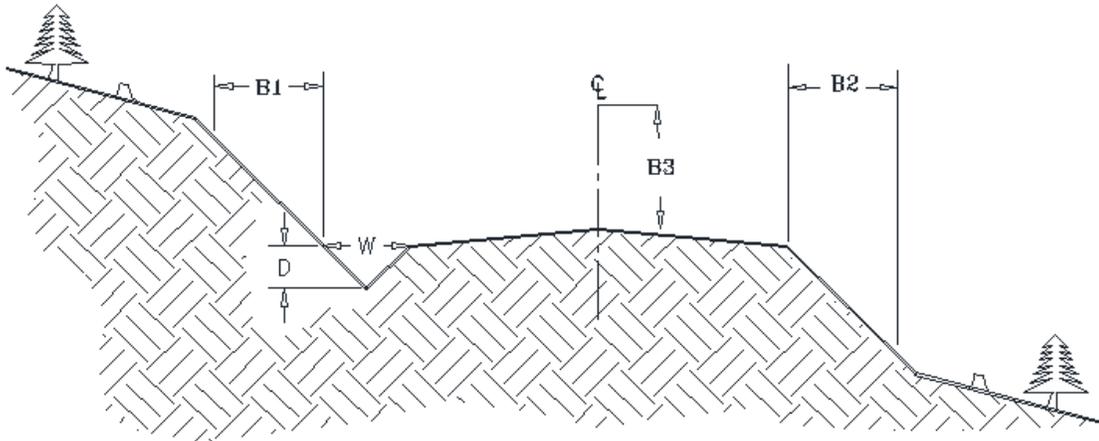


BOTTOM OF DIP SHALL BE OUTSLOPED SO AS TO DRAIN FREELY

PROFILE VIEW

BRUSHING DETAIL

(not to scale)

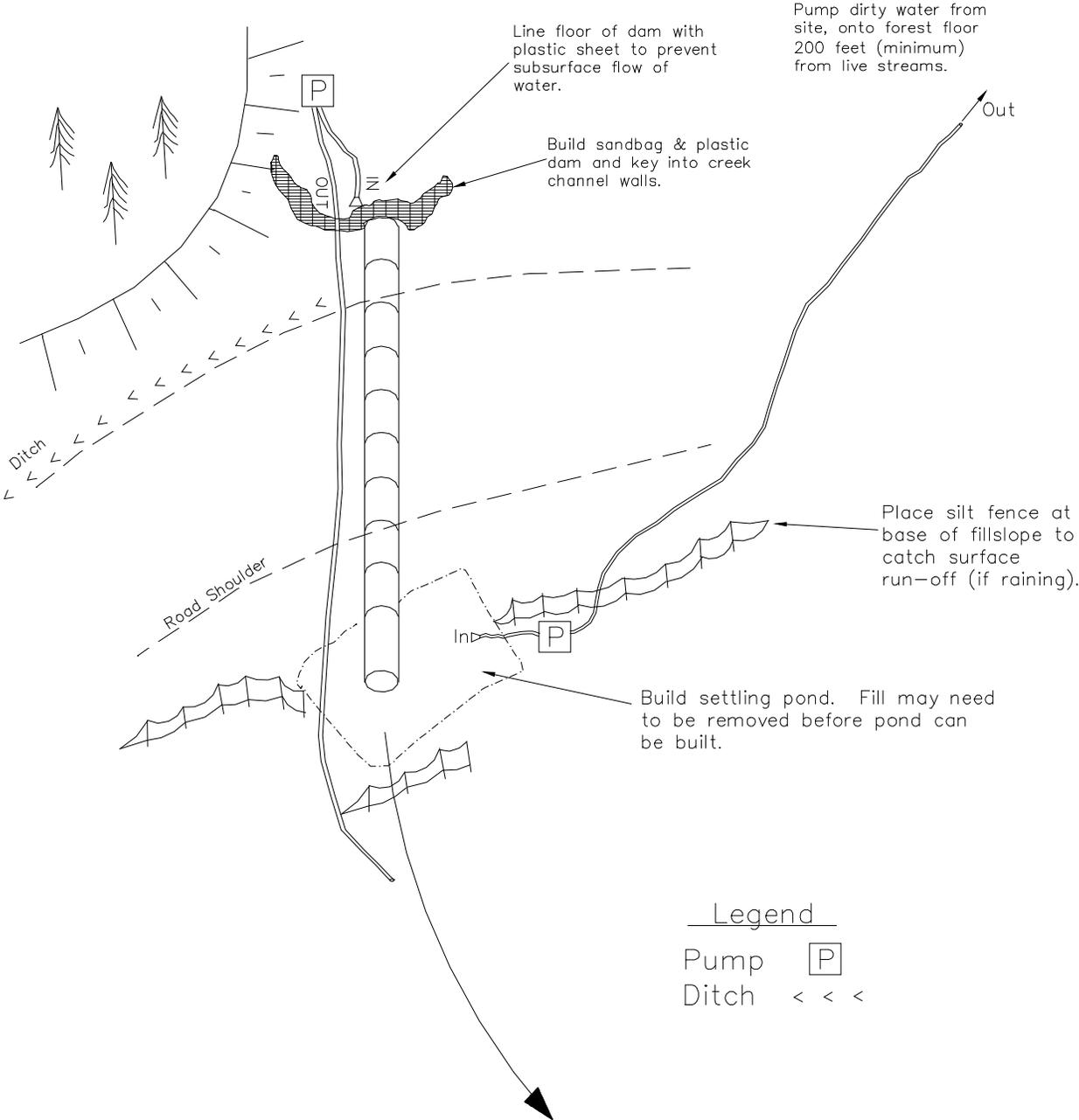


BRUSHING LIST

Road Number	From station	To station	Road Width (feet)	Ditch		Brushing Limits (feet)			Remarks <u>In addition to brushing...</u>
				Width (feet)	Depth (feet)	B1	B2	B3	
				W	D				
B-1000	233+40	235+15	-	3	1	10	10	14	
B-1000	241+10	248+60	-	3	1	10	10	14	
B-1045	0+00	18+60	-	3	1	10	10	14	
B-1300	0+00	66+75	-	3	1	10	10	14	
B-1400	0+00	147+36	-	3	1	10	10	14	
B-1490	0+00	8+96	-	3	1	10	10	14	

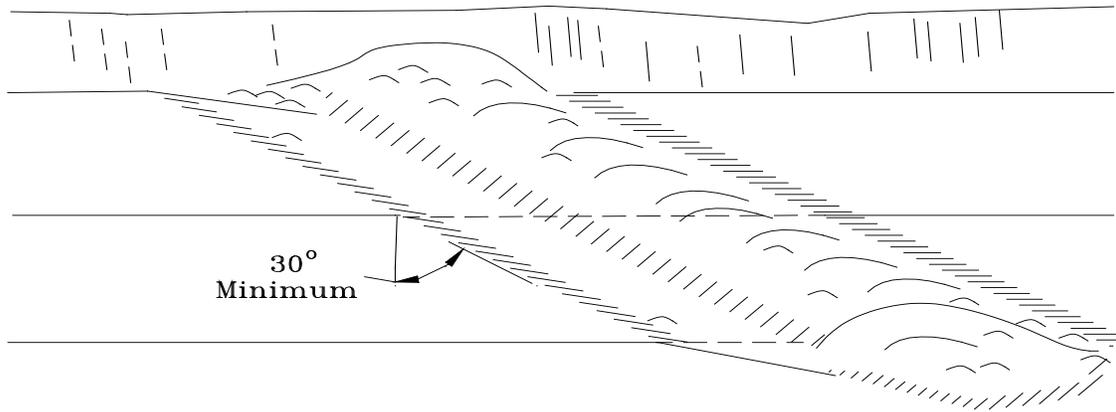
B1 extends horizontally the specified distance in feet from the back of the ditch. B2 extends horizontally the specified distance in feet from the outside edge of the running surface. B3 extends vertically the specified distance in feet above road centerline. Brush is defined as all non-merchantable vegetative material found within the specified limits. Brush that is cut shall be removed to the downhill side of the road and placed such that it will not block ditches, ditch-outs, or drainage structures. Signs, culvert location markers, or any other identification features damaged by brushing shall be replaced at the Purchasers expense.

SETTLING POND AND PUMP DETAIL

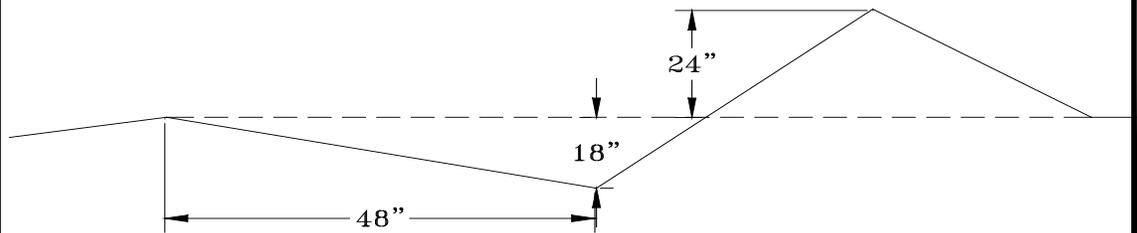


Non-Drivable Water Bar Detail

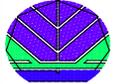
Cross Ditch



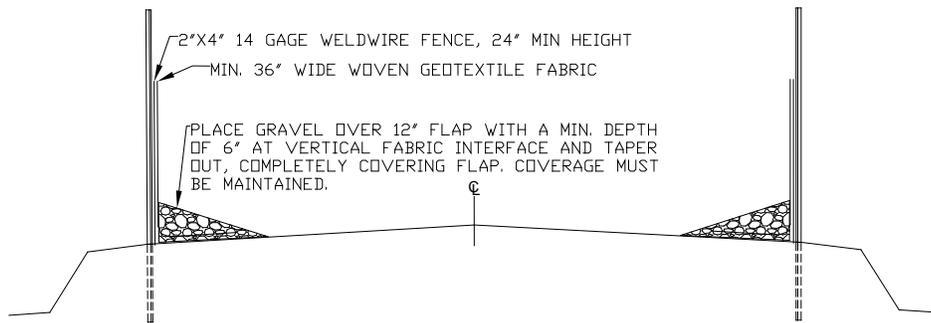
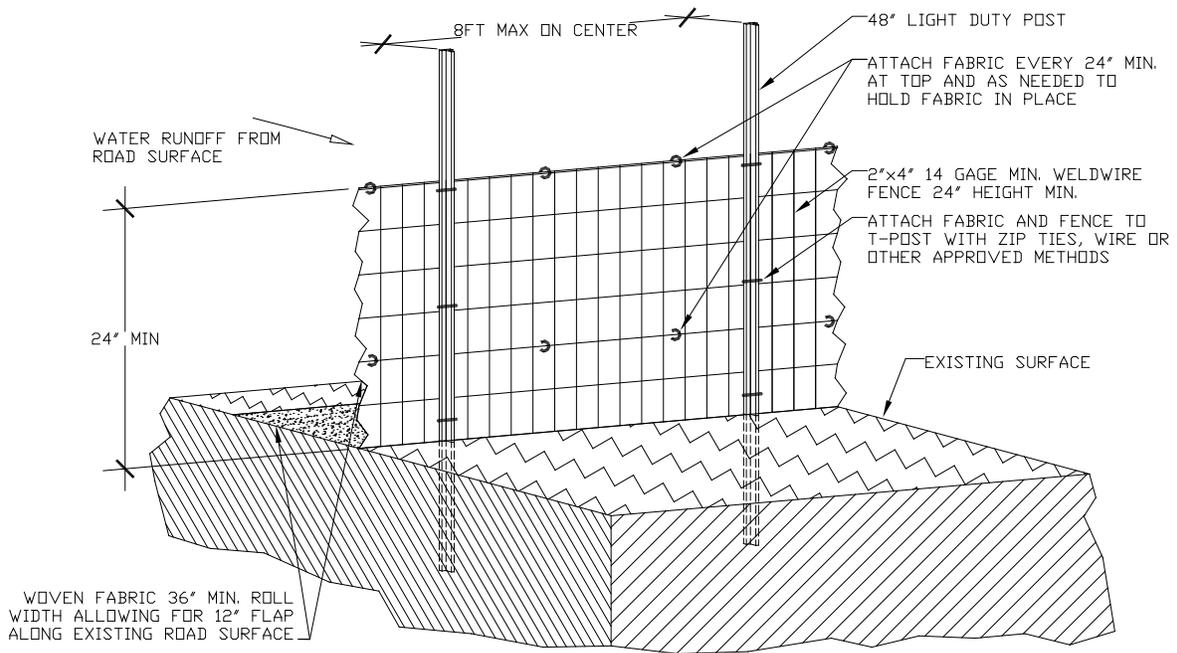
Cross Section at Centerline



Date:
Scale : None
App#
Drawn by: M.A.D.

Water Bar Detail	
	WASHINGTON STATE DEPARTMENT OF Natural Resources
<small>SPS Region</small>	

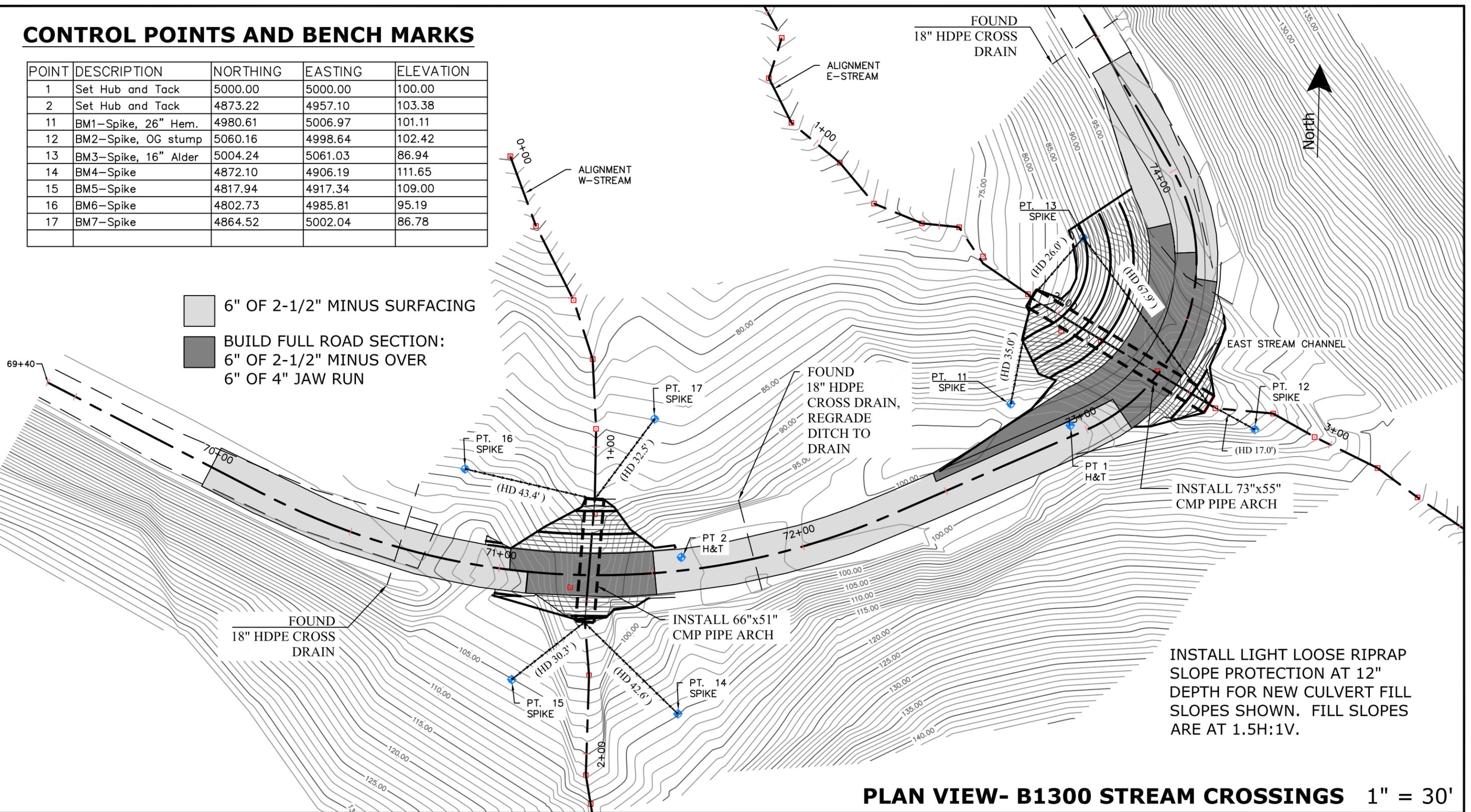
SILT FENCE DETAIL



1. Silt fence shall be installed with Contract Administrator approval prior to haul.
2. Silt fence shall be installed with a minimum of 6" of cover starting at fabric/weldwire and tapering toward road centerline. Coverage of fabric shall be maintained.
3. Light Duty T-Posts shall be placed on the down slope side of the fabric/weldwire. If conditions exist that a taller silt fence is required, such as splash, longer T-Posts, wider fabric rolls and taller fence maybe necessary or other methods as approved by the Contract Administrator.
4. When a silt fence is continued from another run, the end T-Posts shall be connected together and not overlapped.
5. If runoff of silt laden water flows around the sides and additional fence may be used, realignment of the fence, removal of built up sediment and/or other BMP's such as ditch filters shall be used until controlled. Until under control haul shall be suspended.
6. FABRIC SPECS - min tensile strength: 120lbs, min puncture strength: 50lbs, min tear strength: 40lbs, min burst strength: 200lbs, min permittivity: 0.1 sec-1, UV resistance: 70%.

CONTROL POINTS AND BENCH MARKS

POINT	DESCRIPTION	NORTHING	EASTING	ELEVATION
1	Set Hub and Tack	5000.00	5000.00	100.00
2	Set Hub and Tack	4873.22	4957.10	103.38
11	BM1-Spike, 26" Hem.	4980.61	5006.97	101.11
12	BM2-Spike, OG stump	5060.16	4998.64	102.42
13	BM3-Spike, 16" Alder	5004.24	5061.03	86.94
14	BM4-Spike	4872.10	4906.19	111.65
15	BM5-Spike	4817.94	4917.34	109.00
16	BM6-Spike	4802.73	4985.81	95.19
17	BM7-Spike	4864.52	5002.04	86.78



INSTALL LIGHT LOOSE RIPRAP SLOPE PROTECTION AT 12" DEPTH FOR NEW CULVERT FILL SLOPES SHOWN. FILL SLOPES ARE AT 1.5H:1V.

PLAN VIEW- B1300 STREAM CROSSINGS 1" = 30'

Project Location:
 Capitol Forest
 B1300 Road

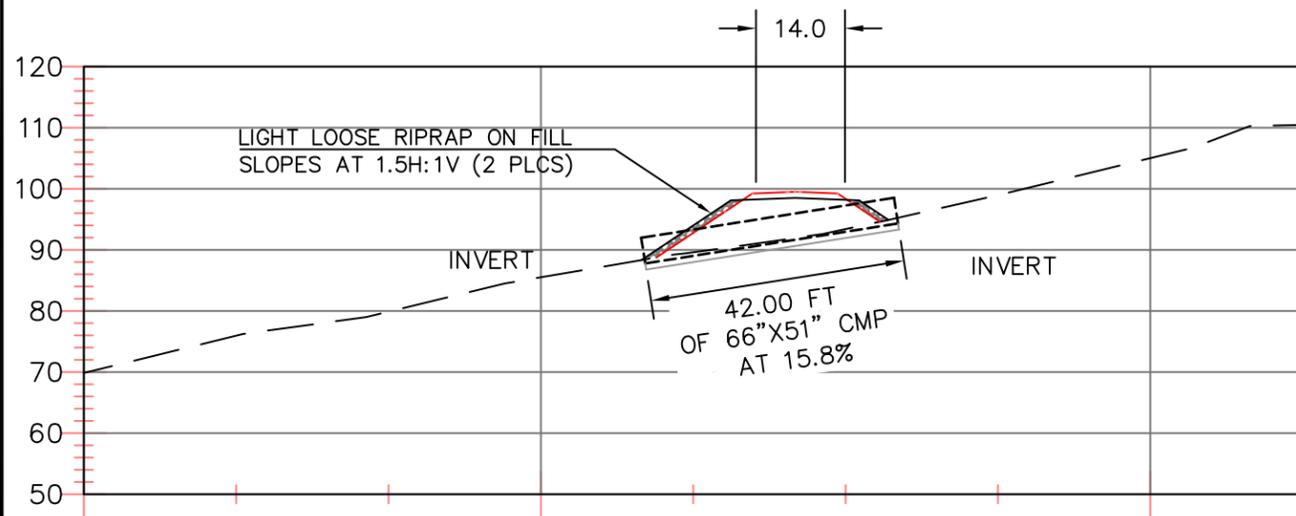


Sheet: Plan View
Sheet No.: 1 of 3
Date: 5/12/2016

Project: Rams Horn T.S.
Project No: Rams Horn T.S.
By: K.D.

W-Stream PROFILE

Station



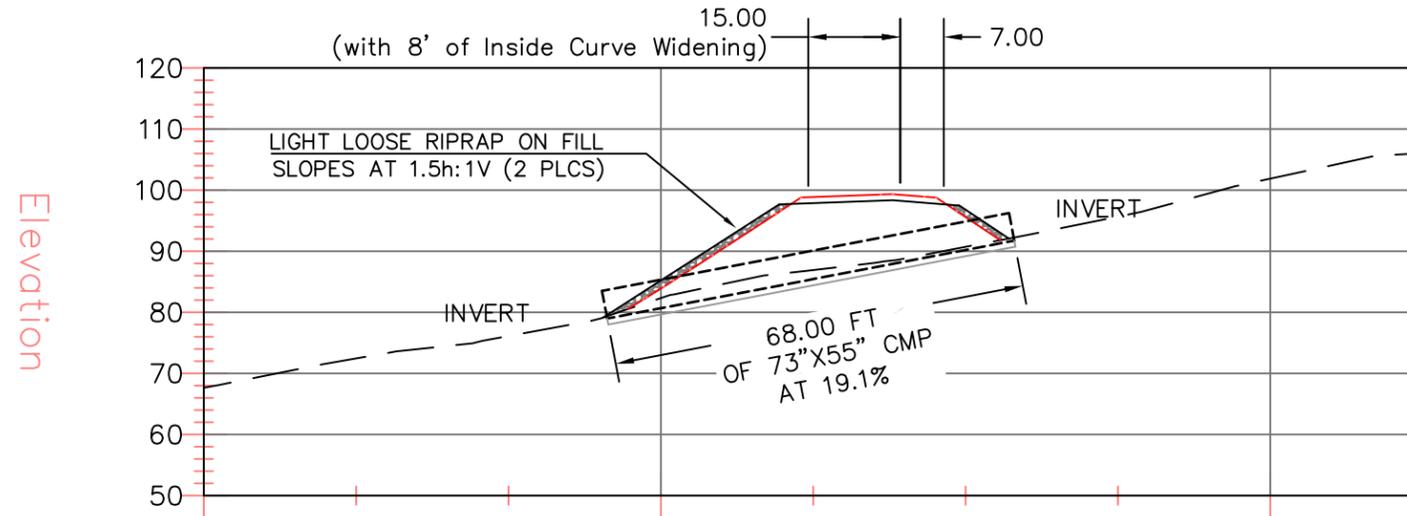
75.94	79.87	85.50	89.60	92.761	93.38	98.364	98.93	105.00
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1+00

2+00

E-Stream PROFILE

Station



72.46	76.13	82.34	83.914	86.93	98.889	90.73	95.593	95.68	101.90
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2+00

3+00

PROFILE VIEWS 1" = 30' Horizontally & Vertically

Project Location:

Capitol Forest
B1300 Road



Sheet: Culvert Profiles

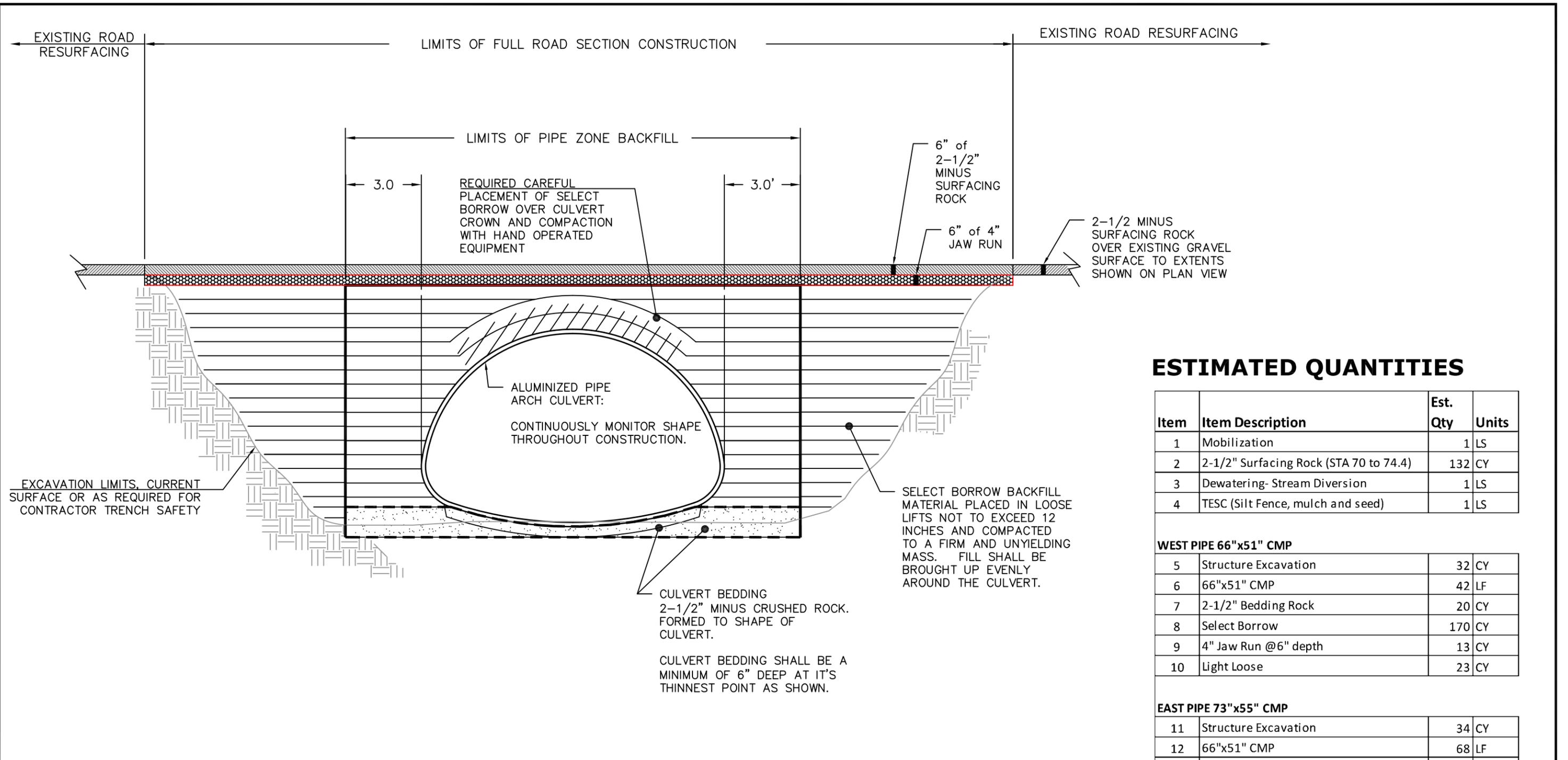
Sheet No.: 2 of 3

Date: 5/12/2016

Project: Rams Horn T.S.

Project No: Rams Horn T.S.

By: K.D.



PIPE ZONE BACKFILL AND ROAD SECTION DETAIL

ESTIMATED QUANTITIES

Item	Item Description	Est. Qty	Units
1	Mobilization	1	LS
2	2-1/2" Surfacing Rock (STA 70 to 74.4)	132	CY
3	Dewatering- Stream Diversion	1	LS
4	TESC (Silt Fence, mulch and seed)	1	LS

WEST PIPE 66"x51" CMP

5	Structure Excavation	32	CY
6	66"x51" CMP	42	LF
7	2-1/2" Bedding Rock	20	CY
8	Select Borrow	170	CY
9	4" Jaw Run @6" depth	13	CY
10	Light Loose	23	CY

EAST PIPE 73"x55" CMP

11	Structure Excavation	34	CY
12	66"x51" CMP	68	LF
13	2-1/2" Bedding Rock	30	CY
14	Select Borrow	539	CY
15	4" Jaw Run @6" depth	34	CY
16	Light Loose	56	CY

Project Location:
Capitol Forest
B1300 Road



Sheet: BACKFILL DETAIL.QTYS

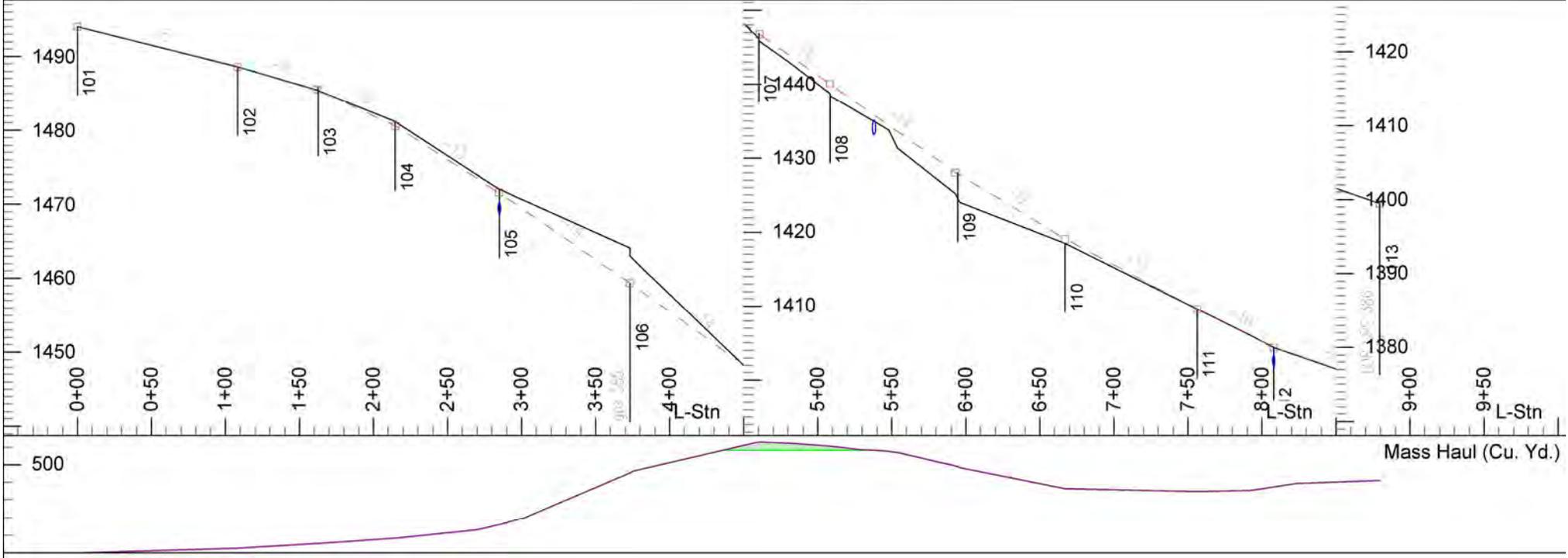
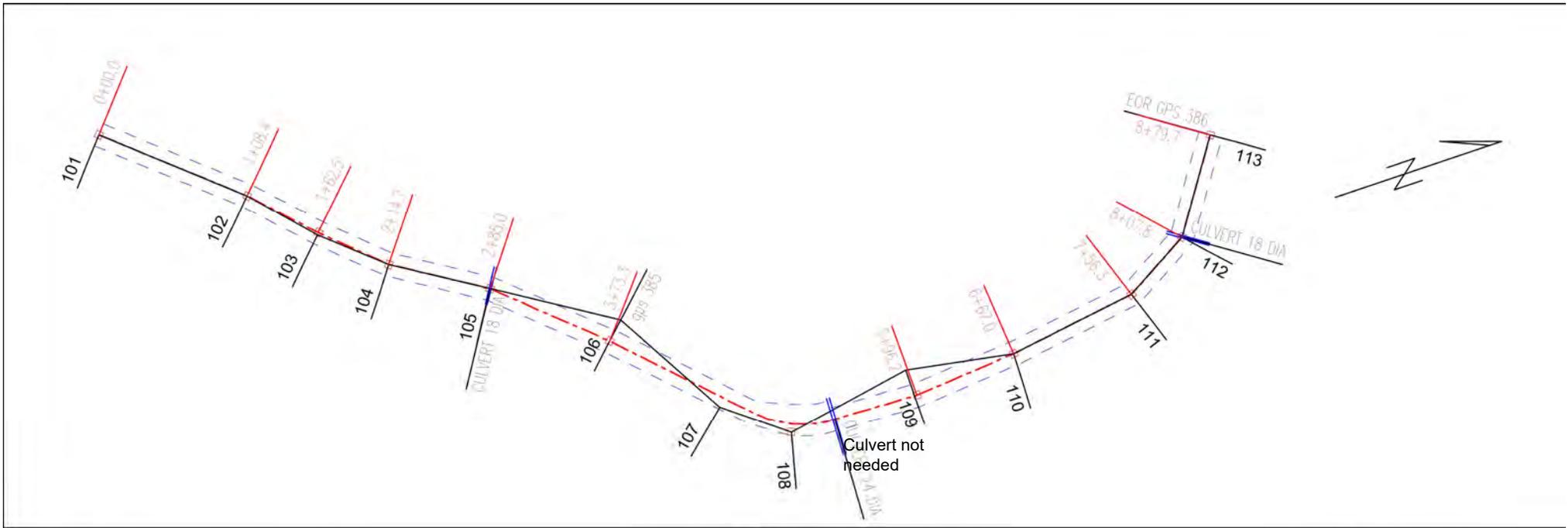
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Date: 5/12/2016

Project: Rams Horn T.S.

Project No: Rams Horn T.S.

By: K.D.



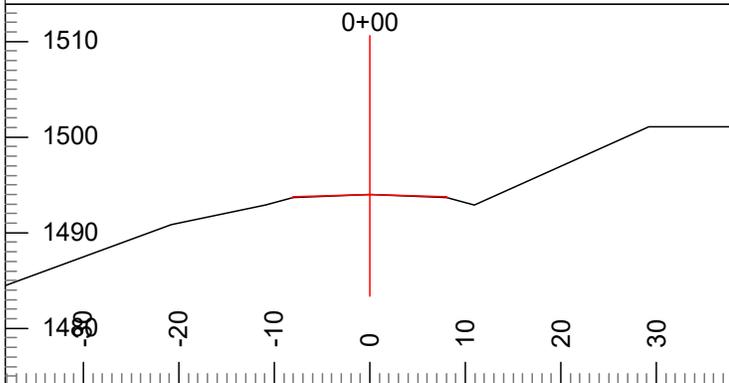
Ram's Horn Timber Sale
 B-1045A
 Contract #: 30-093253

Washington State Department of Natural Resources
 South Puget Sound Region

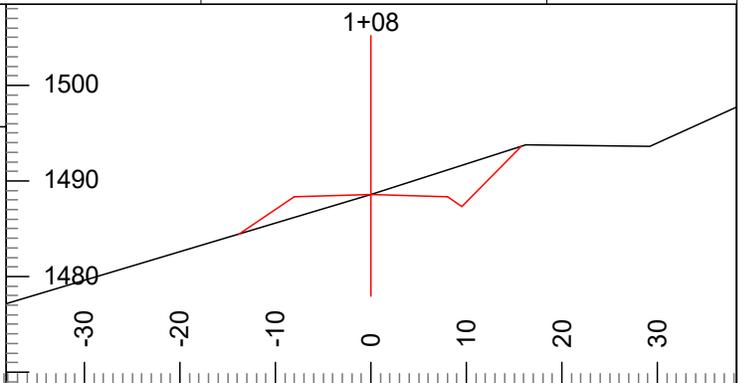
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 Profile Horz Scale 1:1200

Engineer: C. Vandehey
 16/05/11
 Page 1 of 1

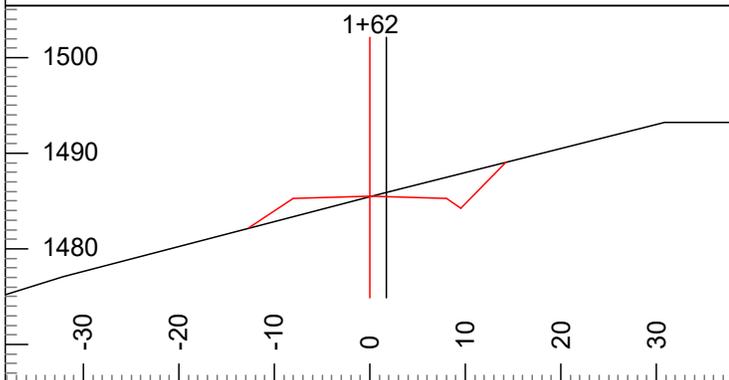
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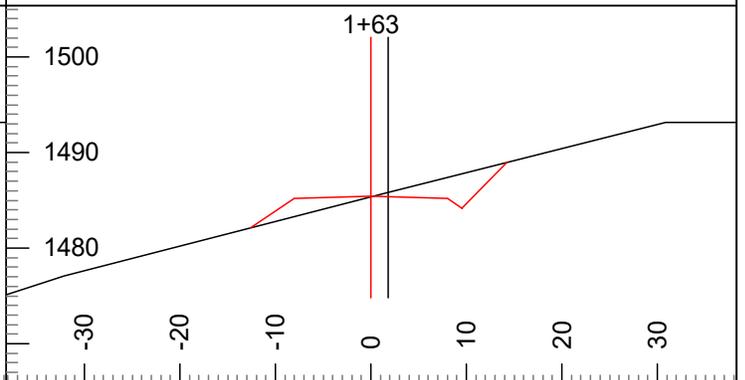
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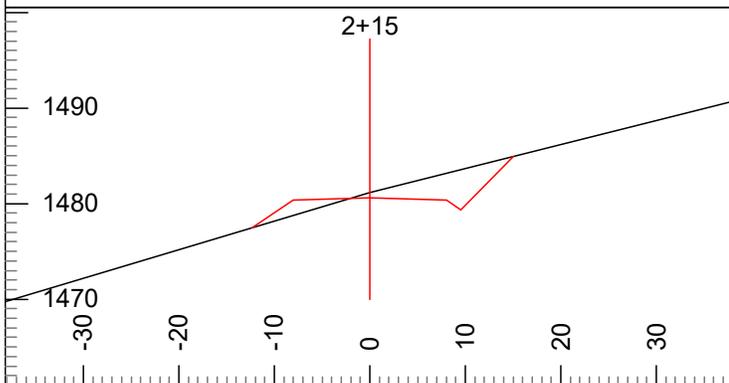
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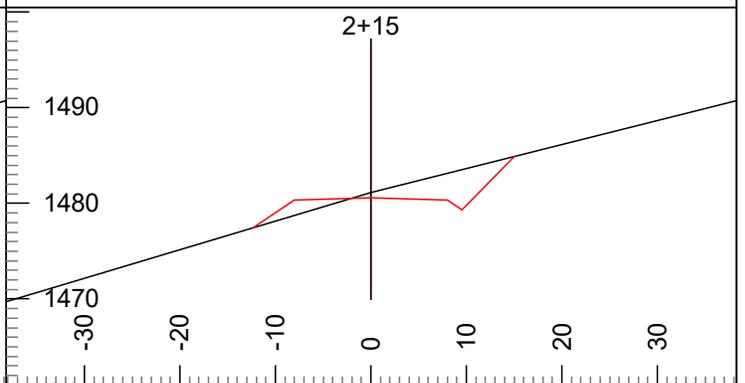
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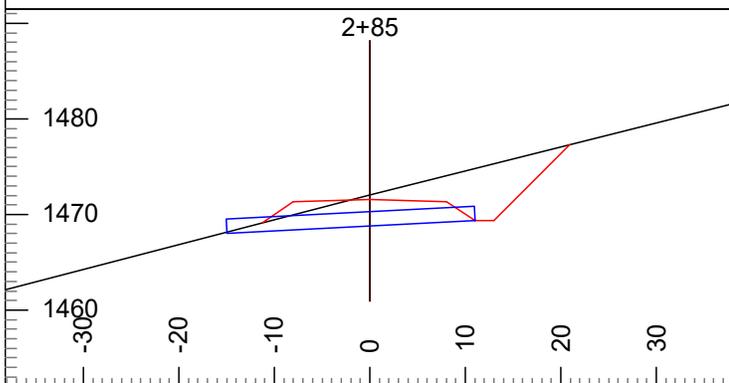
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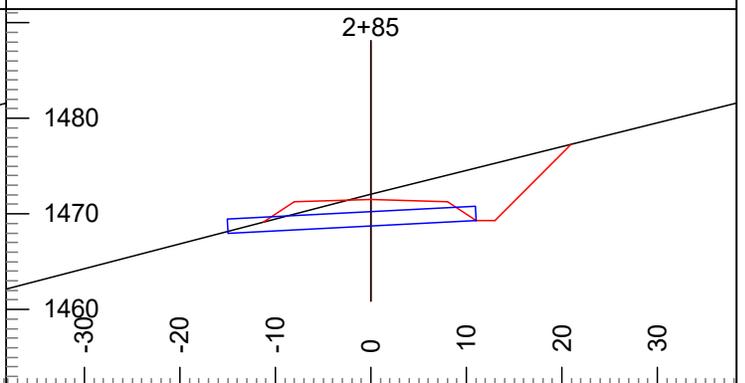
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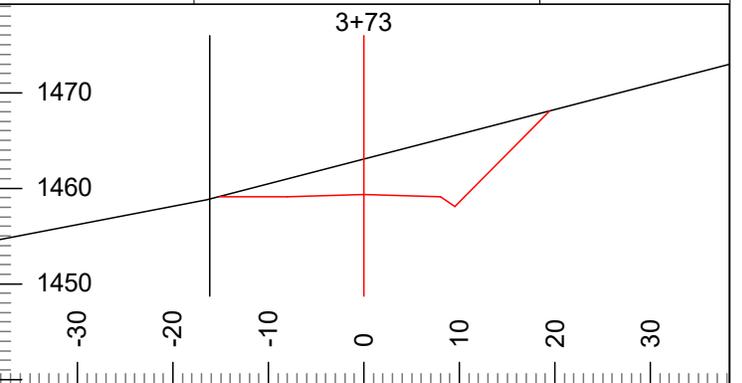
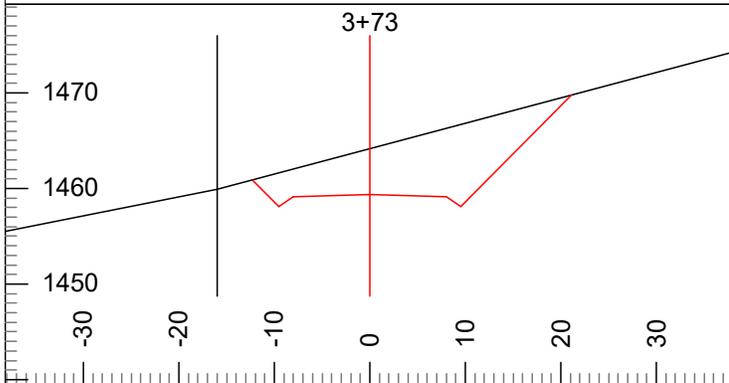


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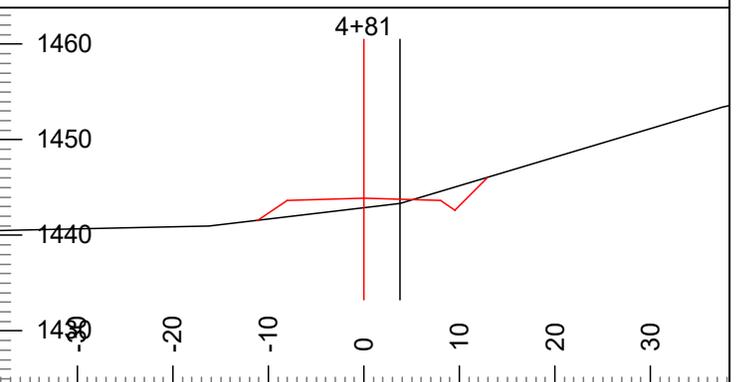
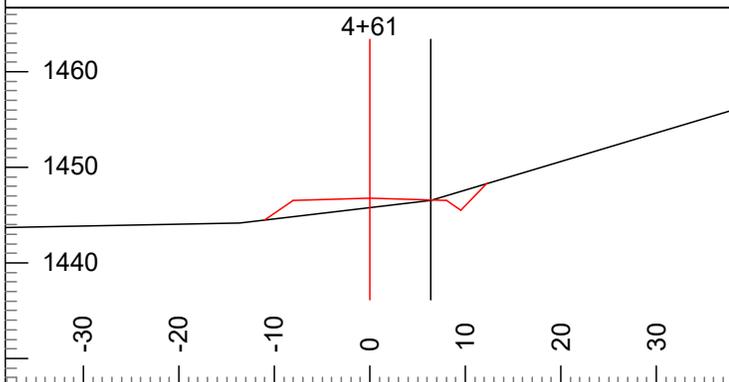
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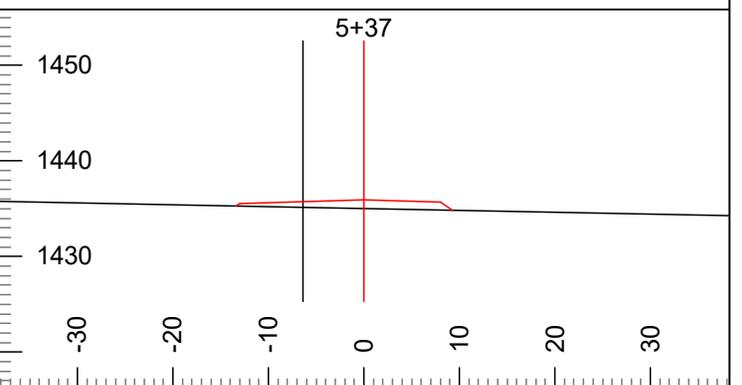
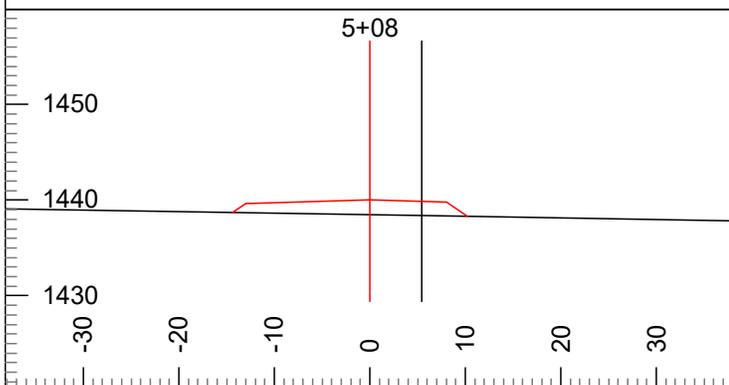
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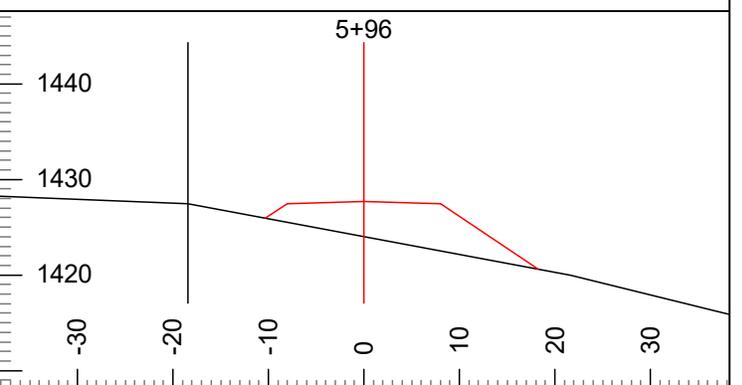
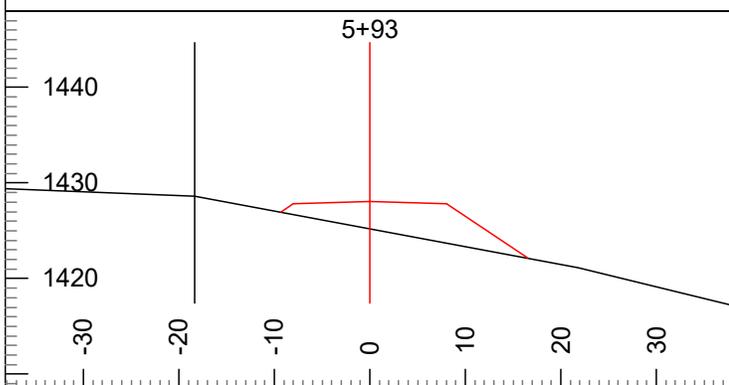
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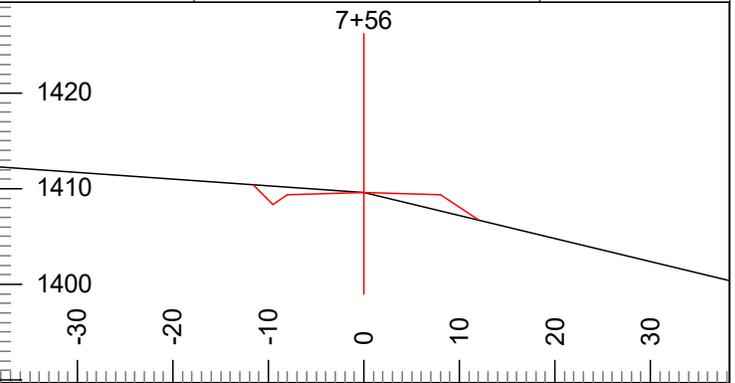
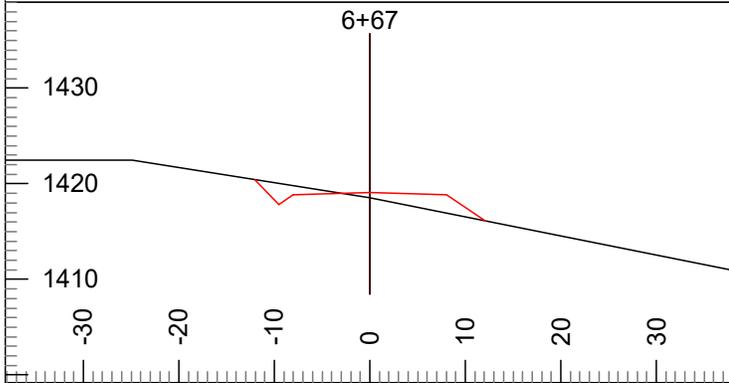
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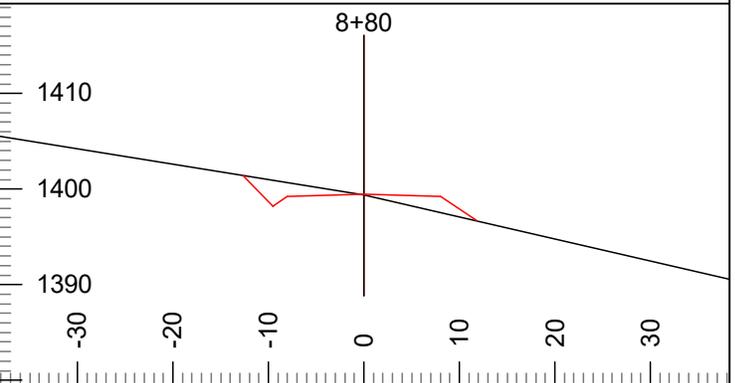
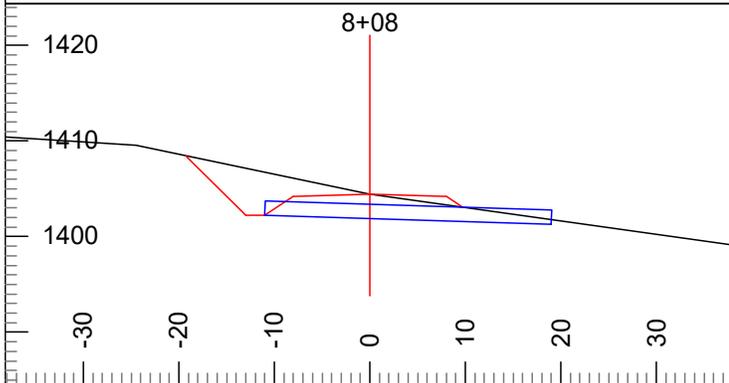
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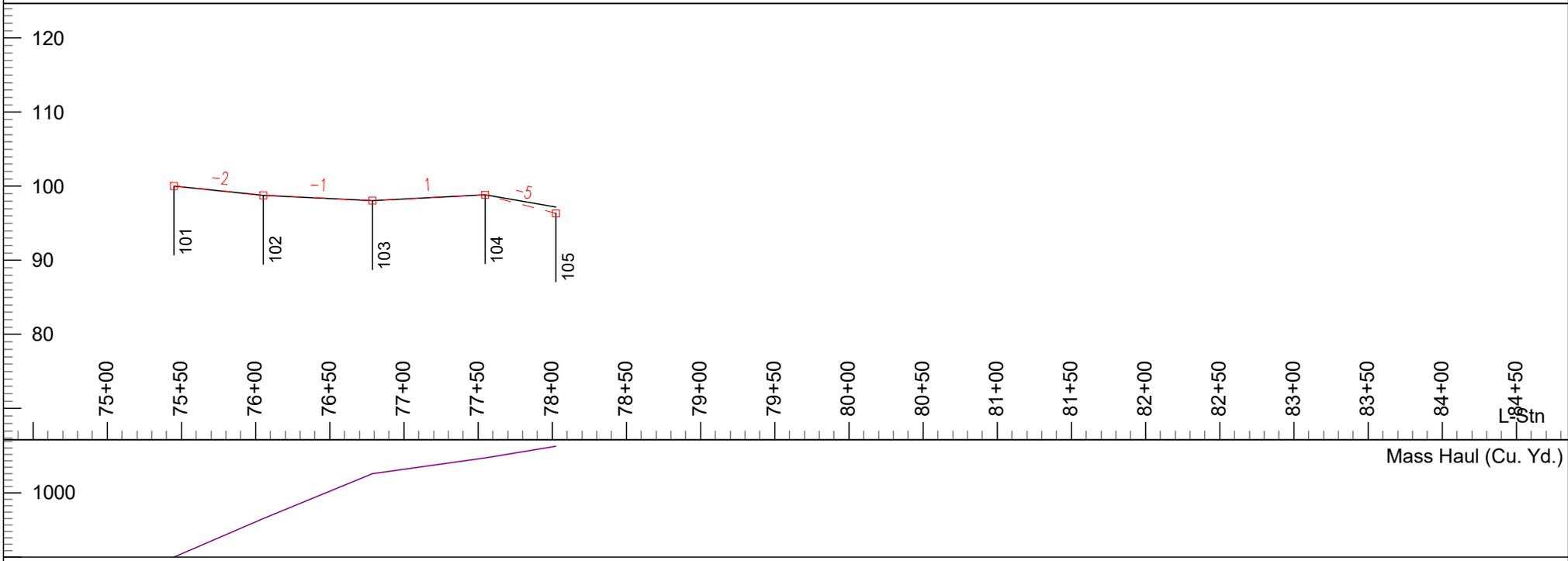
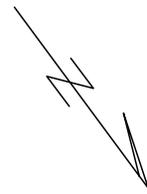
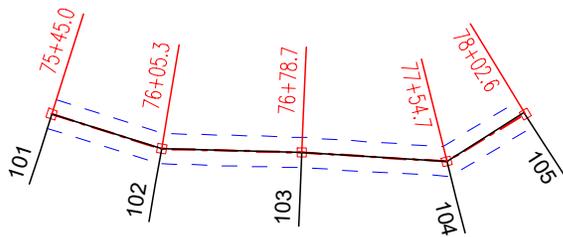
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P-Stn: 8+19 V.Offset: 0 Cut Dp: 0
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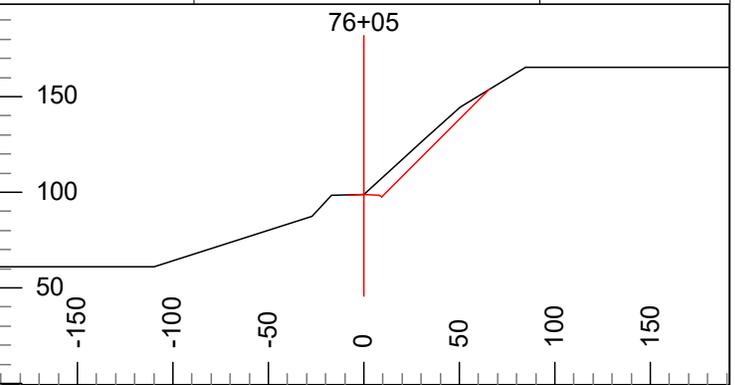
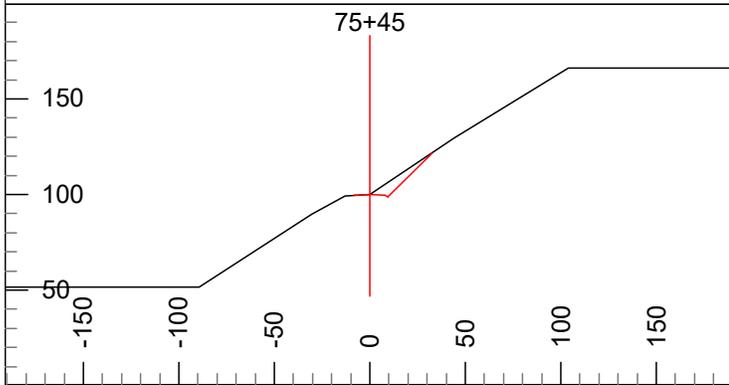


Ram's Horn Timber Sale
 B-1300 Reroute
 Contract #: 30-093253

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 South Puget Sound Region

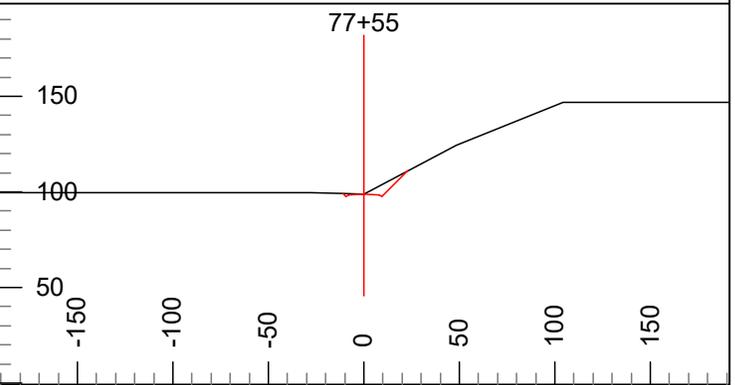
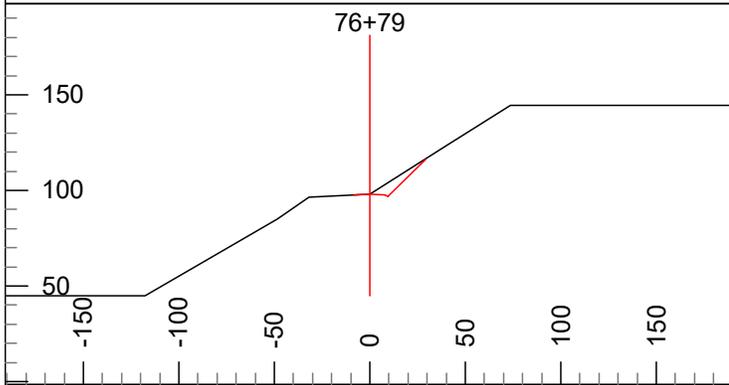
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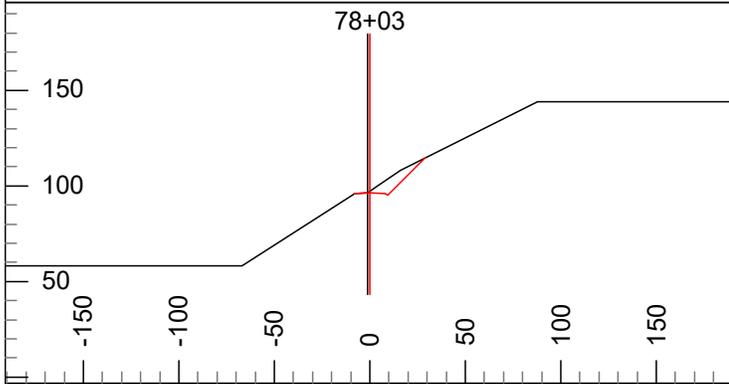
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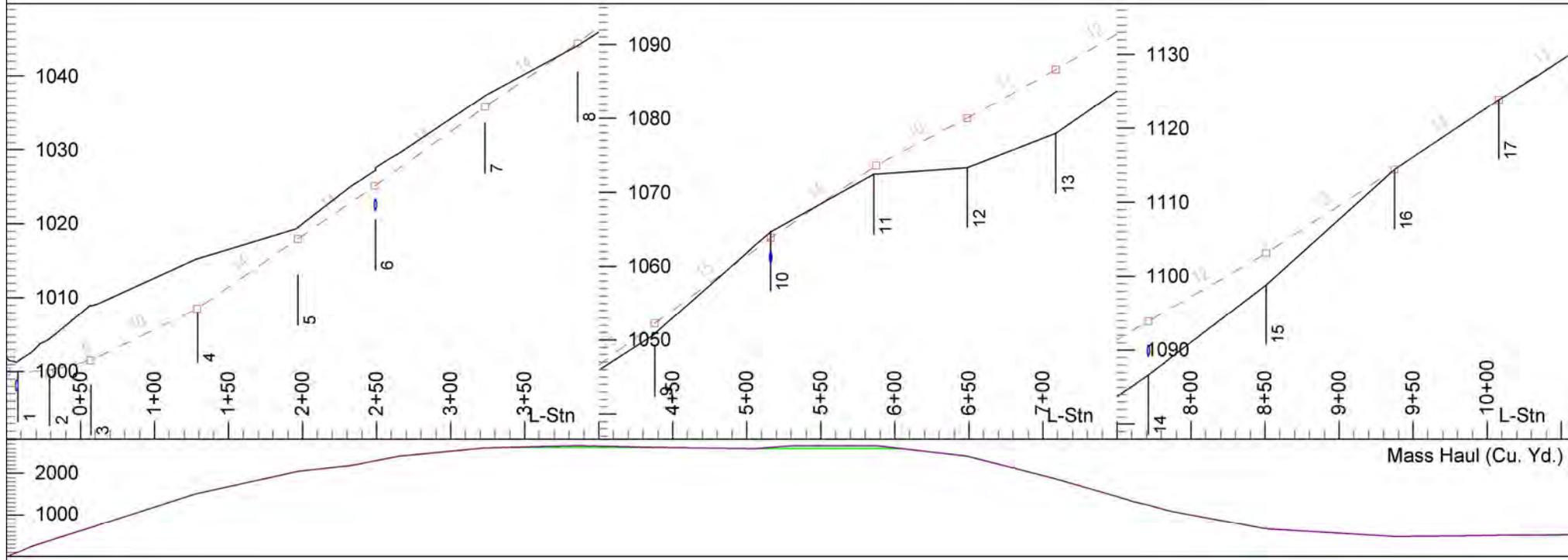
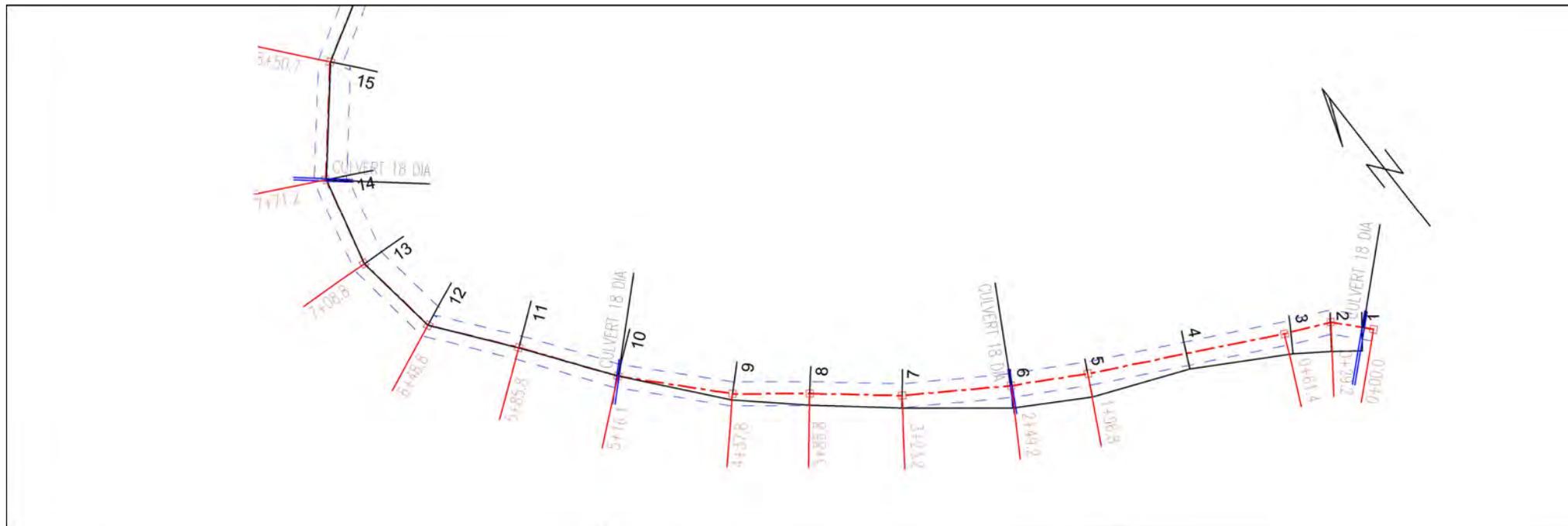


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P-Stn: 2+10 V.Offset: 0 Cut Dp: 0
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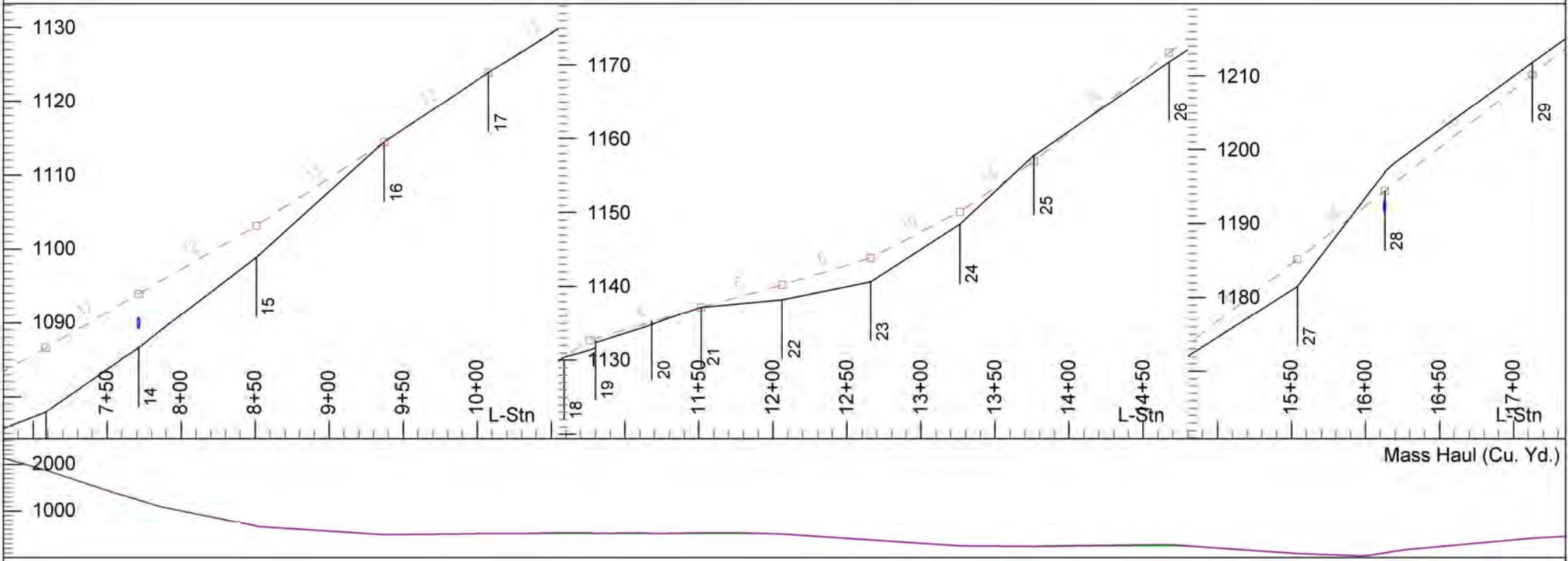
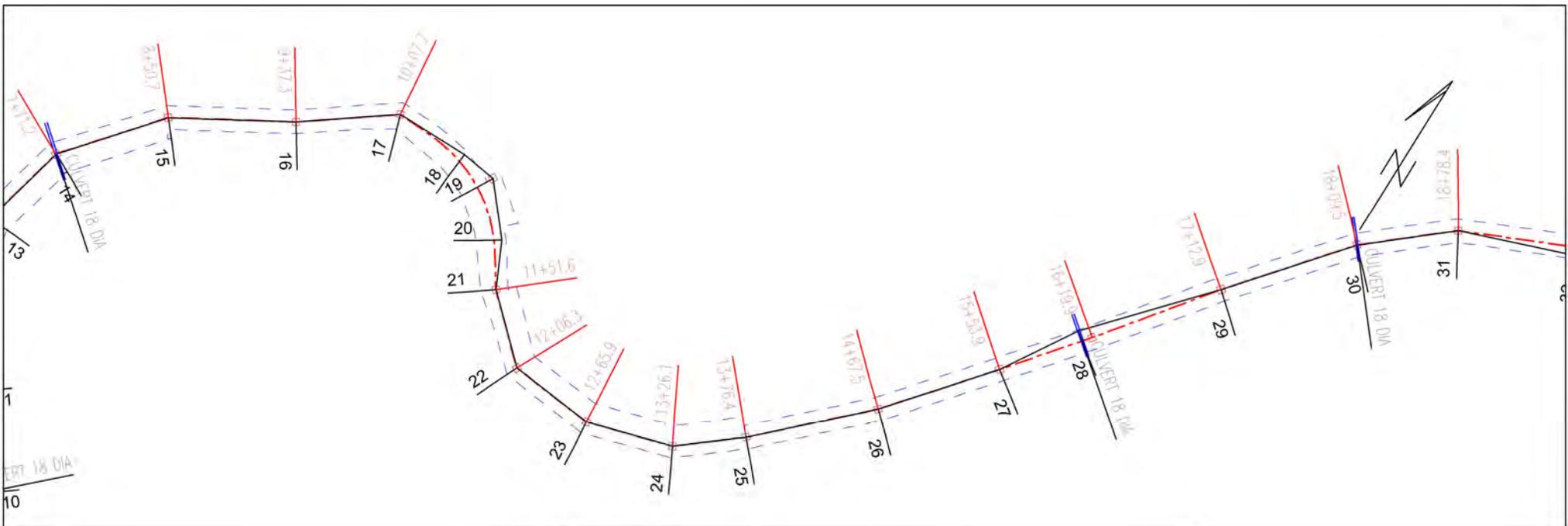


Ram's Horn Timber Sale
 B-1310
 Contract #: 30-093253

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Plan Scale 1:1200
 Profile Vert Scale 1:240
 Profile Horz Scale 1:1200

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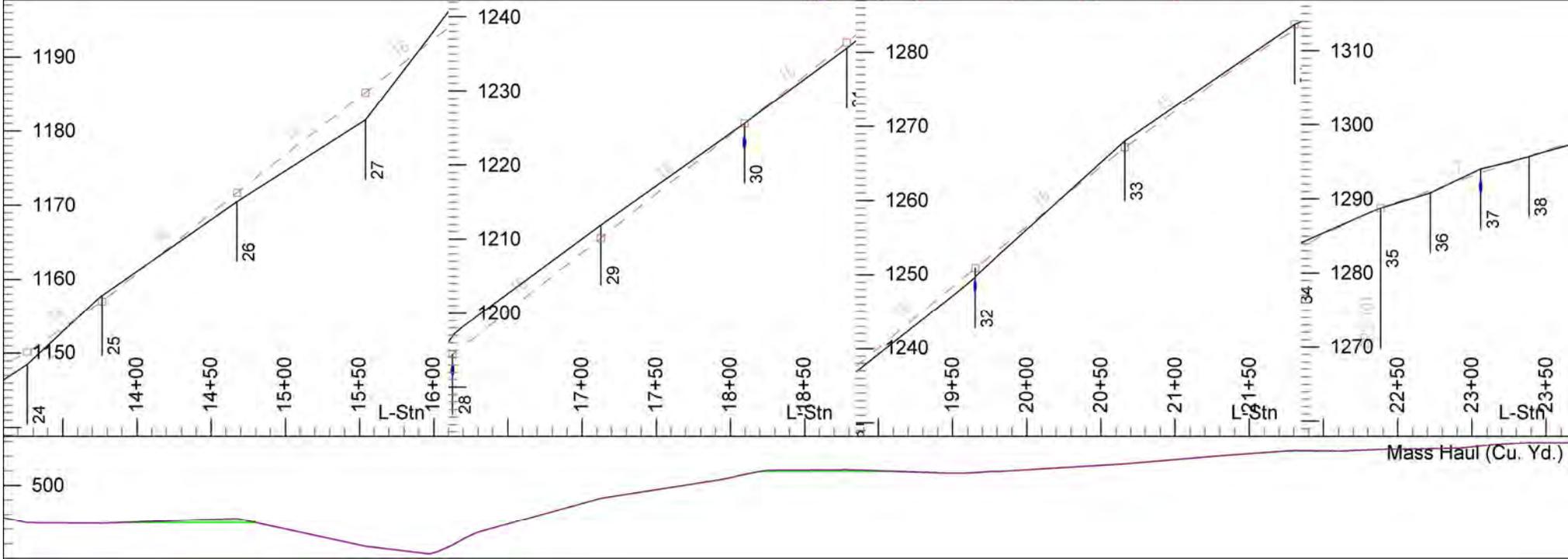
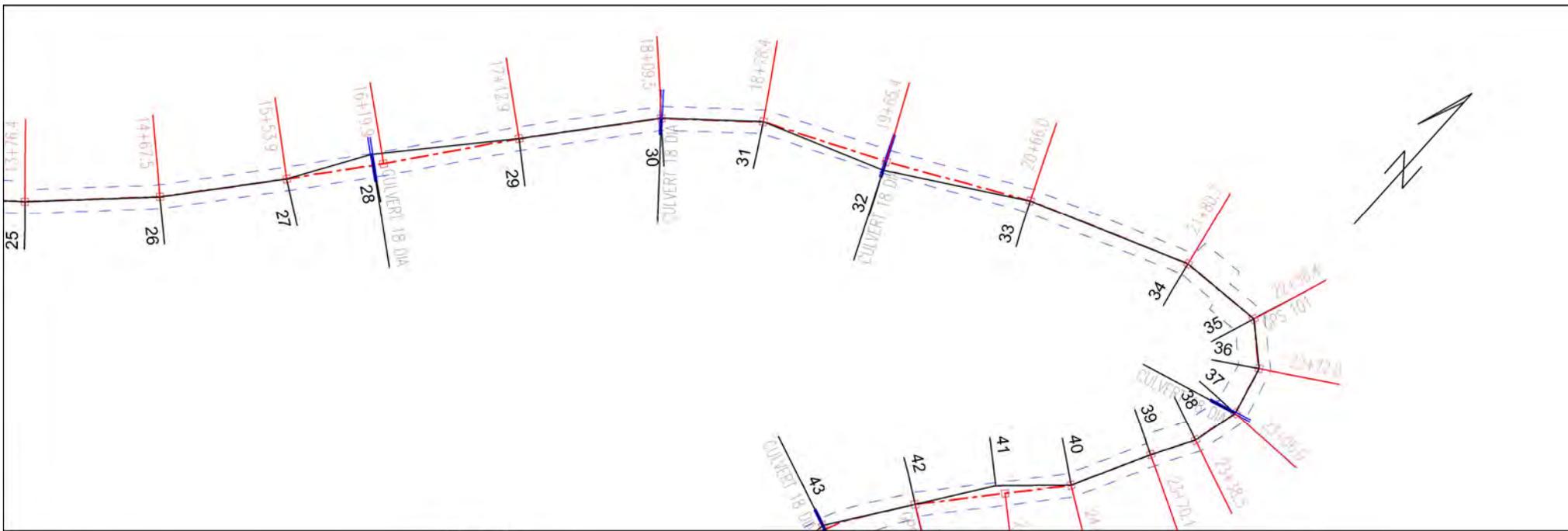


Ram's Horn Timber Sale
 B-1310
 Contract #: 30-093253

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Plan Scale 1:1200
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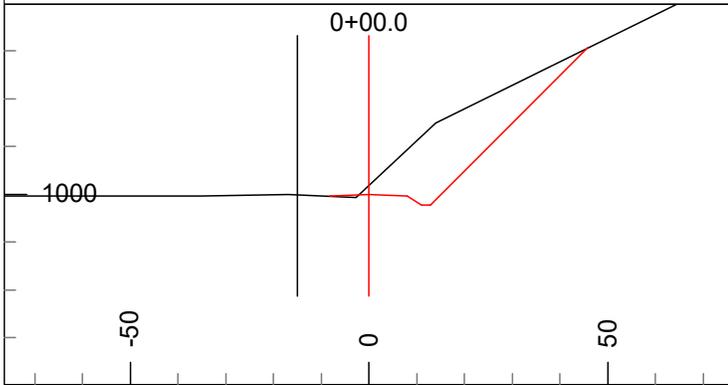
Ram's Horn Timber Sale
 B-1310
 Contract #: 30-093253

Washington State Department of Natural Resources
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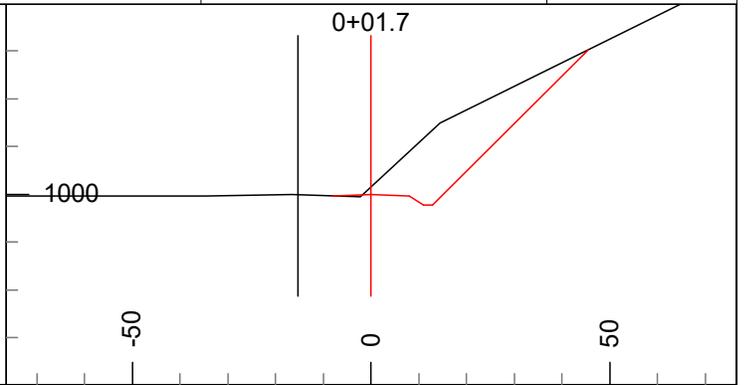
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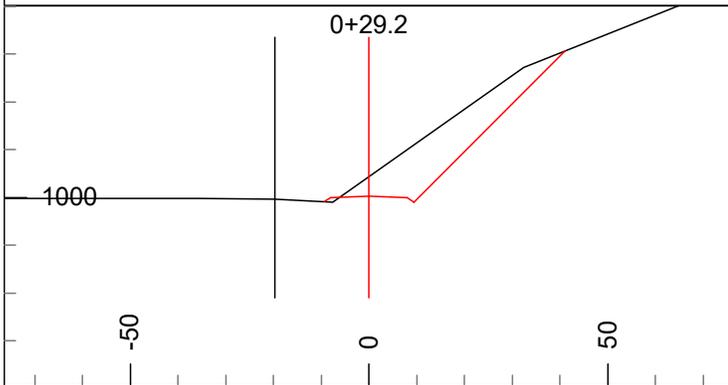
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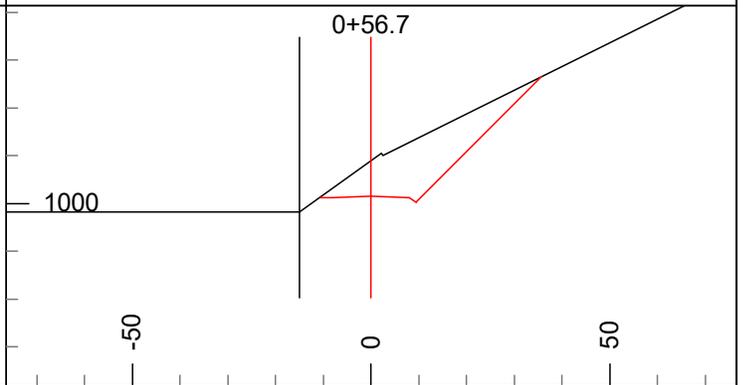
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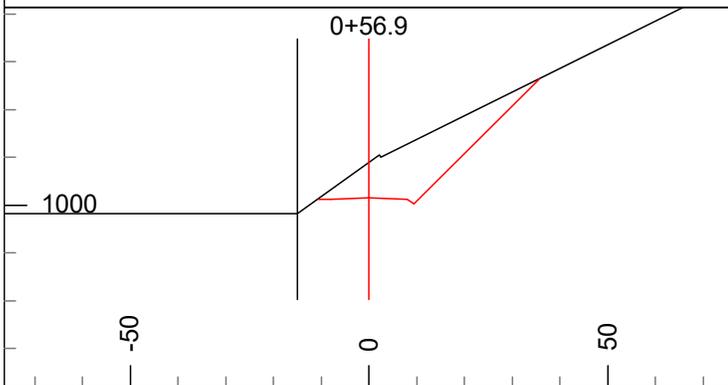
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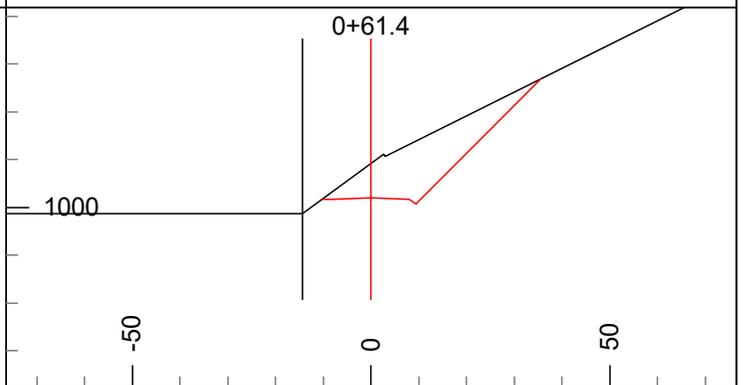
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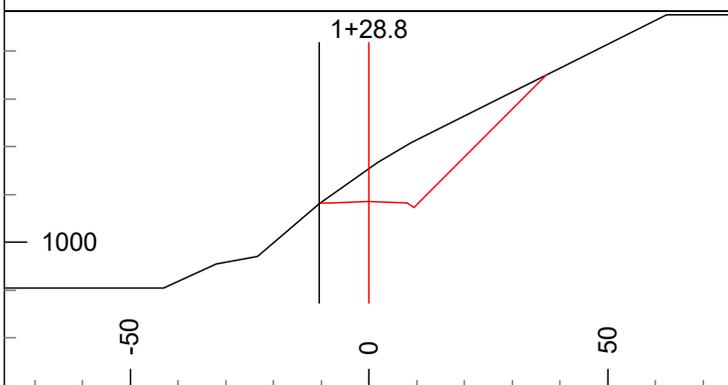
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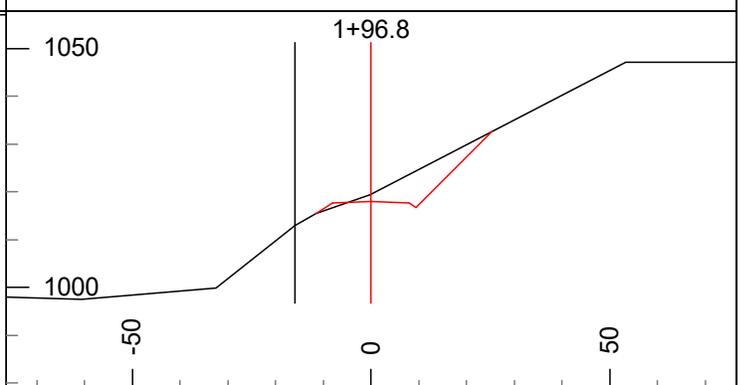
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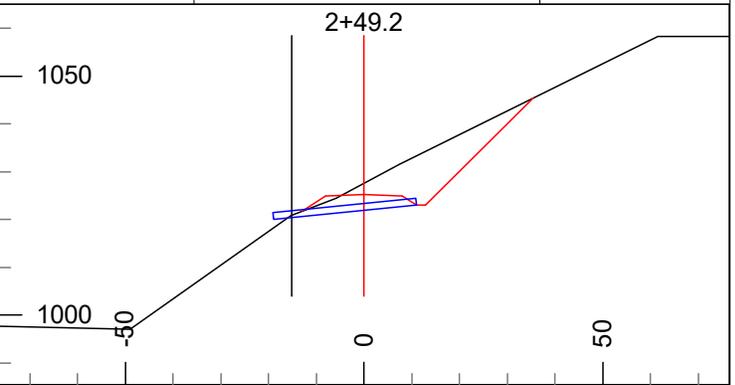
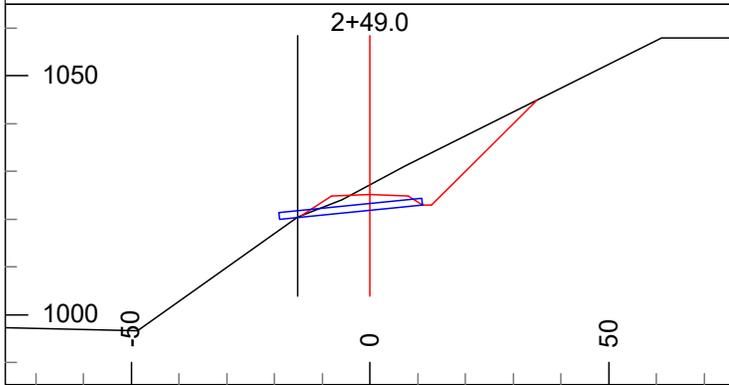
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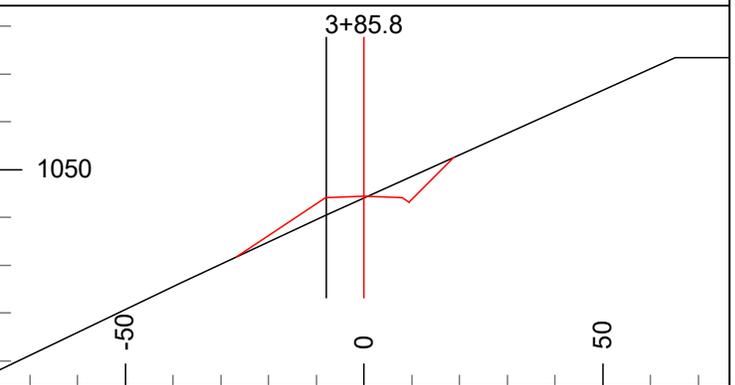
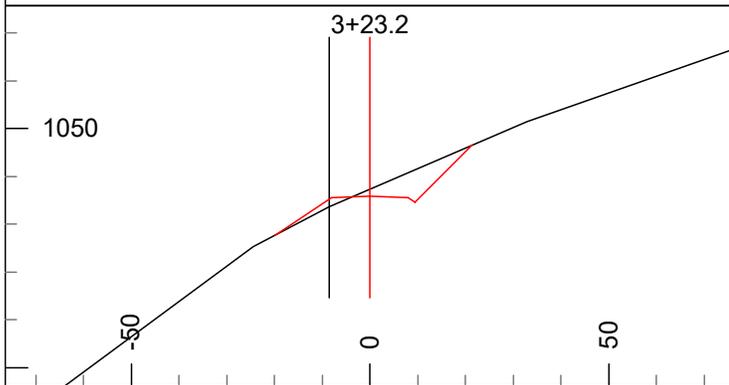


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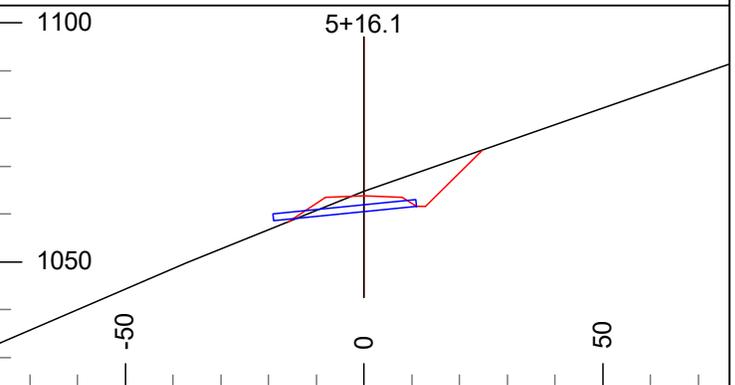
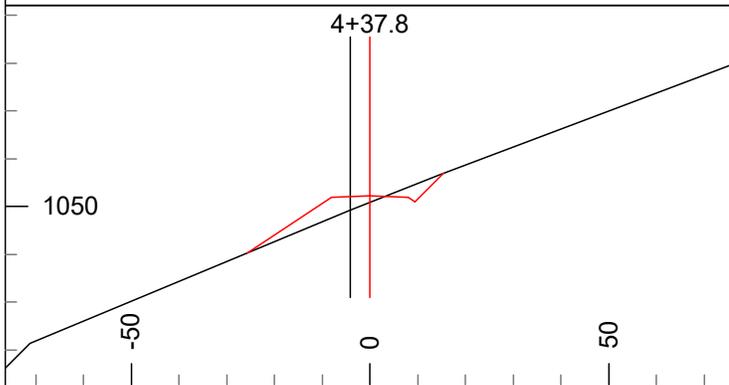
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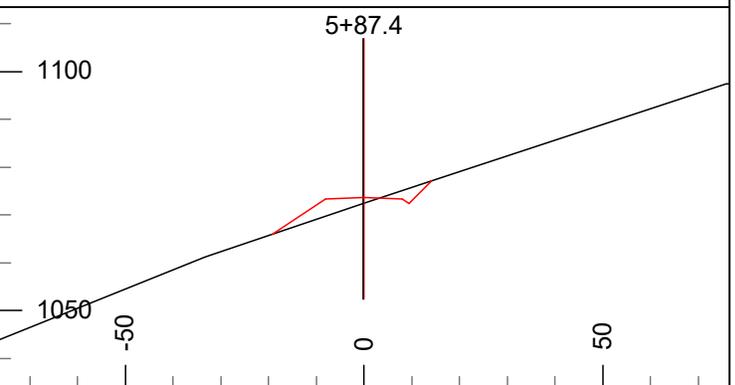
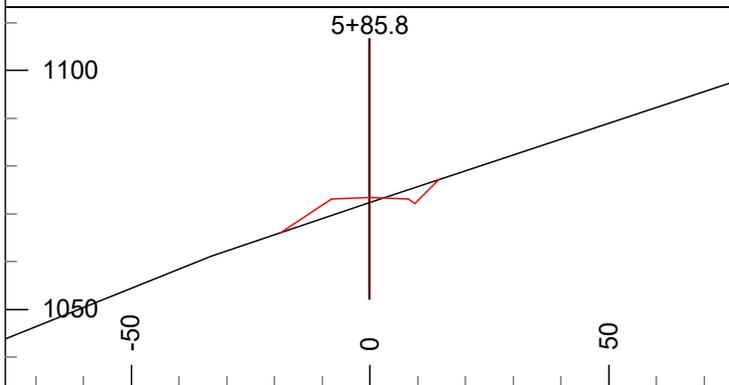
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 L-Stn: 3+23.2 H. Offset: 8.5 Index: 7

P-Stn: 3+77.7 V.Offset: 3.9 Cut Dp: -0.3
 L-Stn: 3+85.8 H. Offset: 7.8 Index: 8



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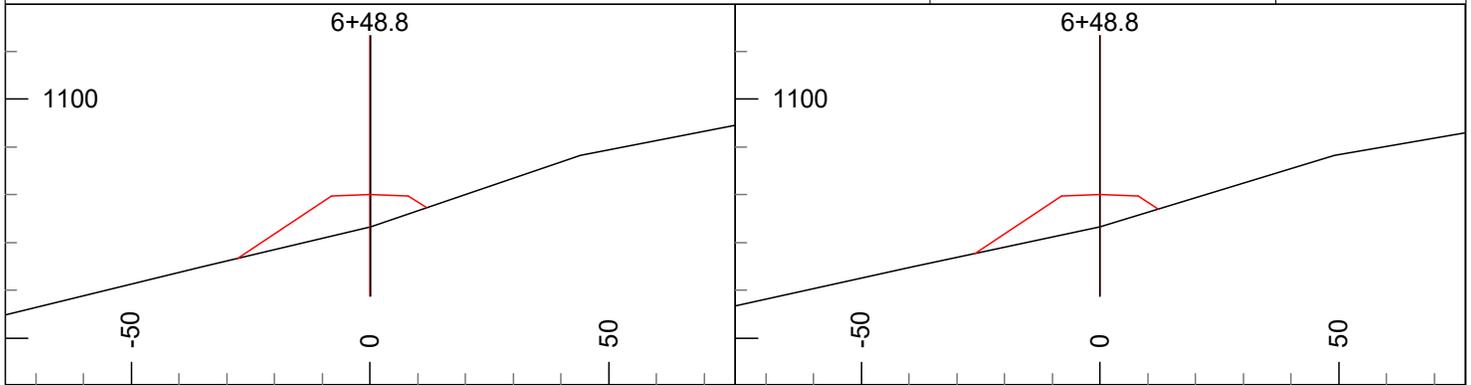
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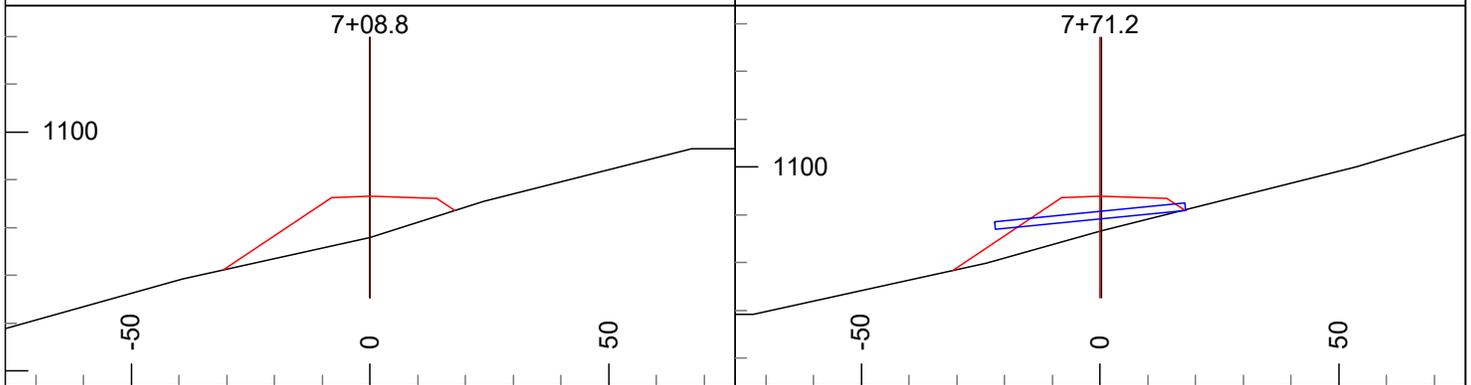
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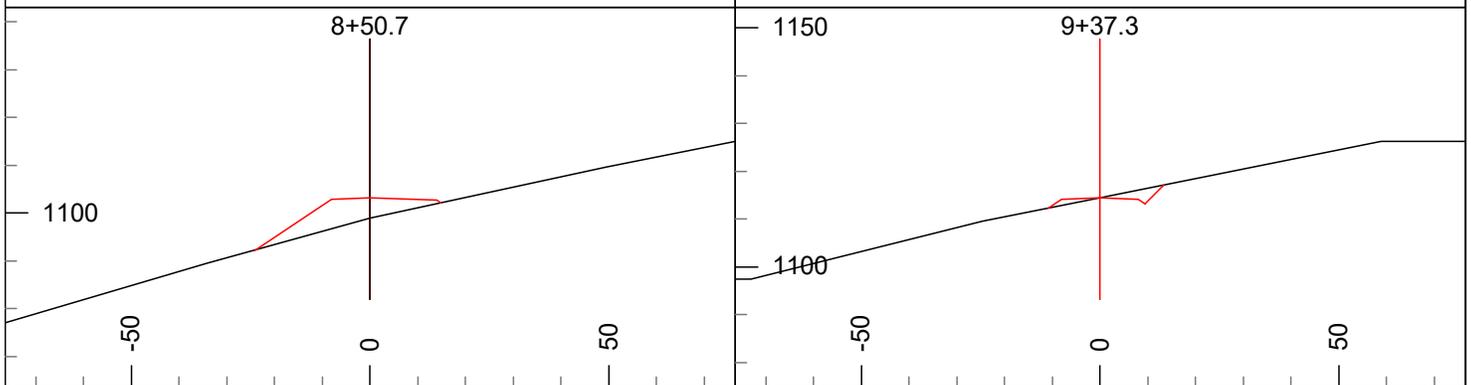
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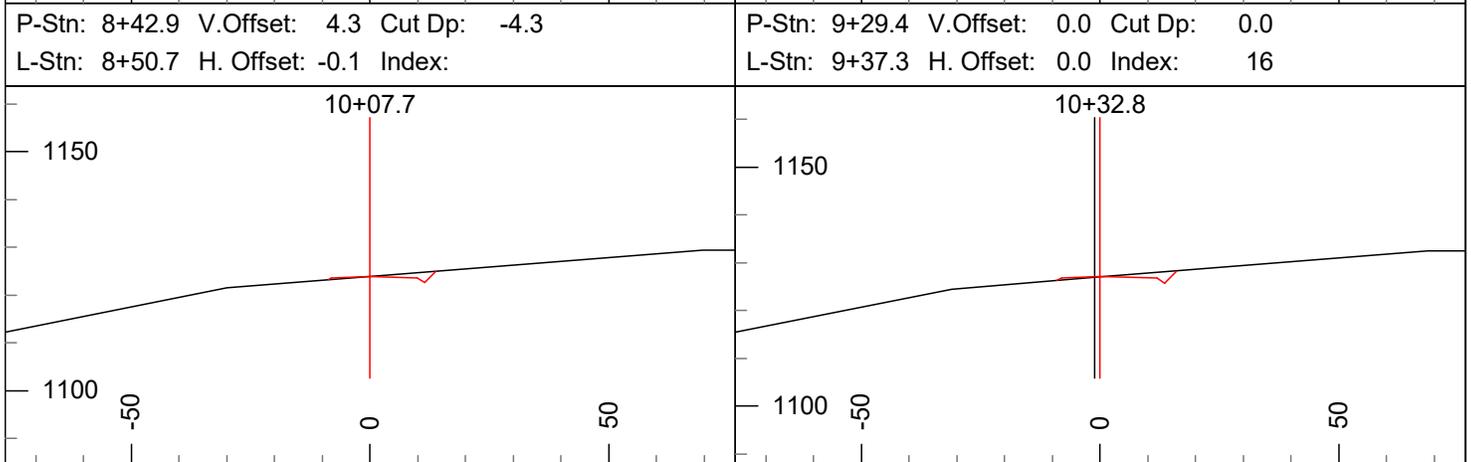
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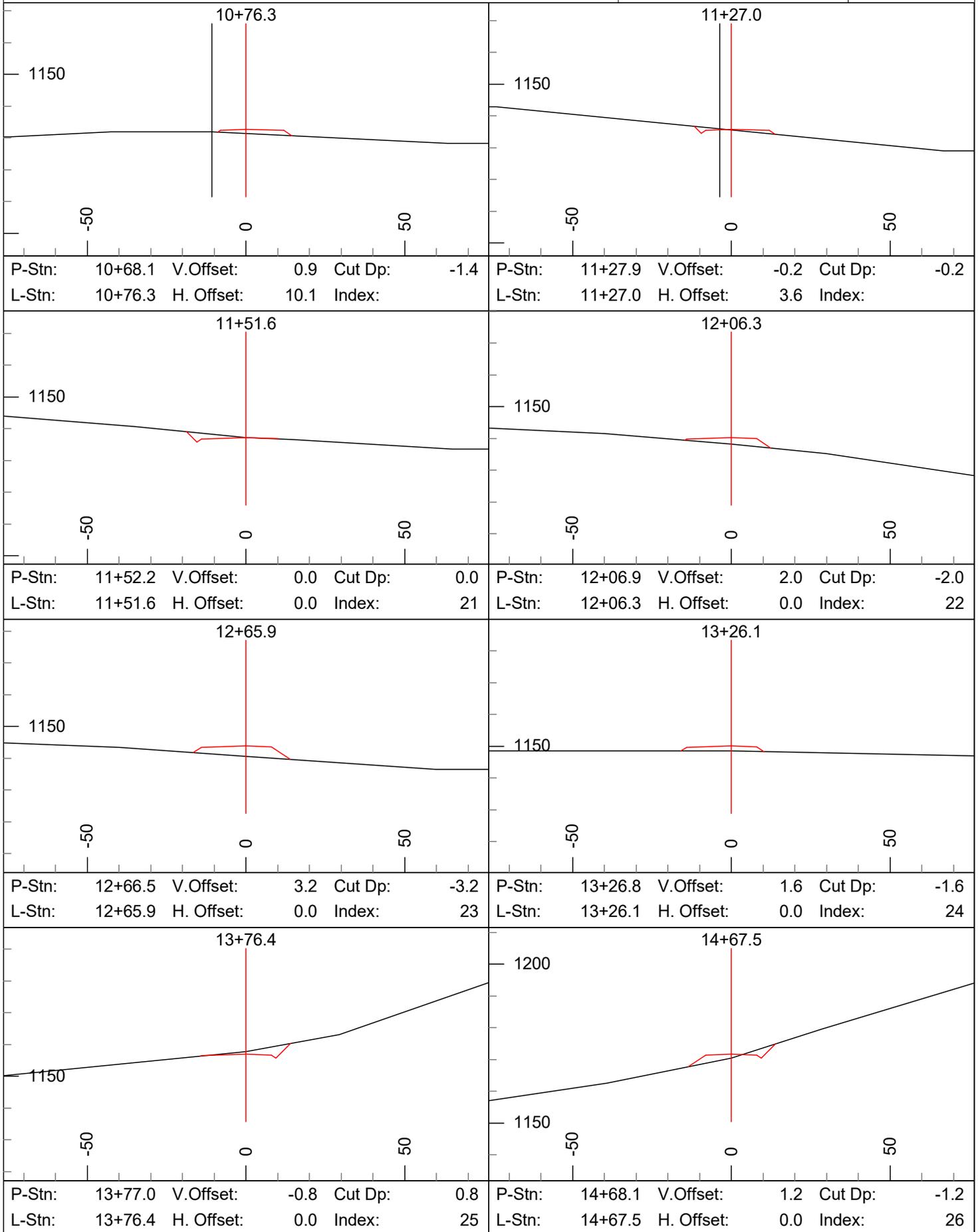
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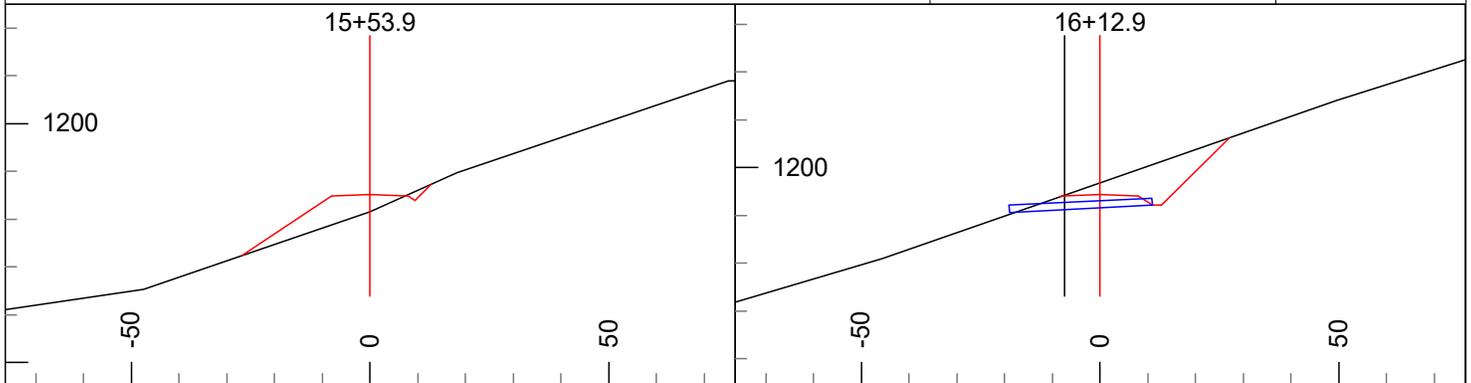
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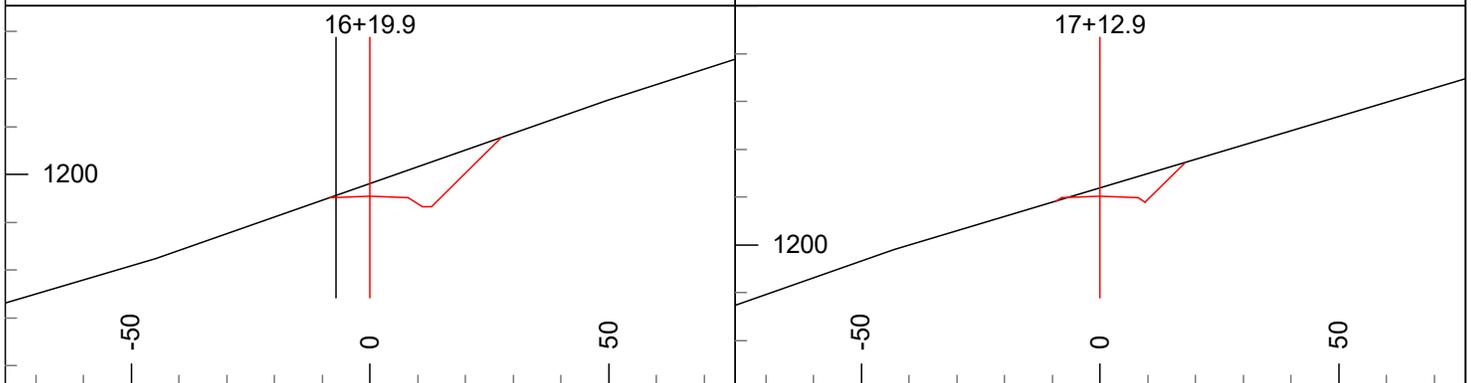


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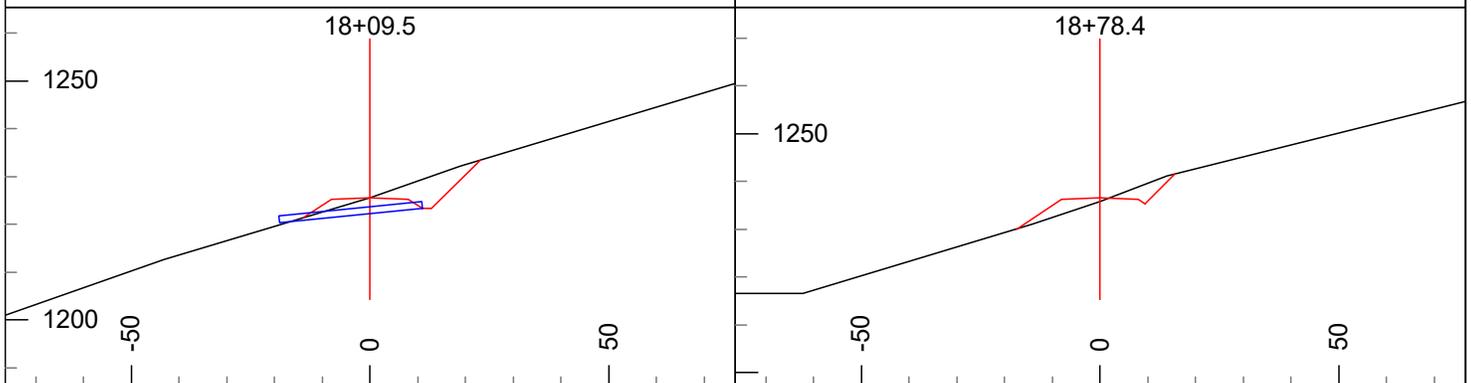
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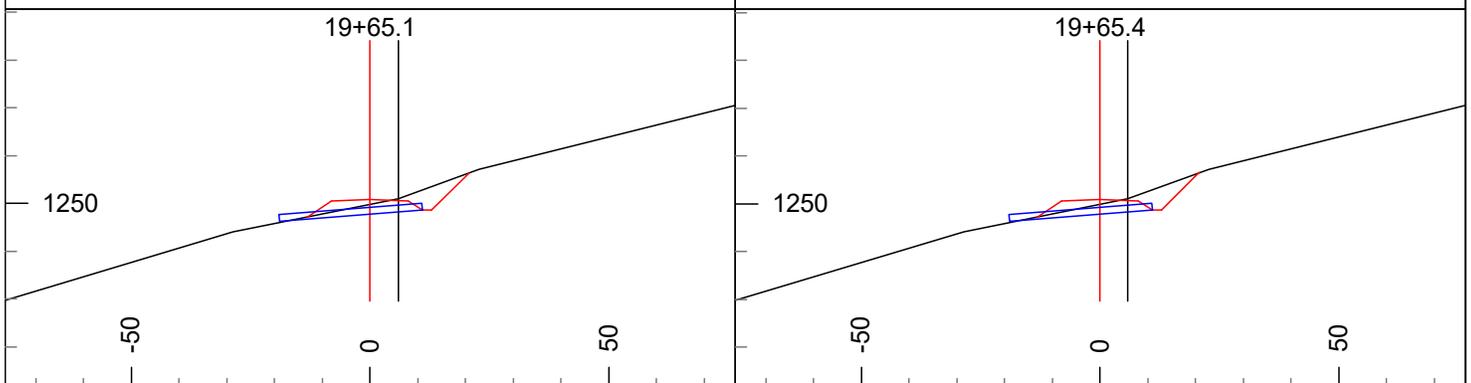
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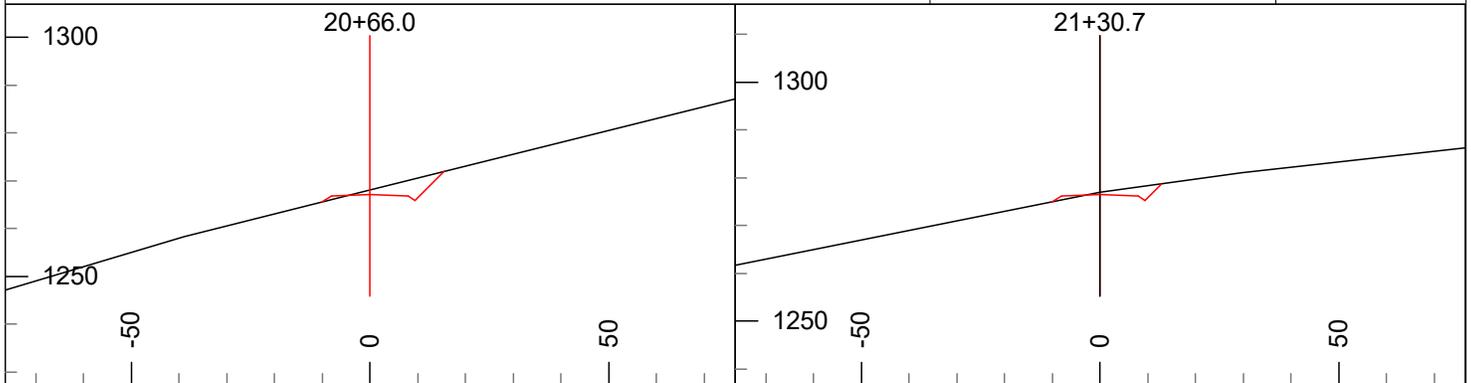
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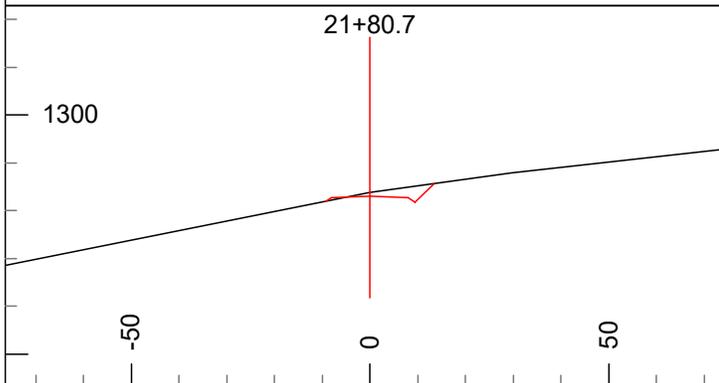
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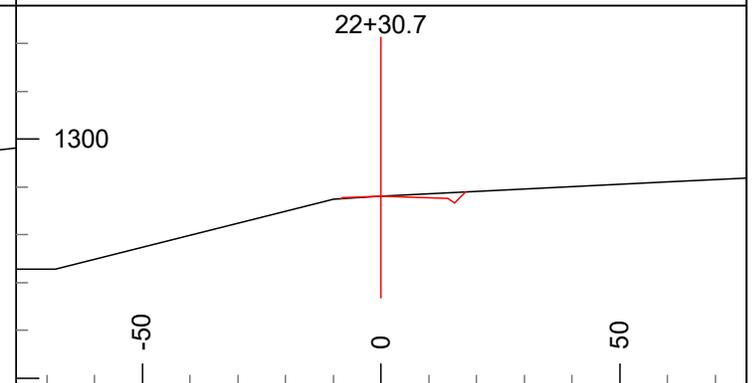


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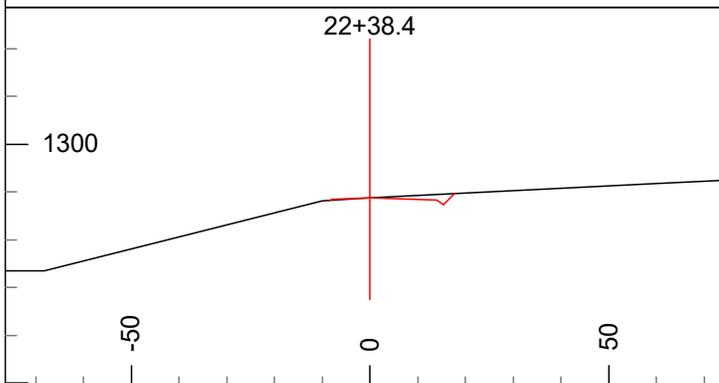
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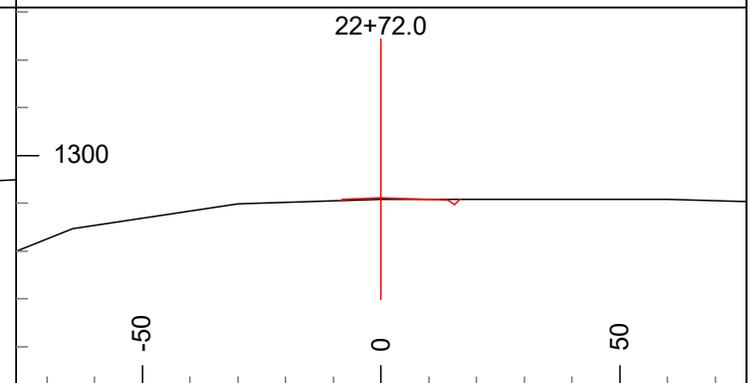
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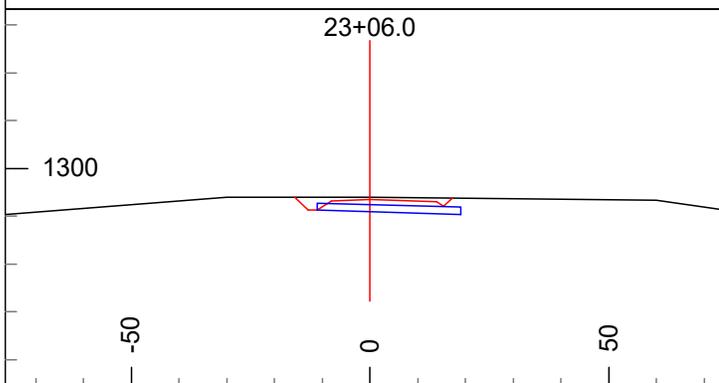
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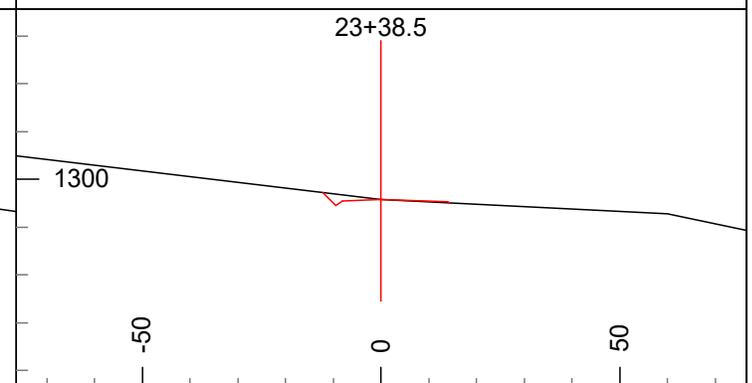
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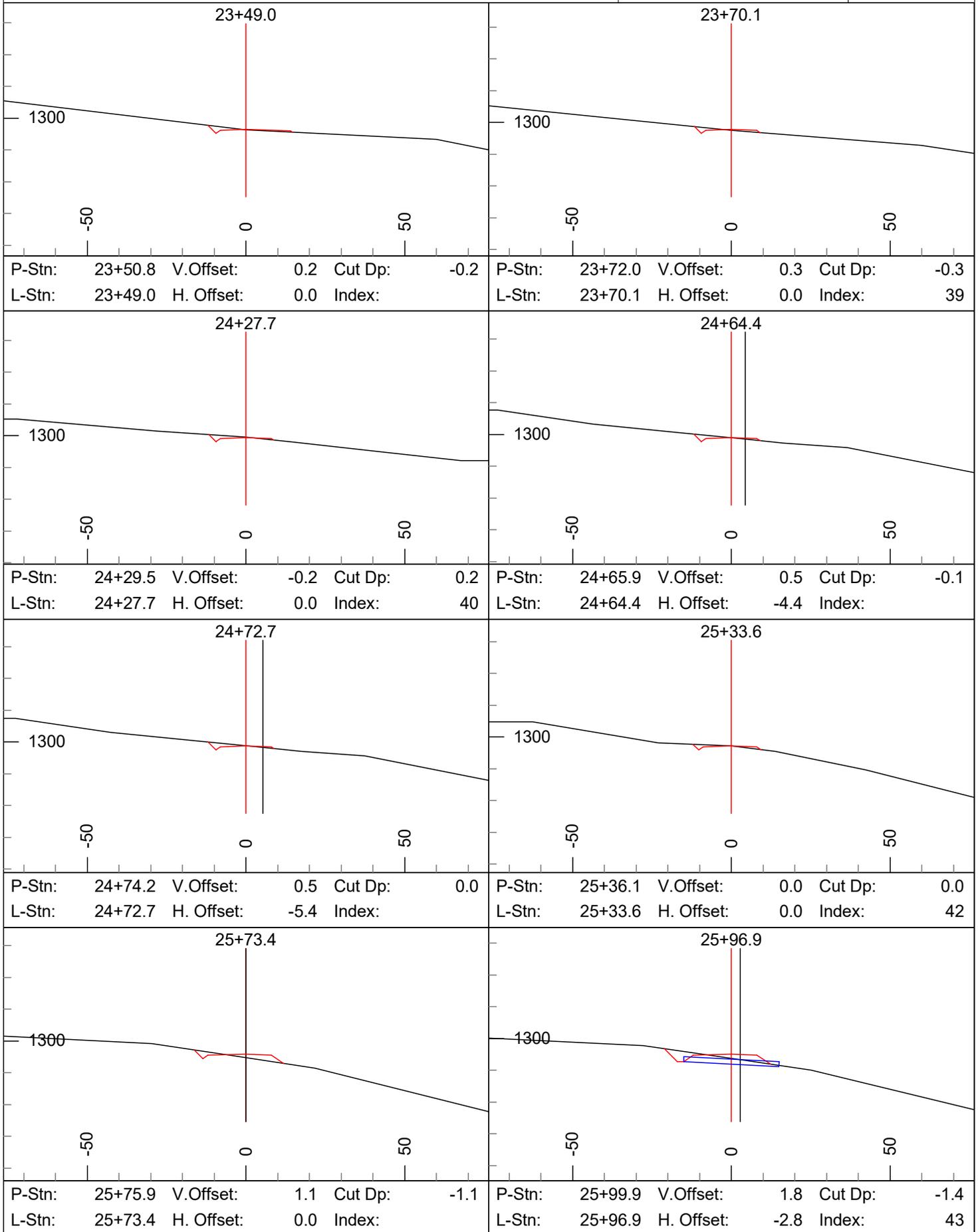


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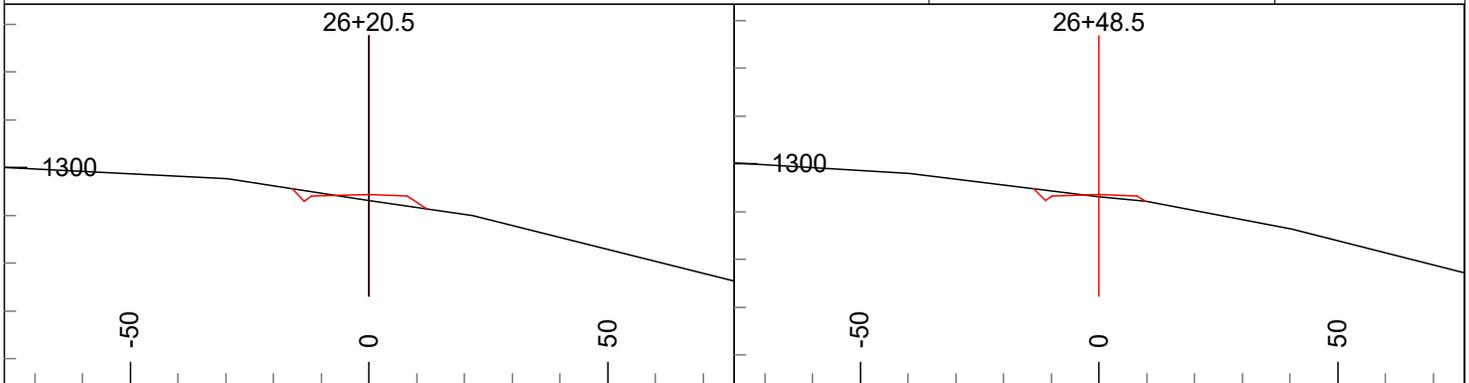


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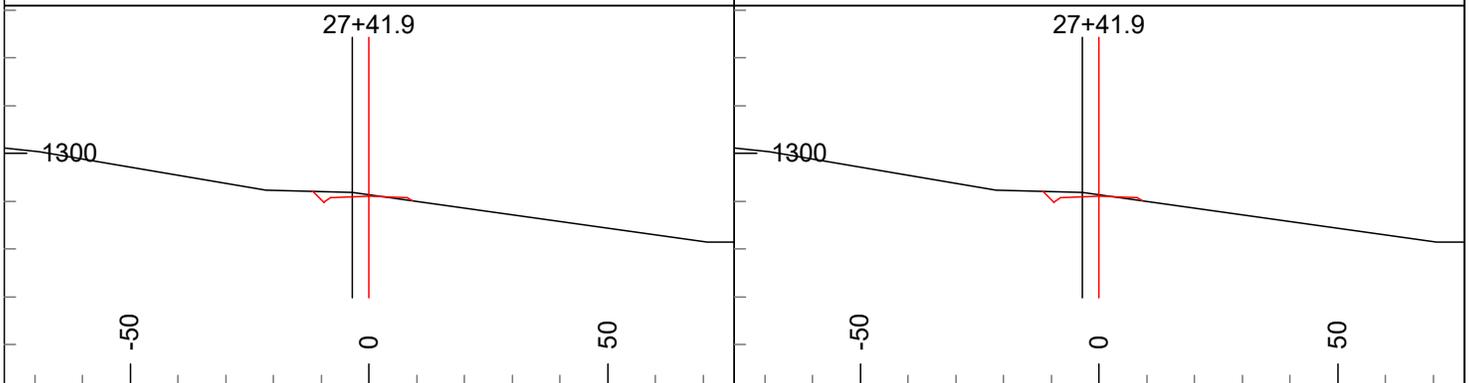


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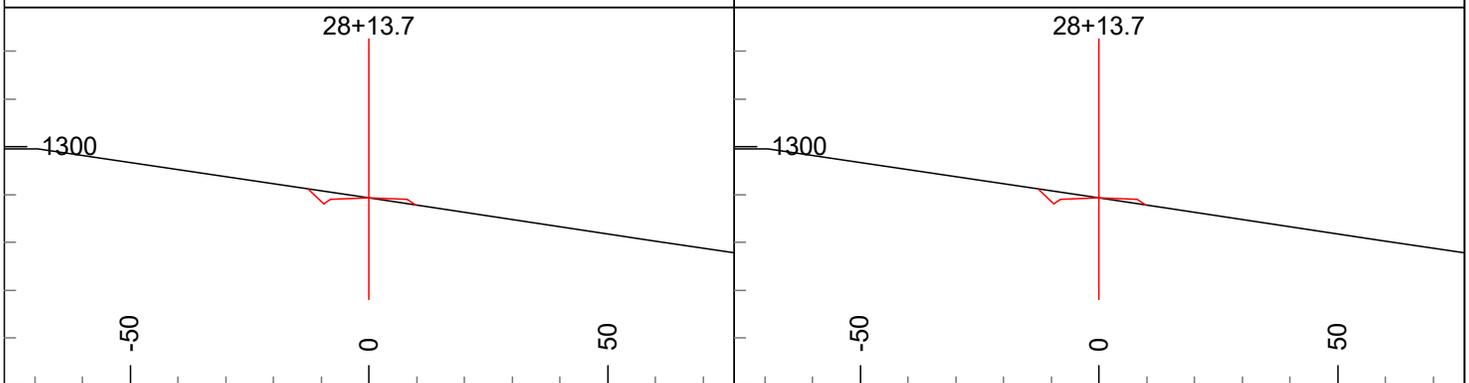
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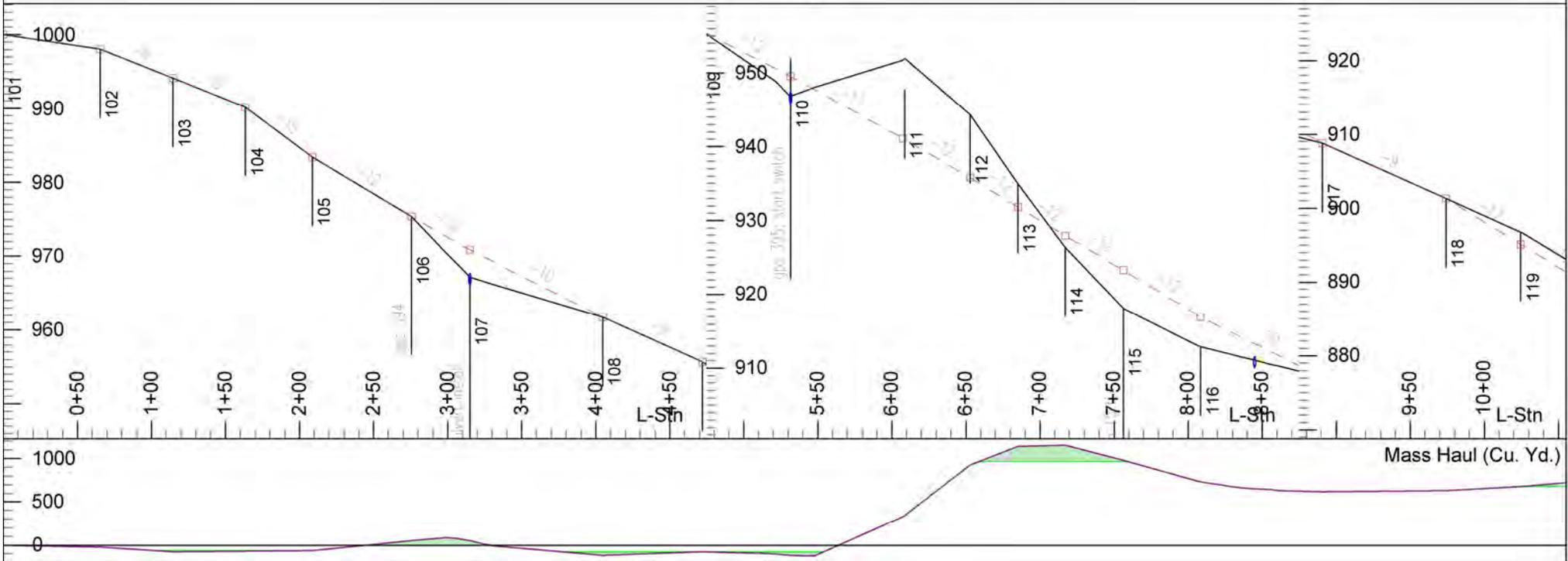
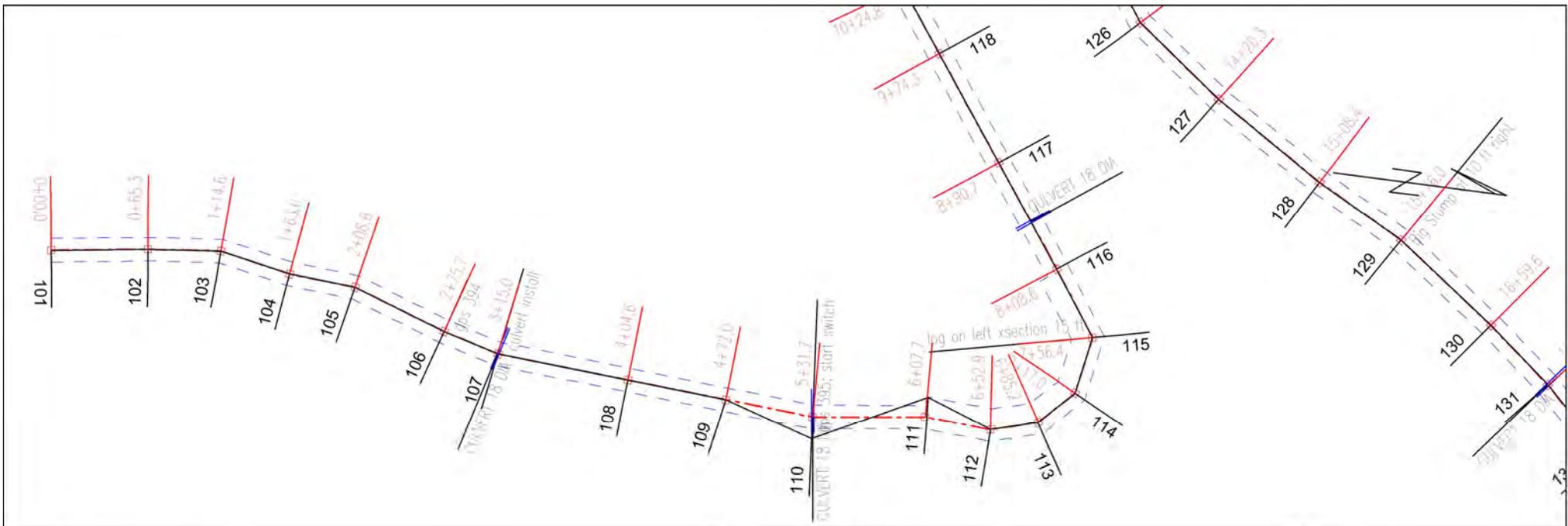
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 L-Stn: 27+41.9 H. Offset: 3.5 Index: 45



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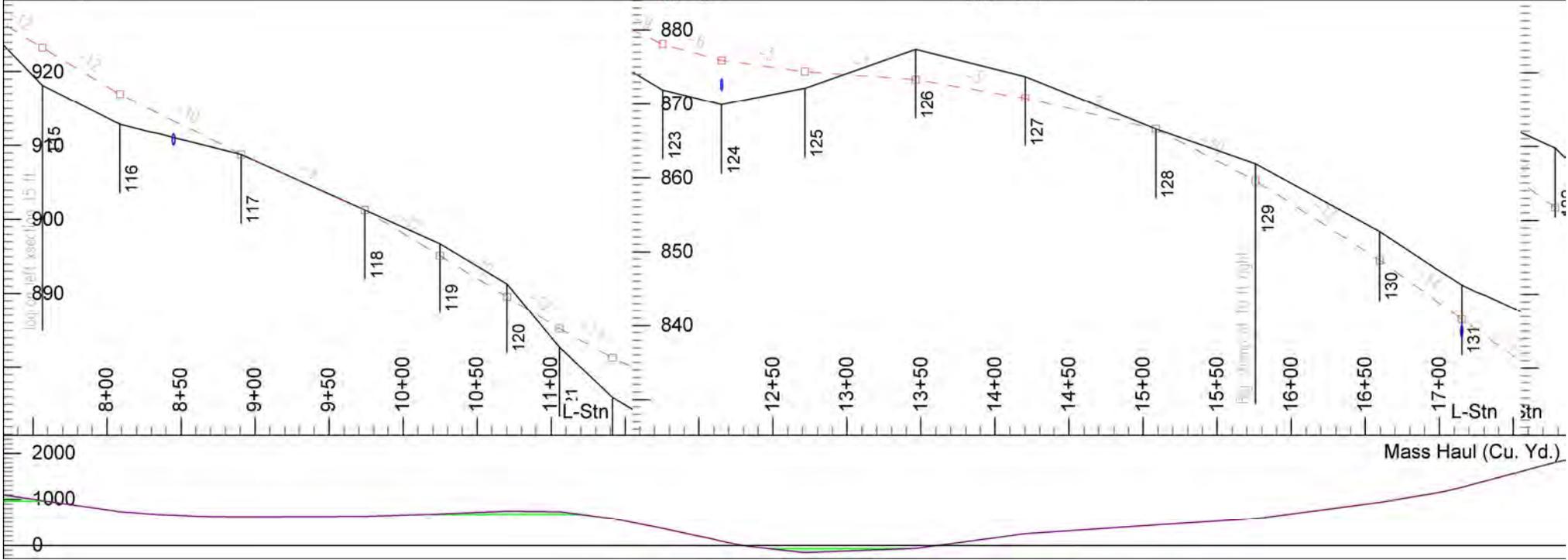
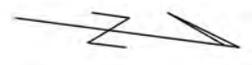
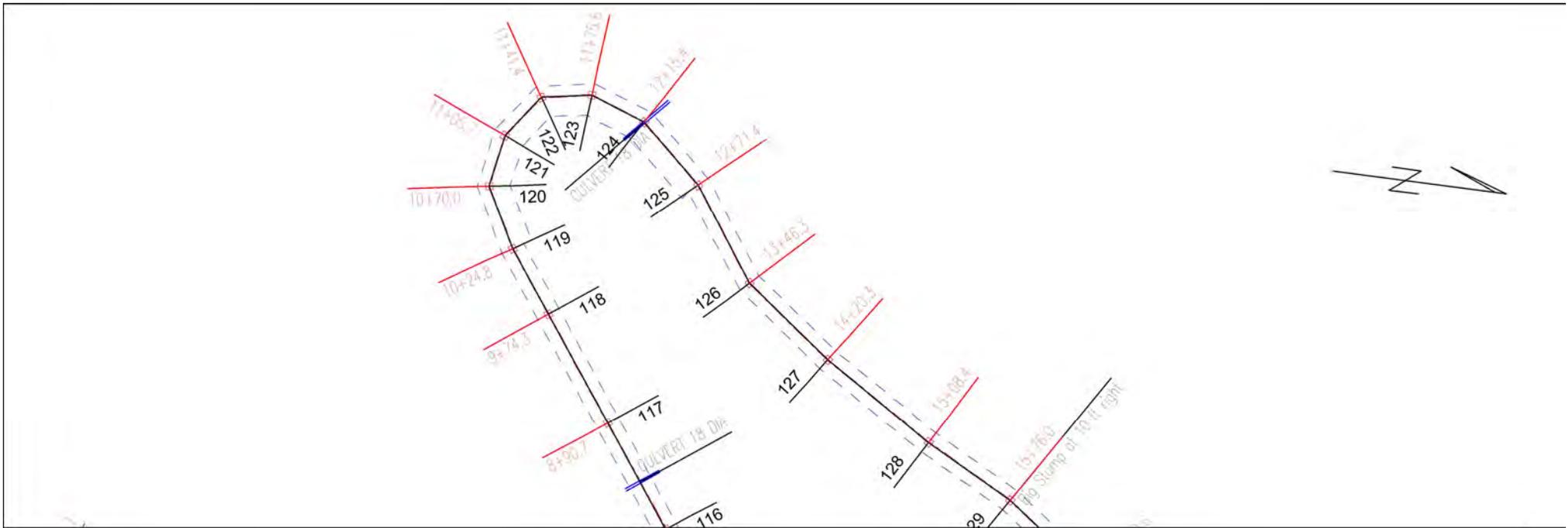


Ram's Horn Timber Sale
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 Contract #: 30-093253

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Plan Scale 1:1200
 Profile Vert Scale 1:240
 Profile Horz Scale 1:1200

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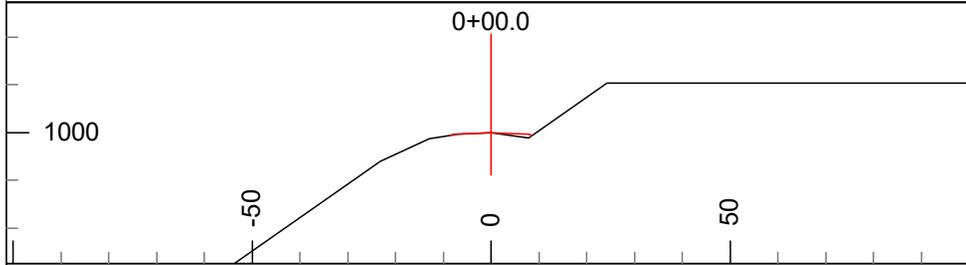


Ram's Horn Timber Sale
 B-1430
 Contract #: 30-093253

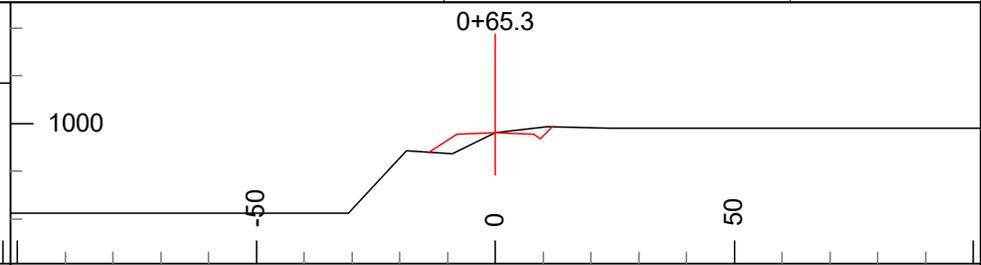
Washington State Department of Natural Resources
 South Puget Sound Region

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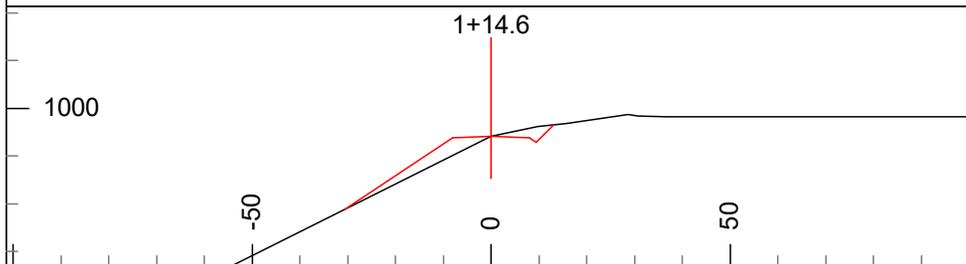
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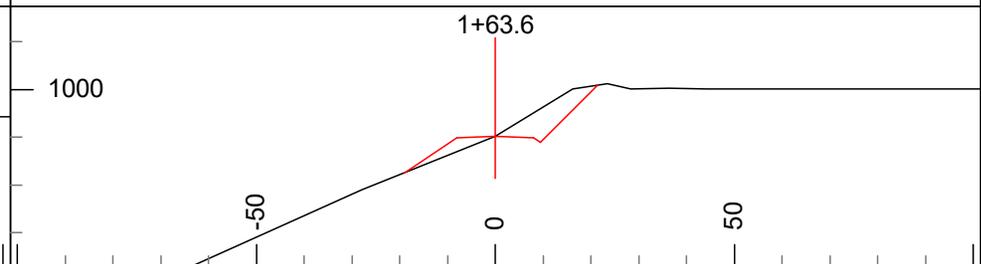
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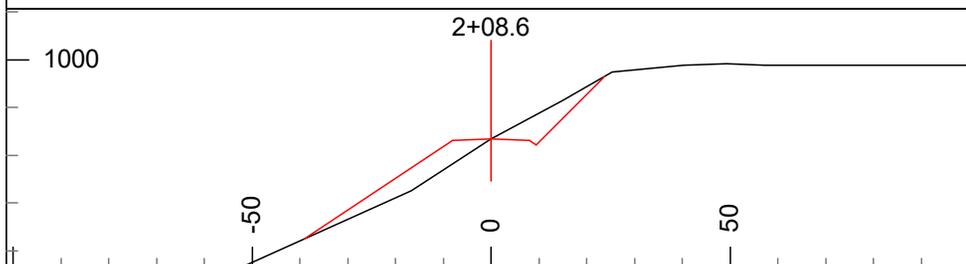
P-Stn: 0+65.3 V.Offset: 0.0 Cut Dp: 0.0
L-Stn: 0+65.3 H. Offset: 0.0 Index: 102



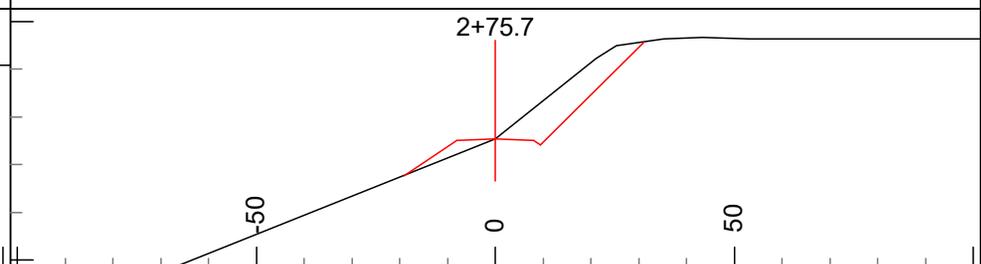
P-Stn: 1+14.6 V.Offset: 0.0 Cut Dp: 0.0
L-Stn: 1+14.6 H. Offset: 0.0 Index: 103



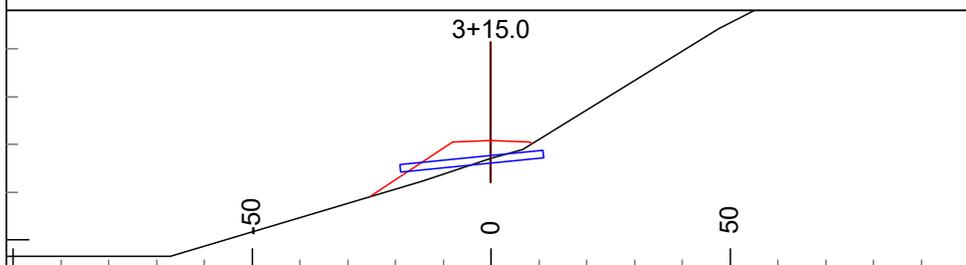
P-Stn: 1+63.6 V.Offset: 0.0 Cut Dp: 0.0
L-Stn: 1+63.6 H. Offset: 0.0 Index: 104



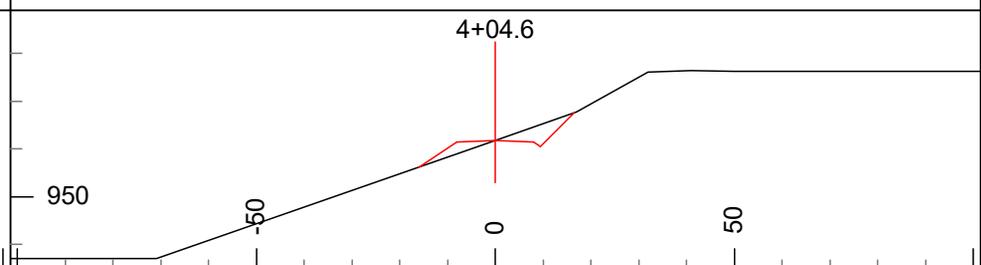
P-Stn: 2+08.6 V.Offset: 0.0 Cut Dp: 0.0
L-Stn: 2+08.6 H. Offset: 0.0 Index: 105



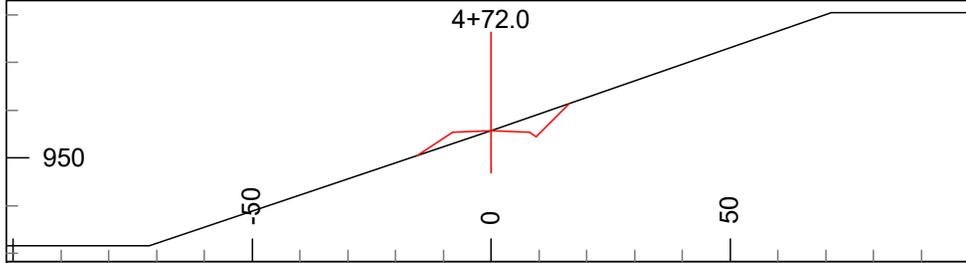
P-Stn: 2+75.7 V.Offset: 0.0 Cut Dp: 0.0
L-Stn: 2+75.7 H. Offset: 0.0 Index: 106



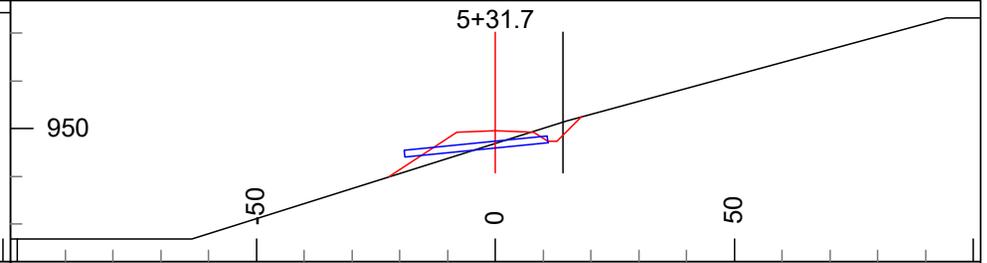
P-Stn: 3+15.0 V.Offset: 3.7 Cut Dp: -3.7
L-Stn: 3+15.0 H. Offset: 0.1 Index: 107



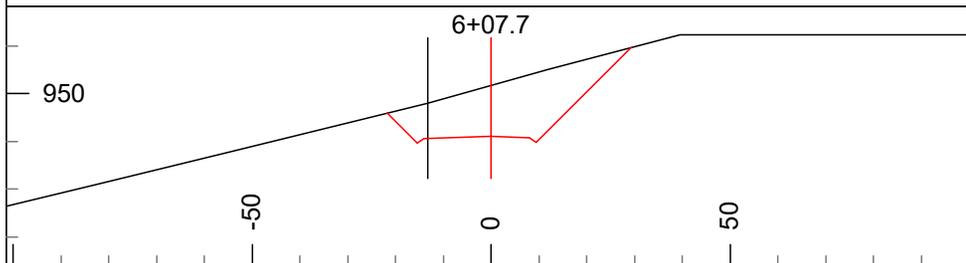
P-Stn: 4+04.6 V.Offset: 0.0 Cut Dp: 0.0
L-Stn: 4+04.6 H. Offset: 0.0 Index: 108



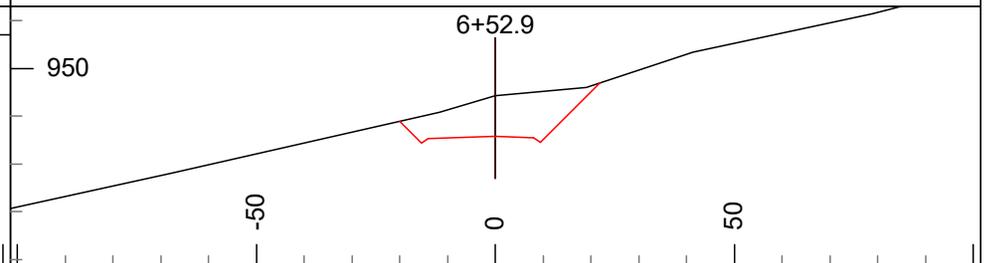
P-Stn: 4+72.0 V.Offset: 0.0 Cut Dp: 0.0
L-Stn: 4+72.0 H. Offset: 0.0 Index: 109



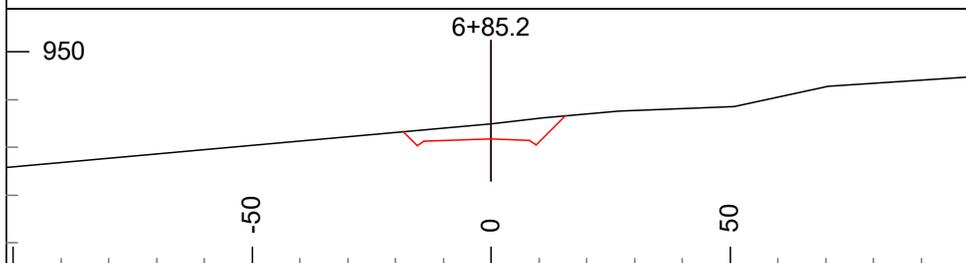
P-Stn: 5+35.6 V.Offset: -2.0 Cut Dp: -2.7
L-Stn: 5+31.7 H. Offset: -13.5 Index: 110



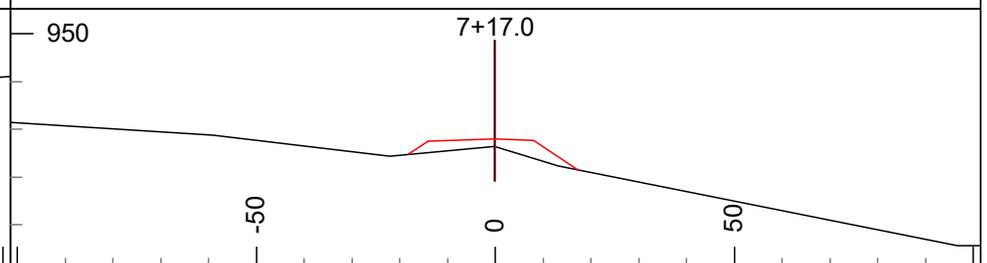
P-Stn: 6+12.6 V.Offset: -6.9 Cut Dp: 10.7
L-Stn: 6+07.7 H. Offset: 12.0 Index:



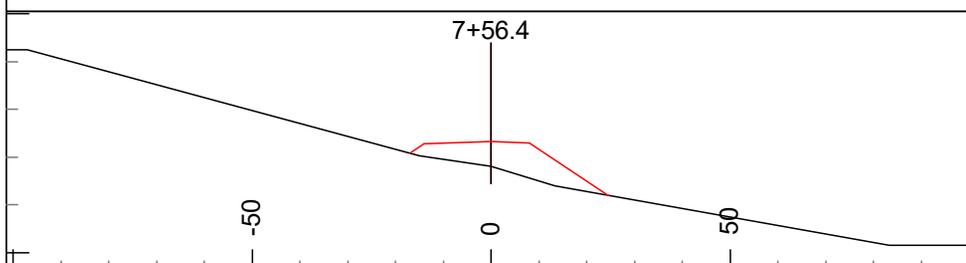
P-Stn: 6+66.7 V.Offset: -8.5 Cut Dp: 8.6
L-Stn: 6+52.9 H. Offset: 0.1 Index: 112



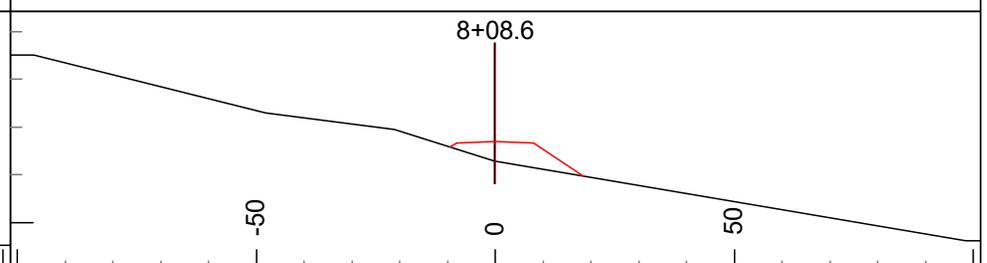
P-Stn: 6+99.0 V.Offset: -3.2 Cut Dp: 3.2
L-Stn: 6+85.2 H. Offset: 0.0 Index: 113



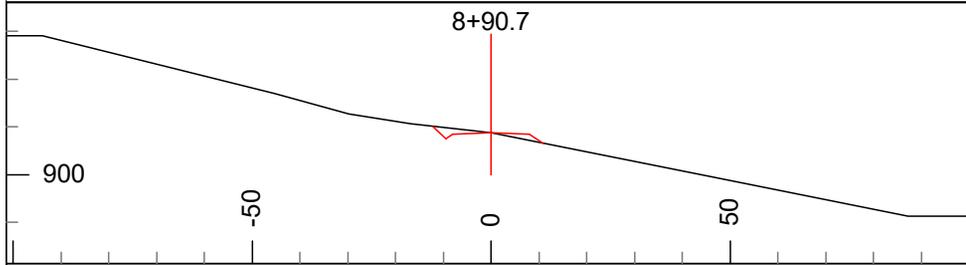
P-Stn: 7+30.9 V.Offset: 1.6 Cut Dp: -1.6
L-Stn: 7+17.0 H. Offset: 0.1 Index: 114



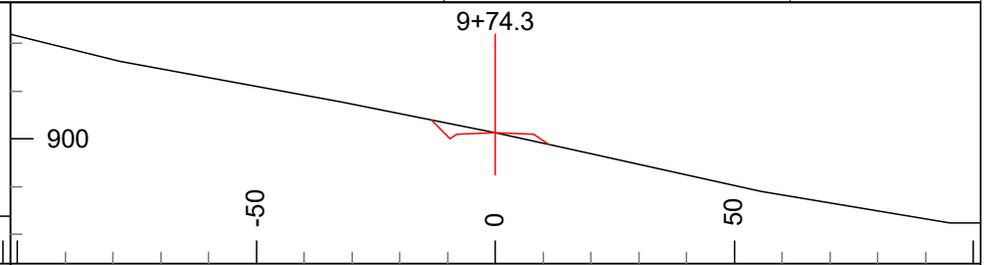
P-Stn: 7+70.2 V.Offset: 5.1 Cut Dp: -5.2
L-Stn: 7+56.4 H. Offset: 0.1 Index: 115



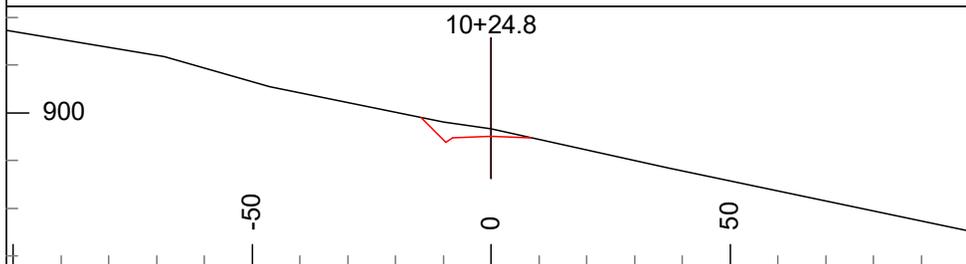
P-Stn: 8+22.4 V.Offset: 4.0 Cut Dp: -4.0
L-Stn: 8+08.6 H. Offset: 0.1 Index: 116



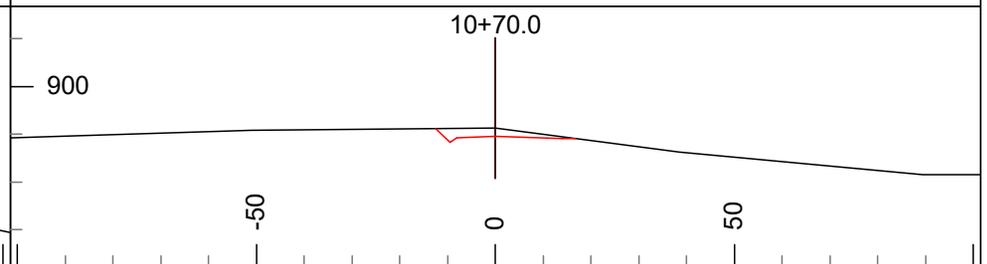
P-Stn: 9+04.5 V.Offset: 0.0 Cut Dp: 0.0
 L-Stn: 8+90.7 H. Offset: 0.0 Index: 117



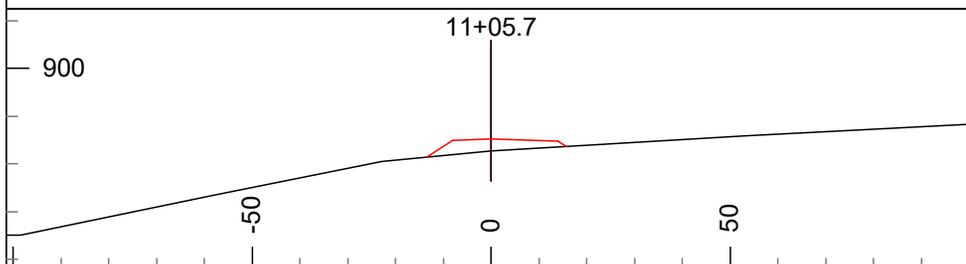
P-Stn: 9+88.0 V.Offset: 0.0 Cut Dp: 0.0
 L-Stn: 9+74.3 H. Offset: 0.0 Index: 118



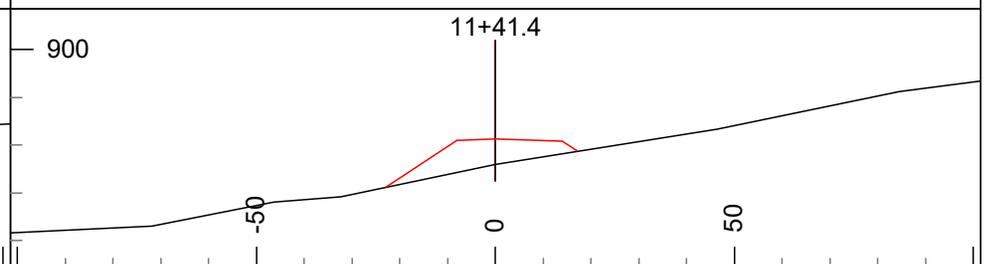
P-Stn: 10+38.5 V.Offset: -1.6 Cut Dp: 1.6
 L-Stn: 10+24.8 H. Offset: 0.0 Index: 119



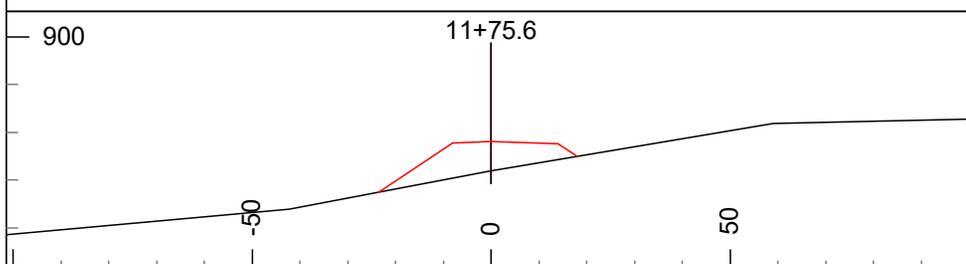
P-Stn: 10+83.8 V.Offset: -1.8 Cut Dp: 1.8
 L-Stn: 10+70.0 H. Offset: 0.0 Index: 120



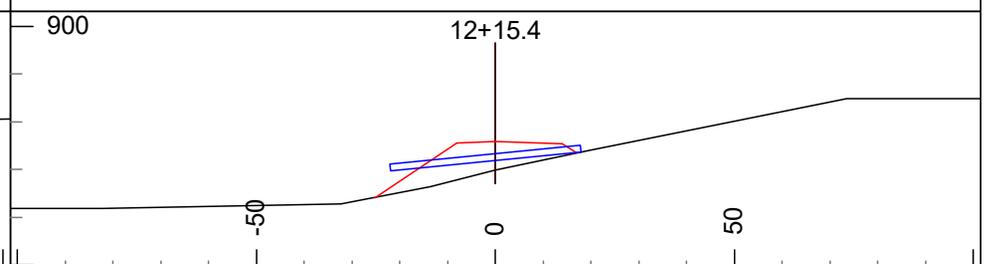
P-Stn: 11+19.5 V.Offset: 2.5 Cut Dp: -2.5
 L-Stn: 11+05.7 H. Offset: 0.0 Index: 121



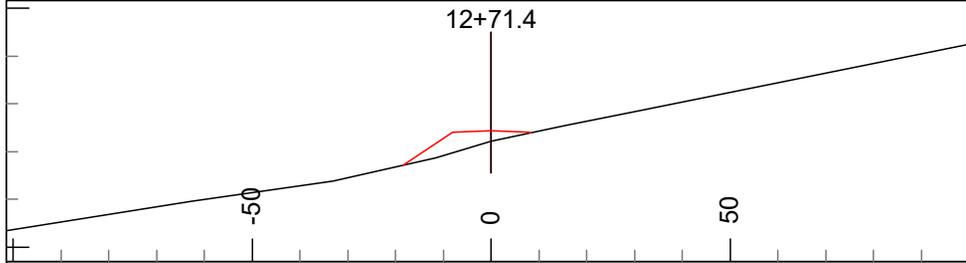
P-Stn: 11+55.2 V.Offset: 5.3 Cut Dp: -5.3
 L-Stn: 11+41.4 H. Offset: 0.0 Index: 122



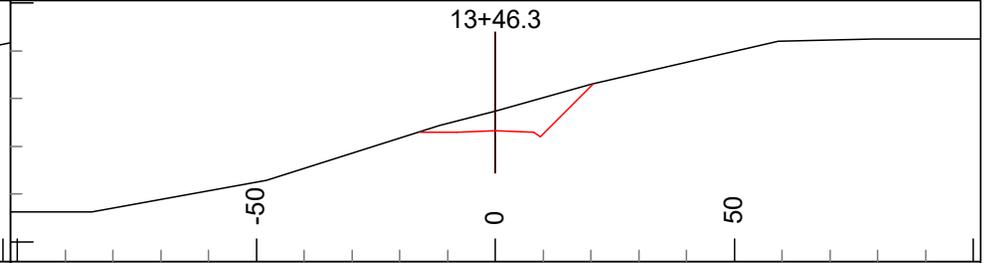
P-Stn: 11+89.4 V.Offset: 6.2 Cut Dp: -6.2
 L-Stn: 11+75.6 H. Offset: 0.0 Index: 123



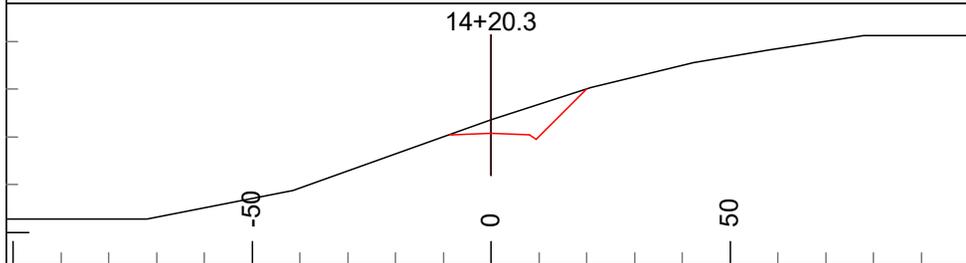
P-Stn: 12+29.2 V.Offset: 6.0 Cut Dp: -6.0
 L-Stn: 12+15.4 H. Offset: 0.0 Index: 124



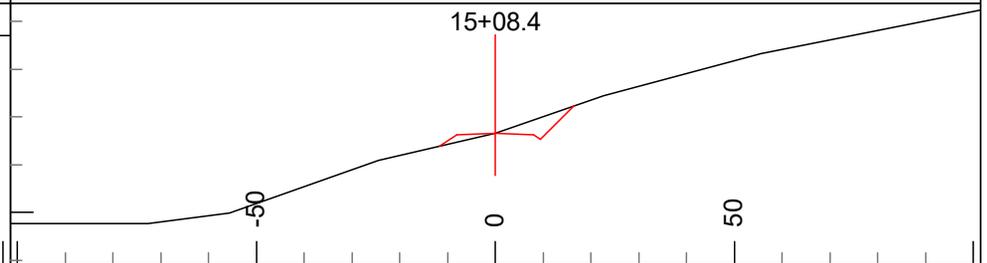
P-Stn: 12+85.3 V.Offset: 2.3 Cut Dp: -2.3
 L-Stn: 12+71.4 H. Offset: 0.0 Index: 125



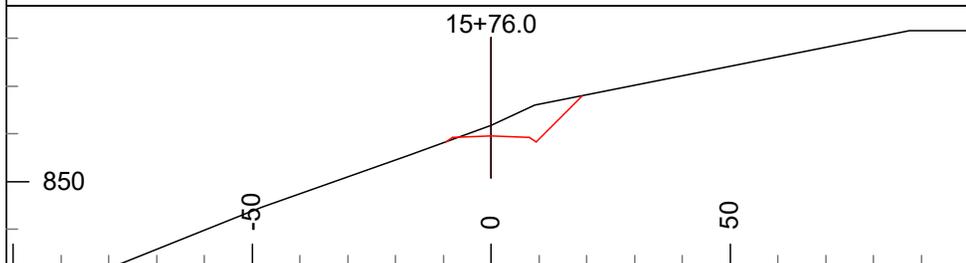
P-Stn: 13+60.1 V.Offset: -4.0 Cut Dp: 4.0
 L-Stn: 13+46.3 H. Offset: 0.0 Index: 126



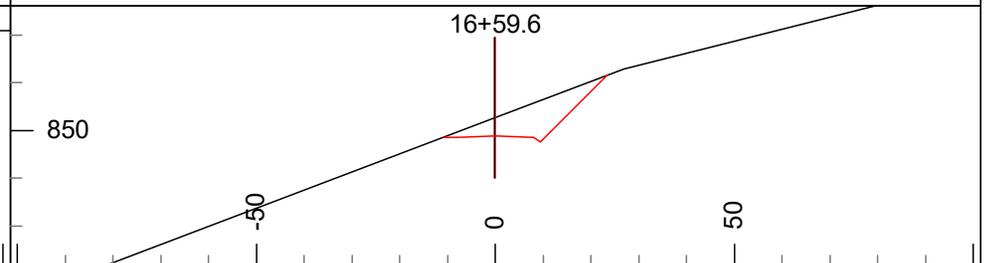
P-Stn: 14+34.1 V.Offset: -2.9 Cut Dp: 2.9
 L-Stn: 14+20.3 H. Offset: 0.0 Index: 127



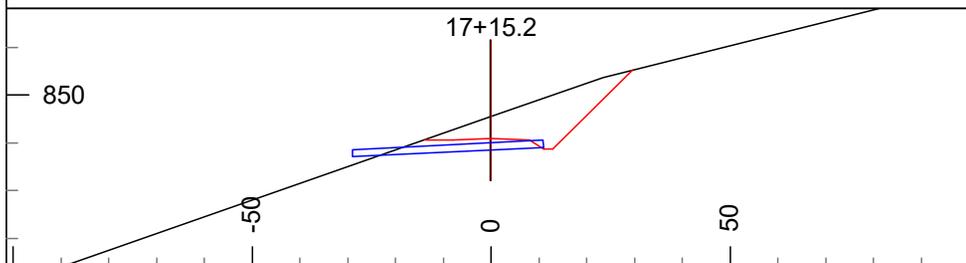
P-Stn: 15+22.2 V.Offset: 0.0 Cut Dp: 0.0
 L-Stn: 15+08.4 H. Offset: 0.0 Index: 128



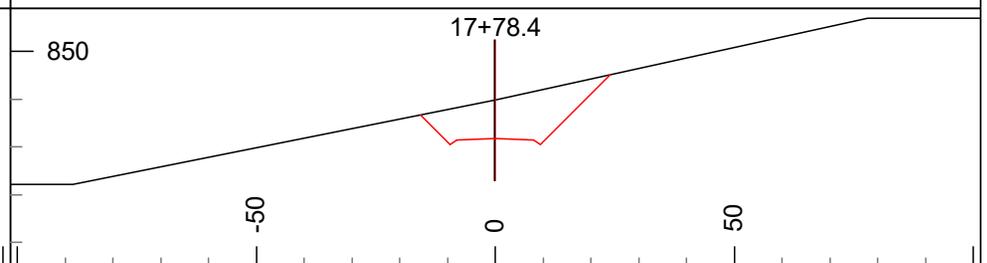
P-Stn: 15+89.9 V.Offset: -2.3 Cut Dp: 2.3
 L-Stn: 15+76.0 H. Offset: 0.0 Index: 129



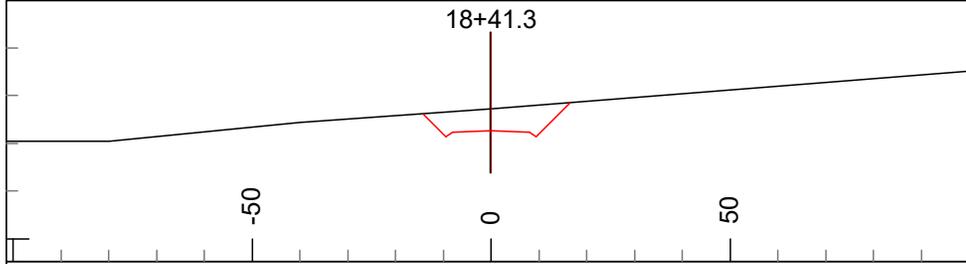
P-Stn: 16+73.5 V.Offset: -3.8 Cut Dp: 3.8
 L-Stn: 16+59.6 H. Offset: 0.2 Index: 130



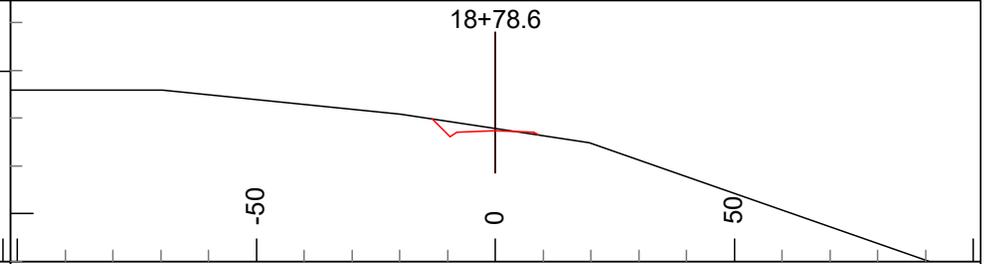
P-Stn: 17+29.1 V.Offset: -4.6 Cut Dp: 4.6
 L-Stn: 17+15.2 H. Offset: 0.1 Index: 131



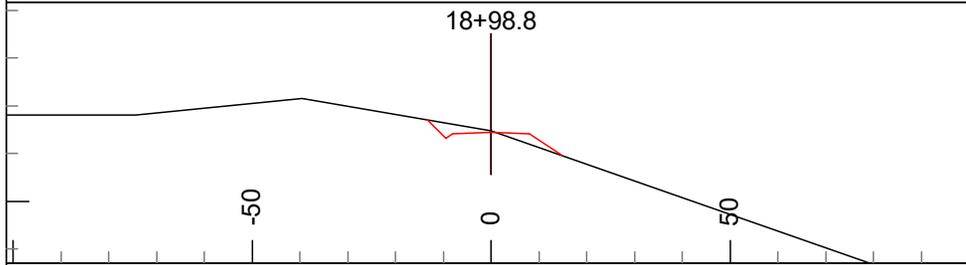
P-Stn: 17+92.2 V.Offset: -8.0 Cut Dp: 8.0
 L-Stn: 17+78.4 H. Offset: 0.2 Index: 132



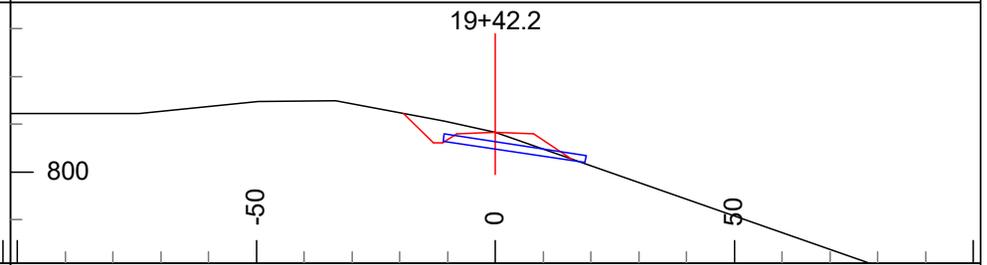
P-Stn: 18+55.1 V.Offset: -4.5 Cut Dp: 4.5
 L-Stn: 18+41.3 H. Offset: 0.1 Index: 133



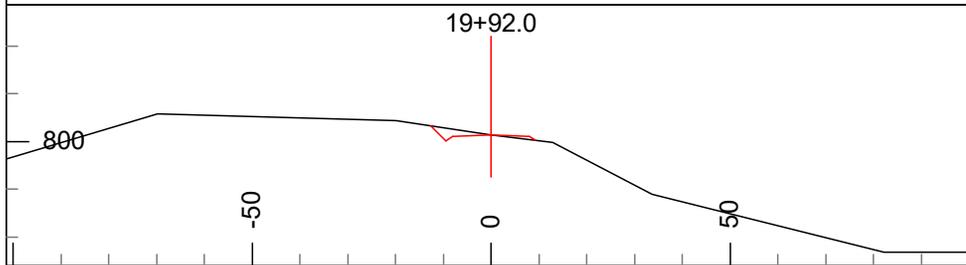
P-Stn: 18+92.4 V.Offset: -0.5 Cut Dp: 0.5
 L-Stn: 18+78.6 H. Offset: 0.0 Index: 134



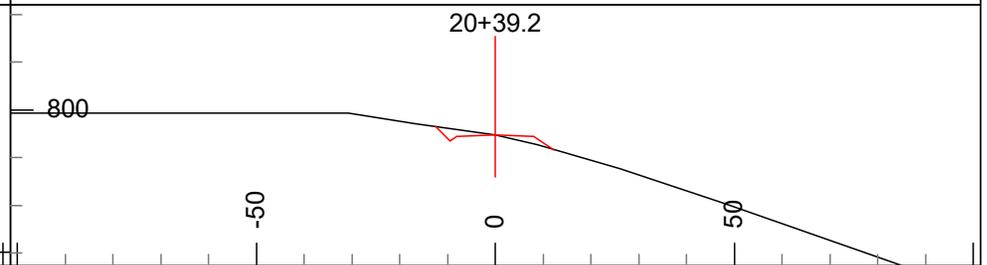
P-Stn: 19+12.6 V.Offset: -0.3 Cut Dp: 0.3
 L-Stn: 18+98.8 H. Offset: 0.0 Index: 135



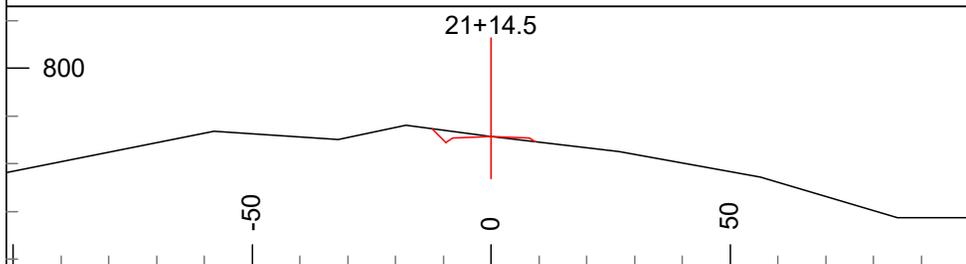
P-Stn: 19+55.9 V.Offset: 0.0 Cut Dp: 0.0
 L-Stn: 19+42.2 H. Offset: 0.0 Index: 136



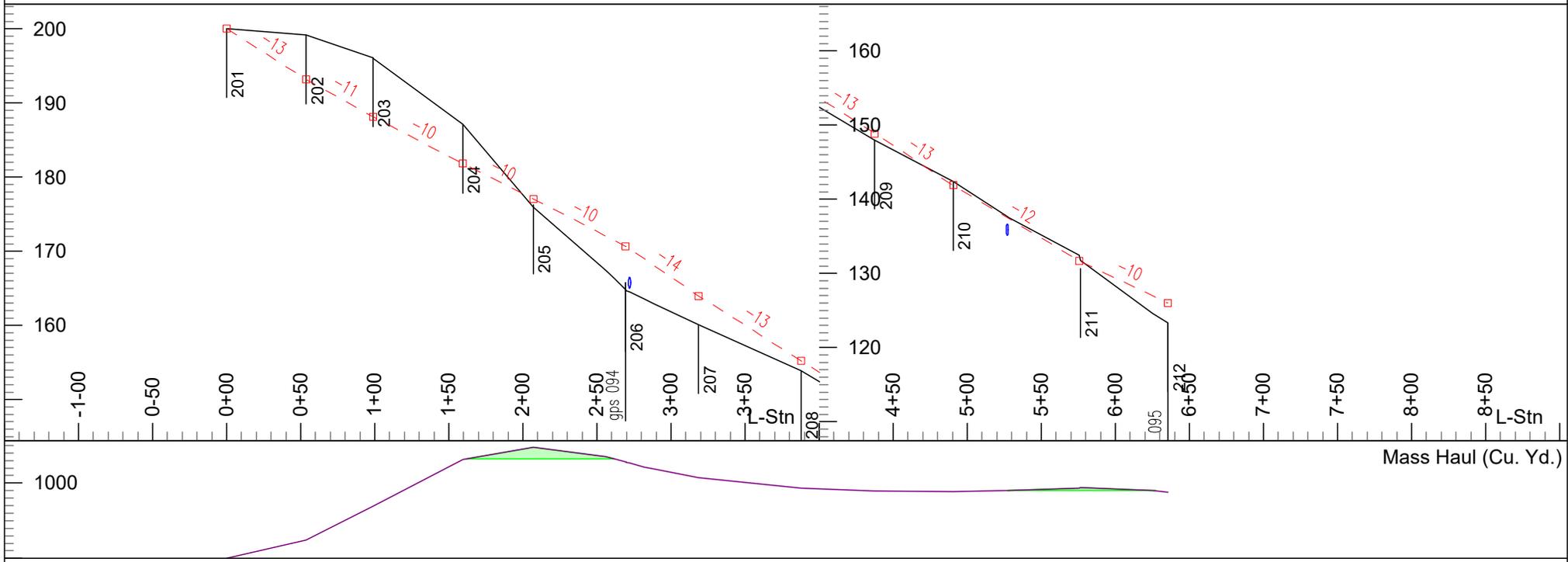
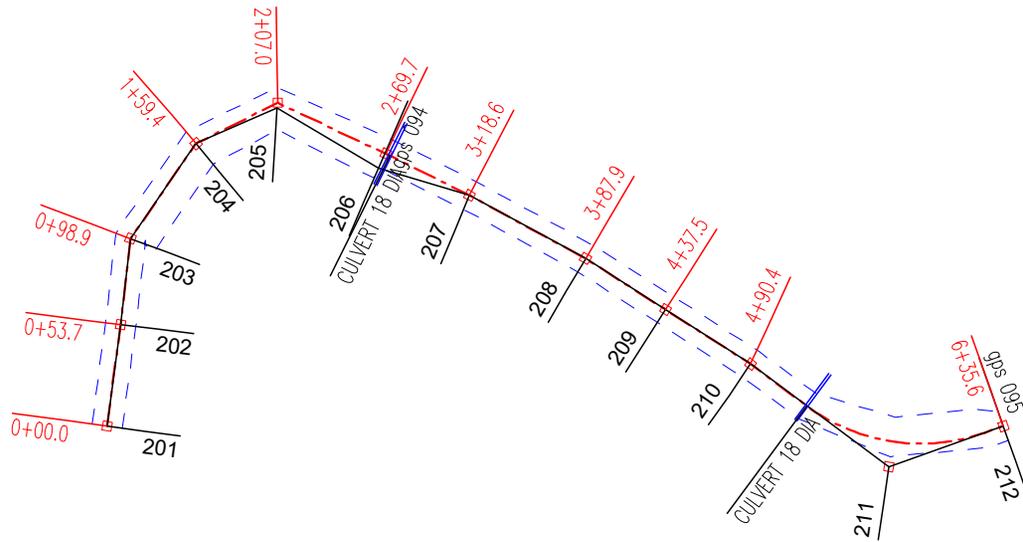
P-Stn: 20+05.8 V.Offset: 0.0 Cut Dp: 0.0
 L-Stn: 19+92.0 H. Offset: 0.0 Index: 137



P-Stn: 20+53.0 V.Offset: 0.0 Cut Dp: 0.0
 L-Stn: 20+39.2 H. Offset: 0.0 Index: 138



P-Stn: 21+28.3 V.Offset: 0.0 Cut Dp: 0.0
 L-Stn: 21+14.5 H. Offset: 0.0 Index: 139

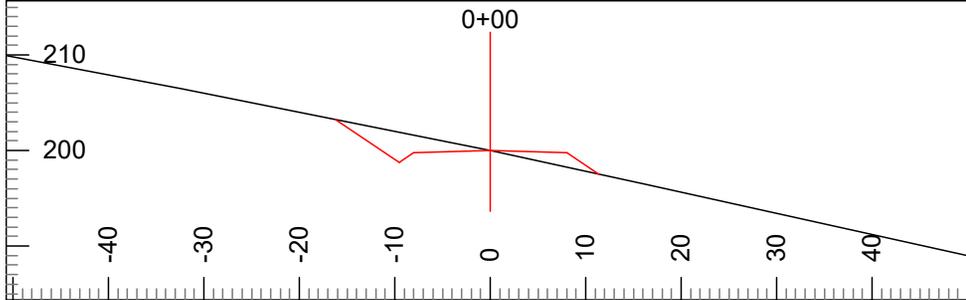


Ram's Horn Timber Sale
 B-1430A
 Contract #: 30-093253

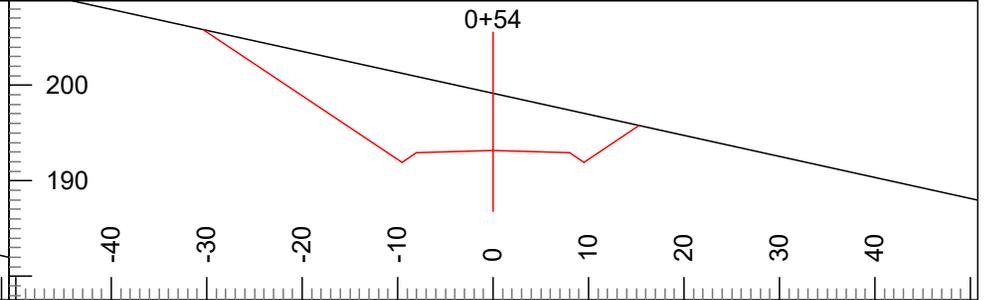
Washington State Department of Natural Resources
 South Puget Sound Region

Plan Scale 1:1200
 Profile Vert Scale 1:240
 Profile Horz Scale 1:1200

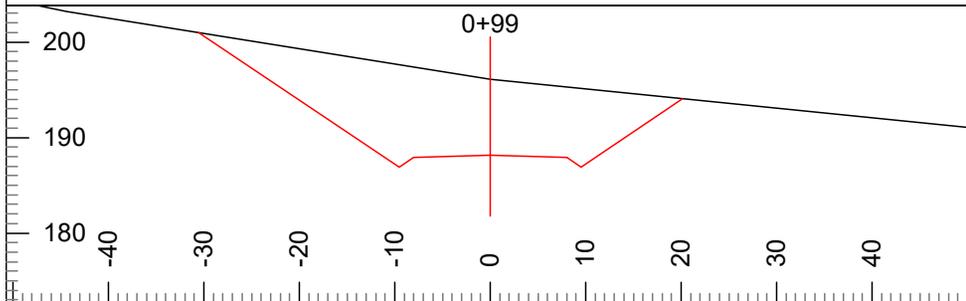
Engineer: C. Vandehey
 16/05/12
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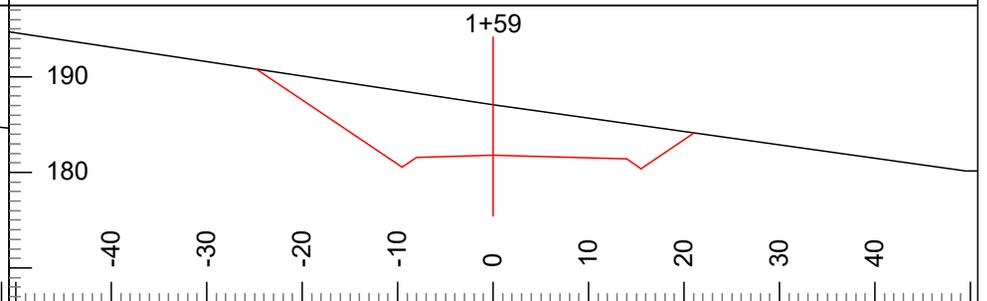
P-Stn: 0+00 L-Stn: 0+00 V.Offset: 0 H. Offset: 0 Cut Dp: 0 Index: 201



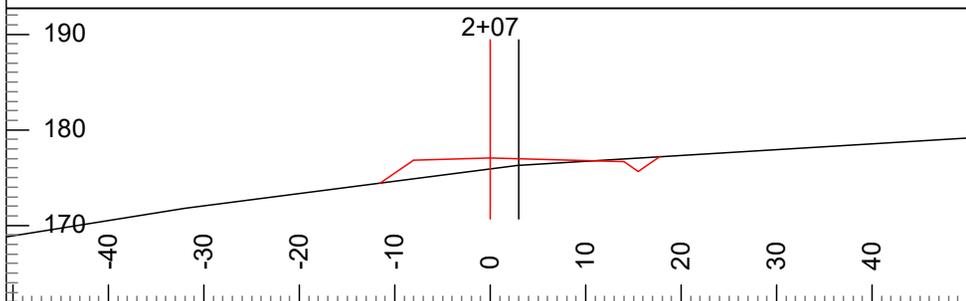
P-Stn: 0+54 L-Stn: 0+54 V.Offset: -6 H. Offset: 0 Cut Dp: 6 Index: 202



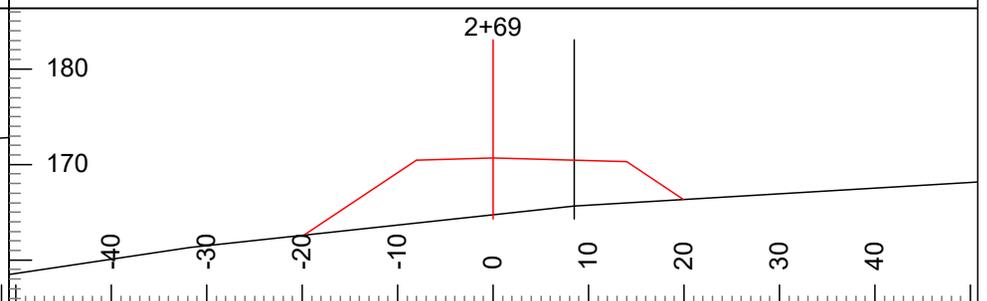
P-Stn: 0+99 L-Stn: 0+99 V.Offset: -8 H. Offset: 0 Cut Dp: 8 Index: 203



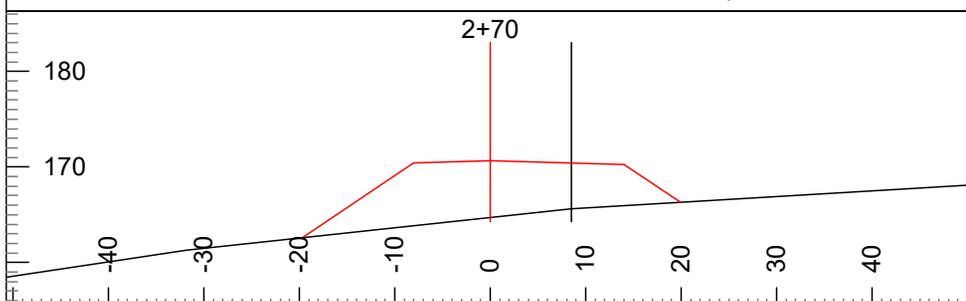
P-Stn: 1+59 L-Stn: 1+59 V.Offset: -5 H. Offset: 0 Cut Dp: 5 Index: 204



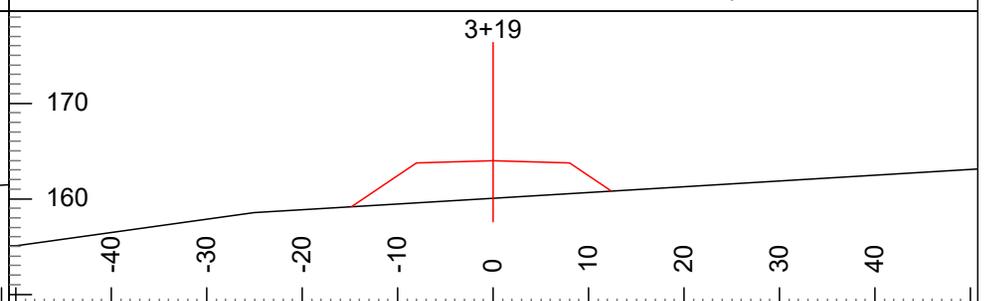
P-Stn: 2+06 L-Stn: 2+07 V.Offset: 1 H. Offset: -3 Cut Dp: -1 Index: 205



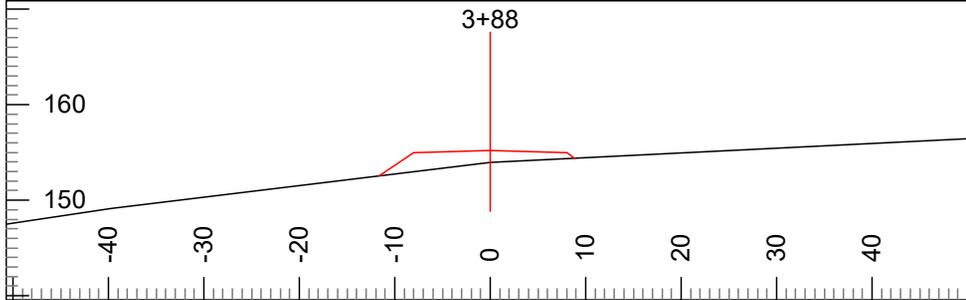
P-Stn: 2+69 L-Stn: 2+69 V.Offset: 5 H. Offset: -8 Cut Dp: -6 Index:



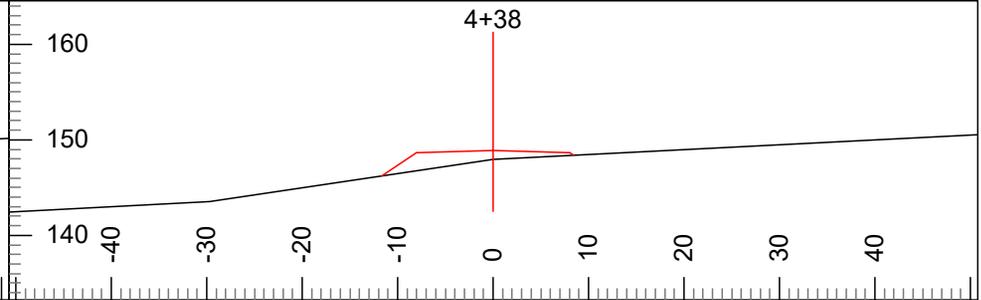
P-Stn: 2+69 L-Stn: 2+70 V.Offset: 5 H. Offset: -8 Cut Dp: -6 Index:



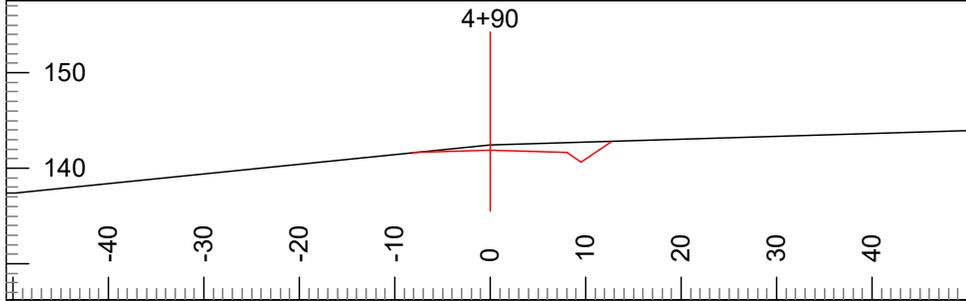
P-Stn: 3+17 L-Stn: 3+19 V.Offset: 4 H. Offset: 0 Cut Dp: -4 Index: 207



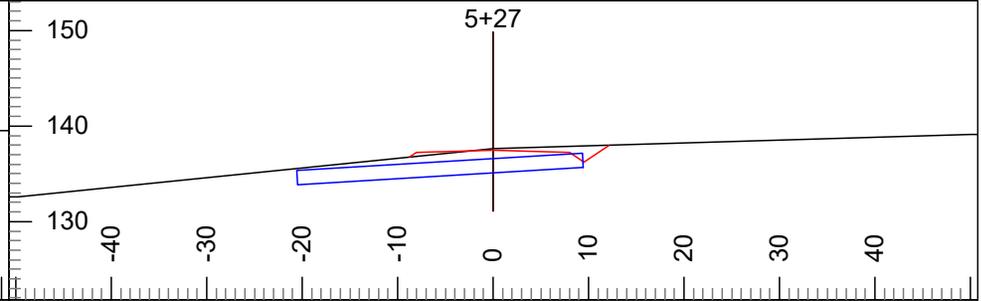
P-Stn: 3+86 L-Stn: 3+88 V.Offset: 1 H. Offset: 0 Cut Dp: -1 Index: 208



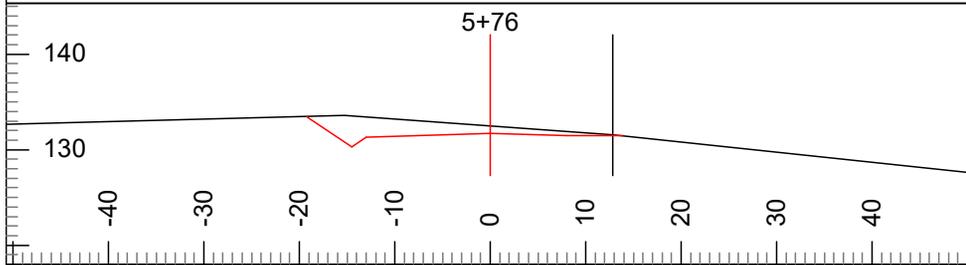
P-Stn: 4+36 L-Stn: 4+38 V.Offset: 1 H. Offset: 0 Cut Dp: -1 Index: 209



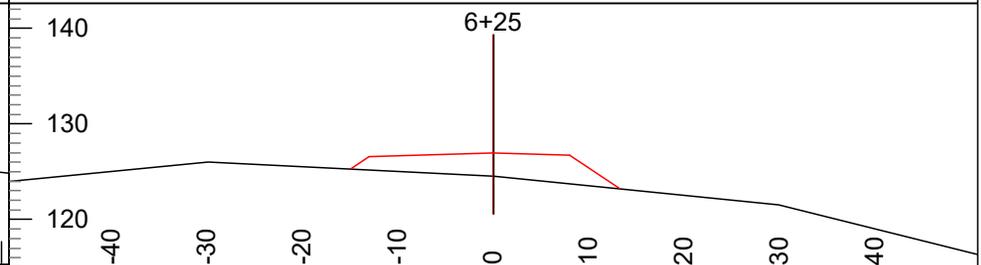
P-Stn: 4+89 L-Stn: 4+90 V.Offset: -1 H. Offset: 0 Cut Dp: 1 Index: 210



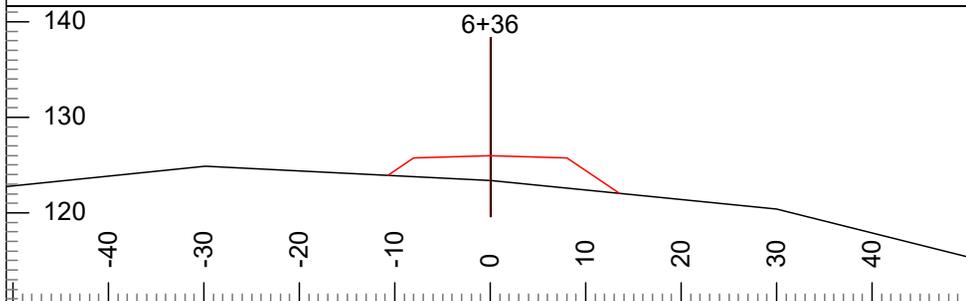
P-Stn: 5+26 L-Stn: 5+27 V.Offset: 0 H. Offset: 0 Cut Dp: 0 Index:



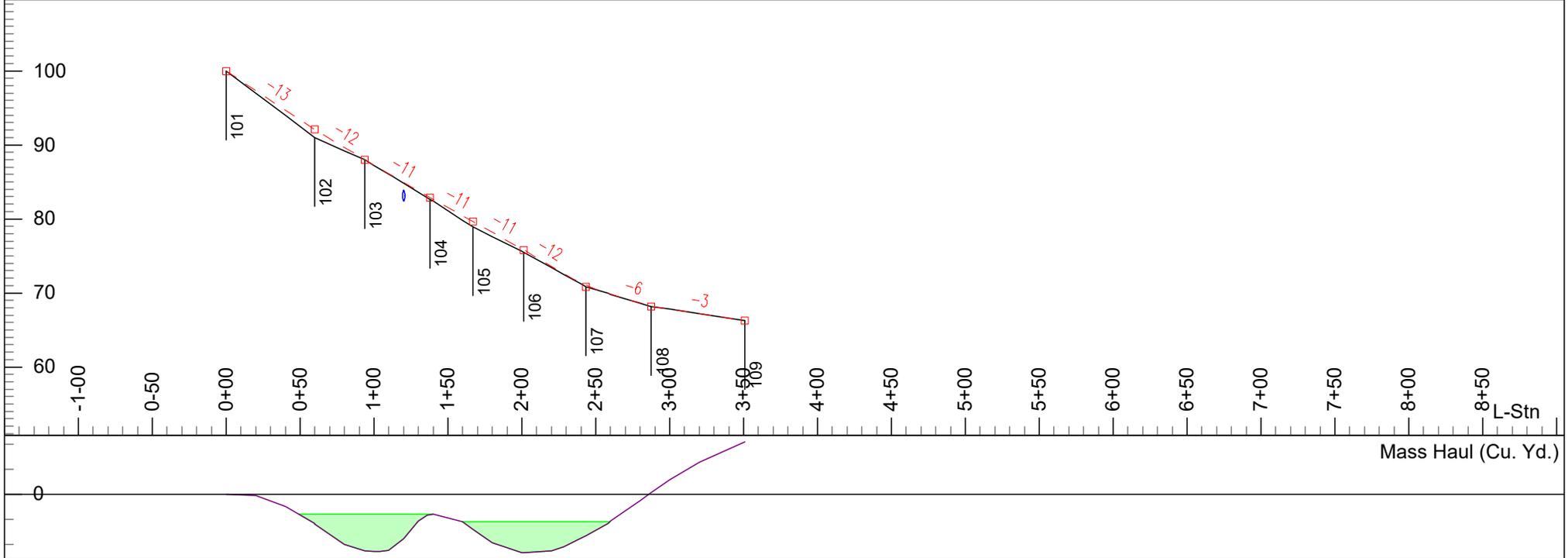
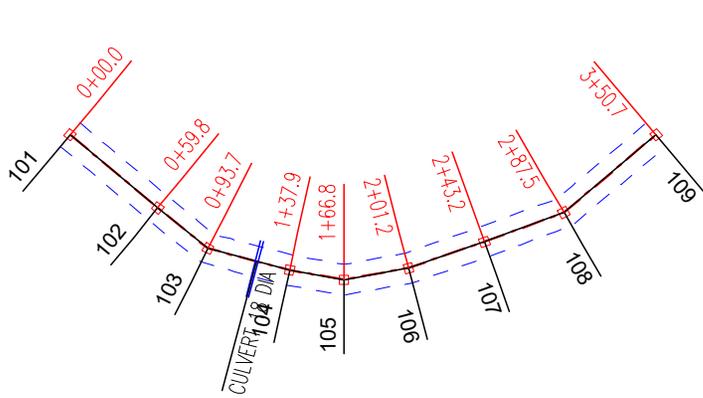
P-Stn: 5+72 V.Offset: 0 Cut Dp: 1
L-Stn: 5+76 H. Offset: -11 Index:



P-Stn: 6+32 L-Stn: 6+25 V.Offset: 2 H. Offset: 0 Cut Dp: -2 Index:



P-Stn: 6+43 L-Stn: 6+36 V.Offset: 3 H. Offset: 0 Cut Dp: -3 Index: 212

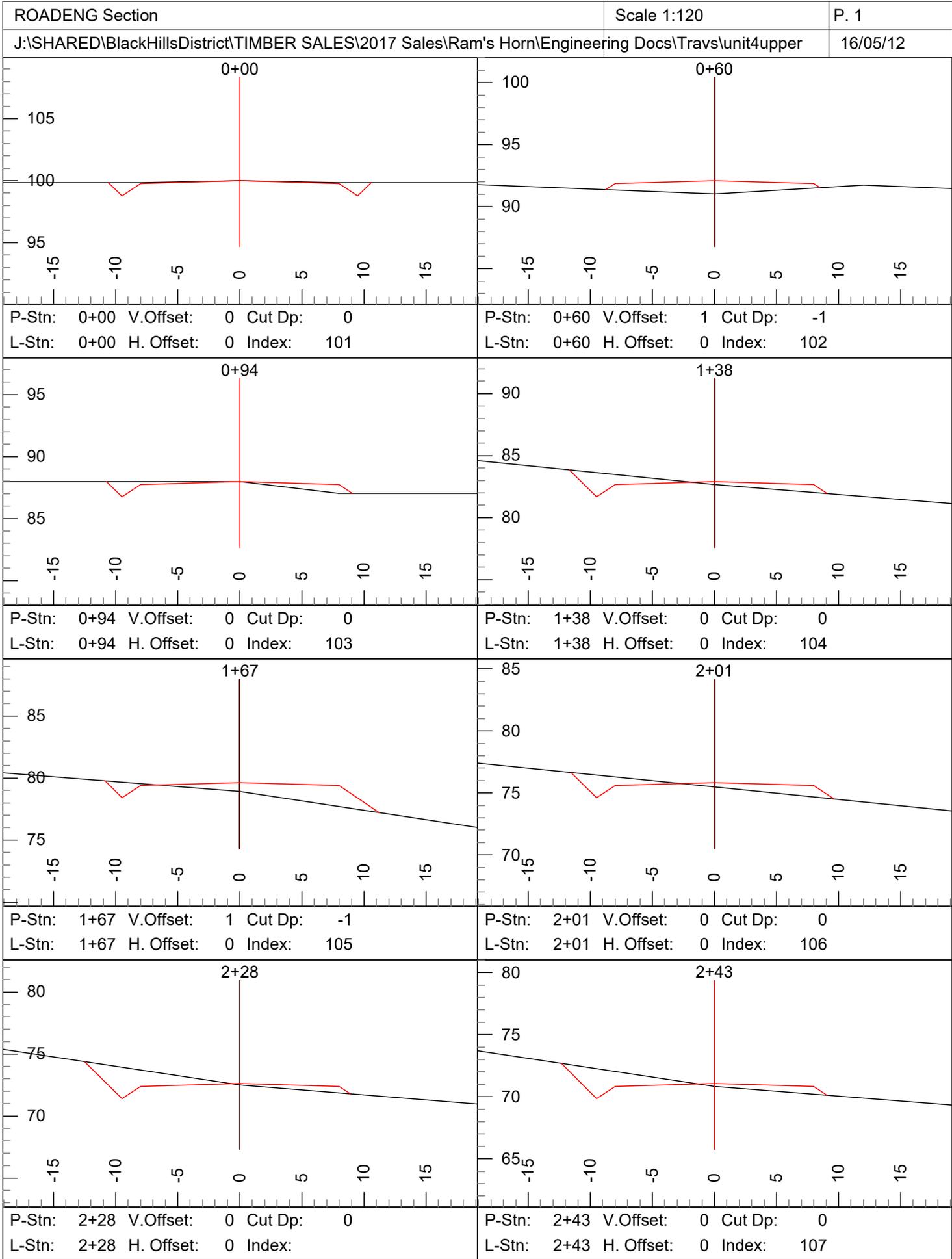


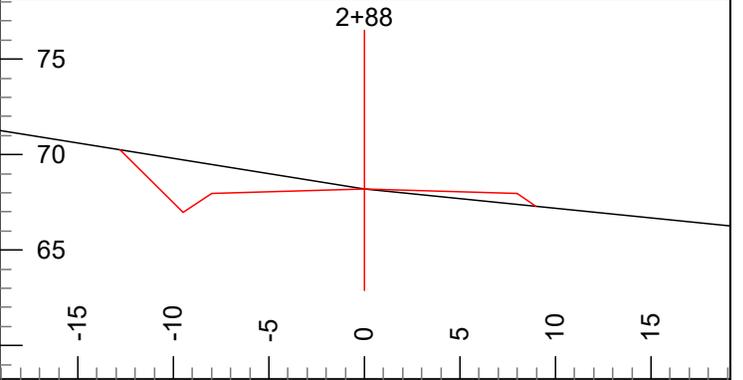
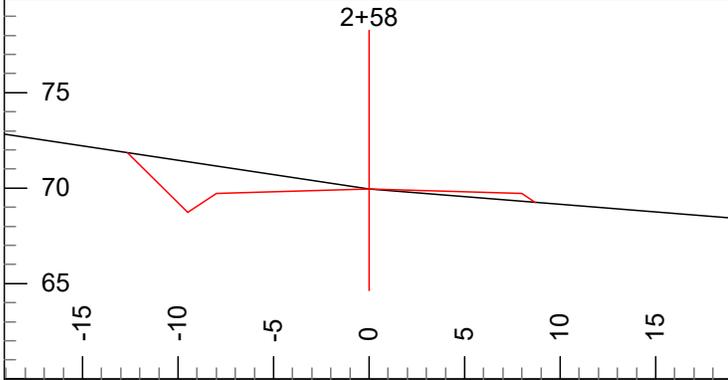
Ram's Horn Timber Sale
 B-1470
 Contract #: 30-093253

Washington State Department of Natural Resources
 South Puget Sound Region

Plan Scale 1:1200
 Profile Vert Scale 1:240
 Profile Horz Scale 1:1200

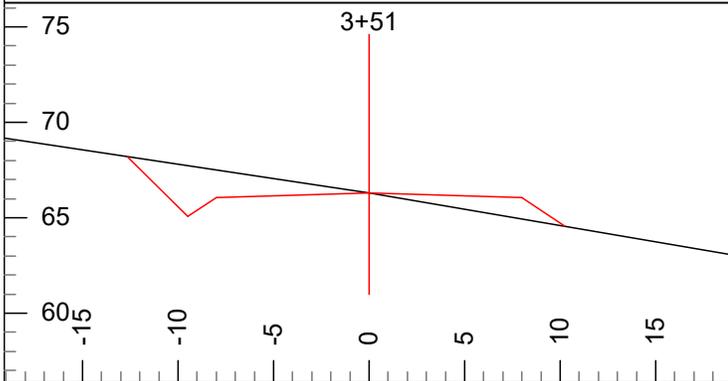
Engineer: C. Vandehey
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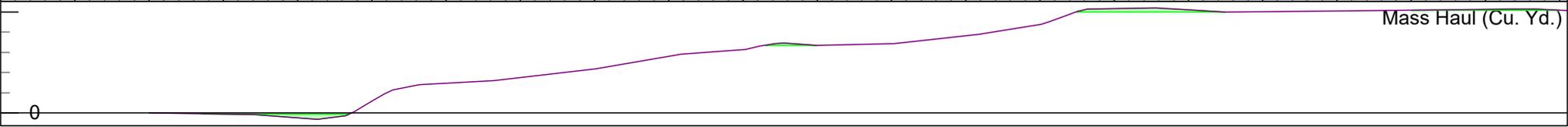
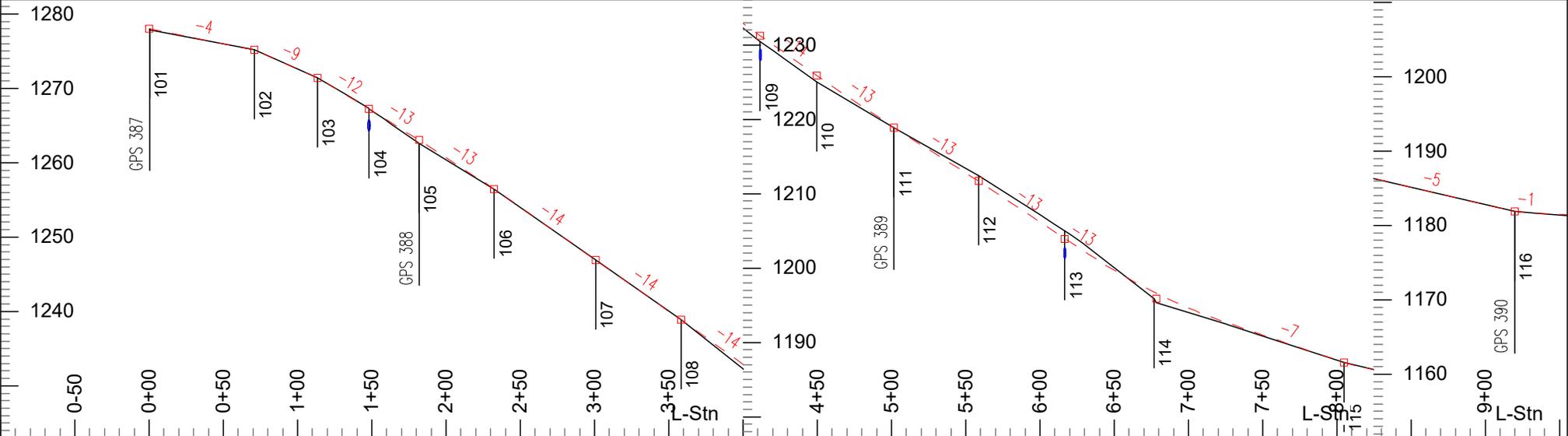
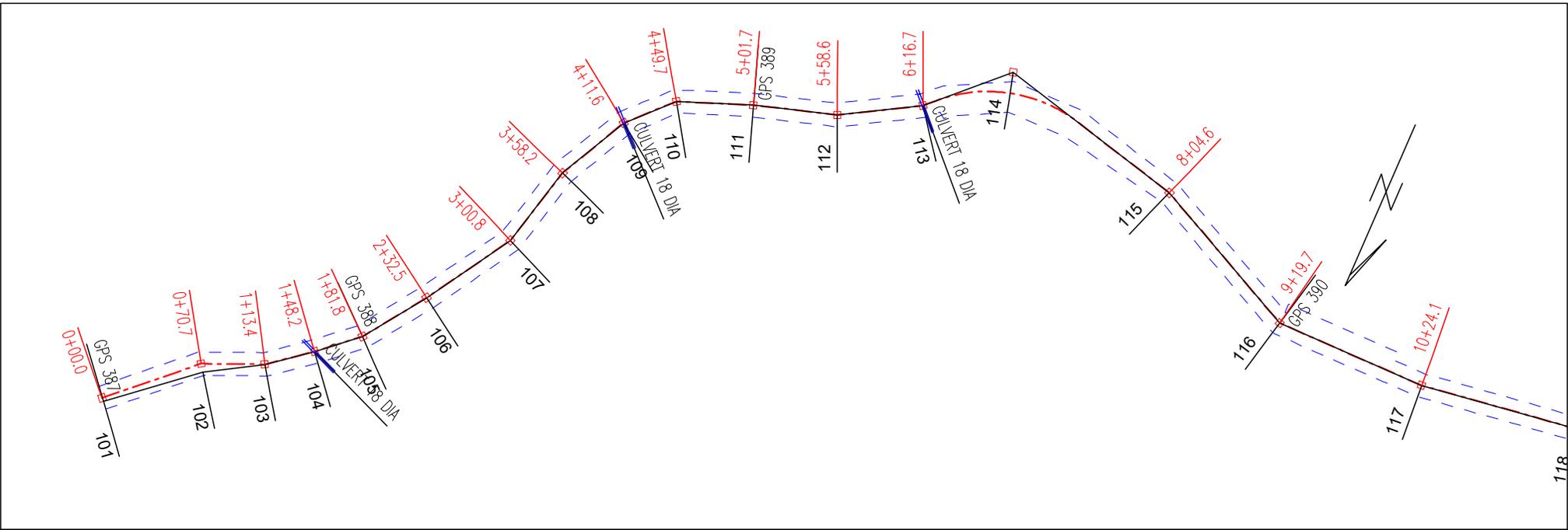


P-Stn: 2+58 V.Offset: 0 Cut Dp: 0
 L-Stn: 2+58 H. Offset: 0 Index:

P-Stn: 2+88 V.Offset: 0 Cut Dp: 0
 L-Stn: 2+88 H. Offset: 0 Index: 108



P-Stn: 3+51 V.Offset: 0 Cut Dp: 0
 L-Stn: 3+51 H. Offset: 0 Index: 109

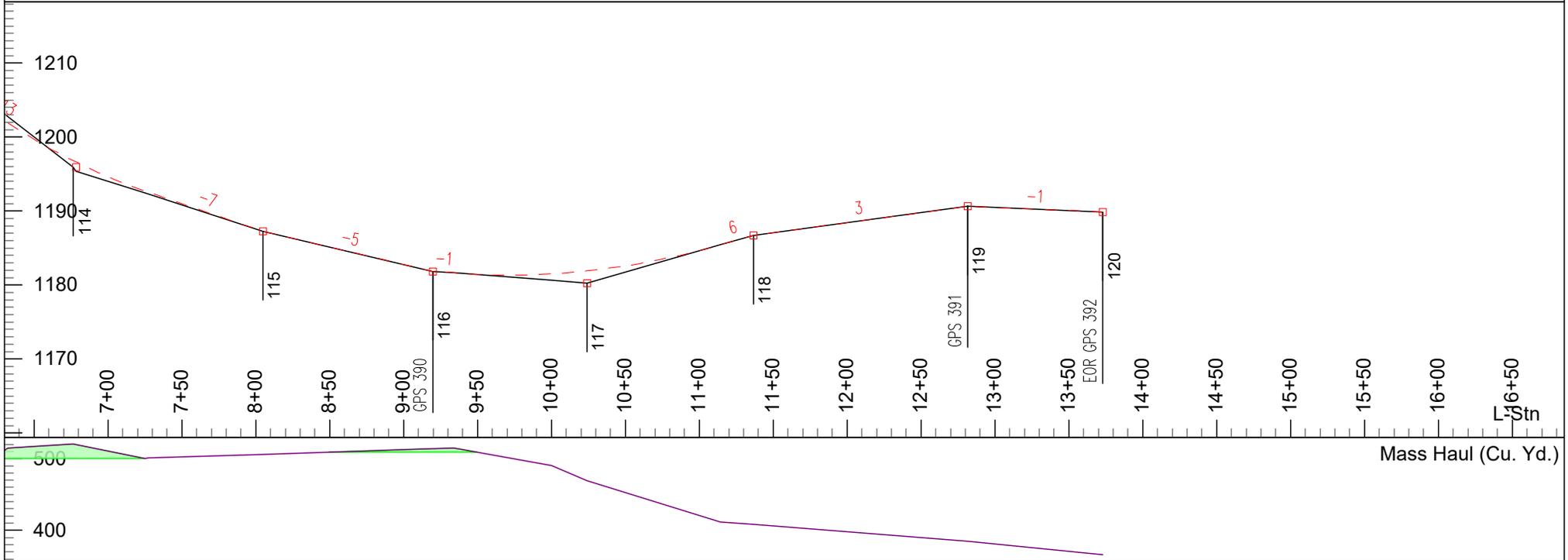
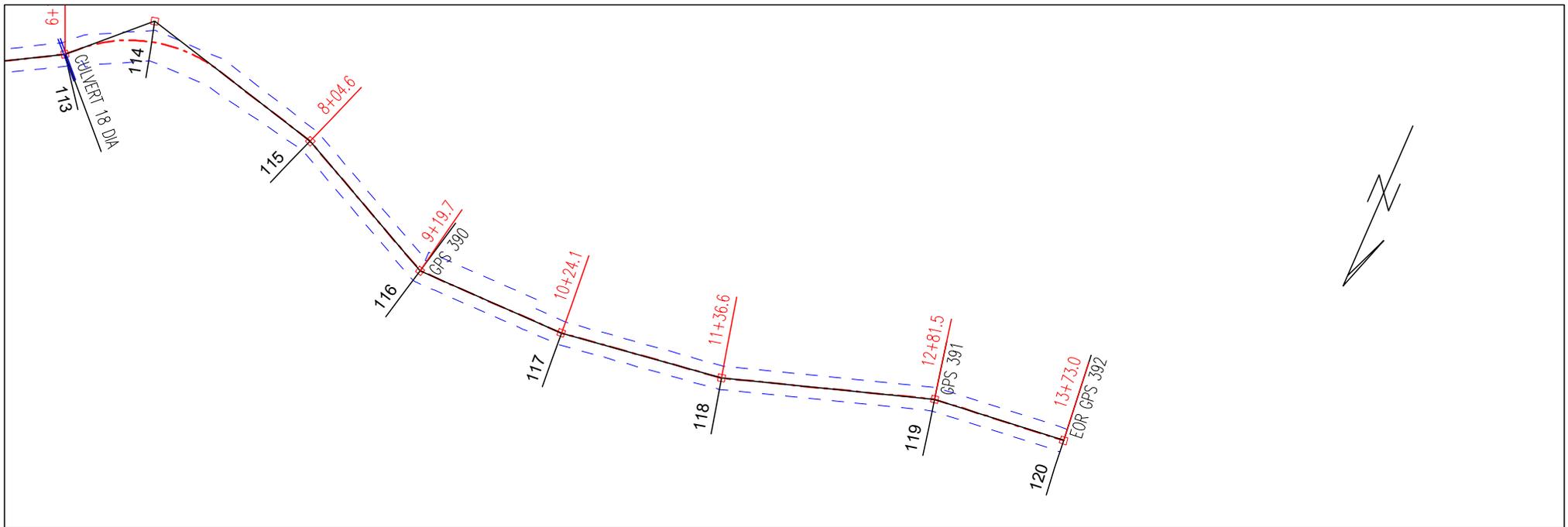


Ram's Horn Timber Sale
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 Contract #: 30-093253

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 South Puget Sound Region

Plan Scale 1:1200
 Profile Vert Scale 1:240
 Profile Horz Scale 1:1200

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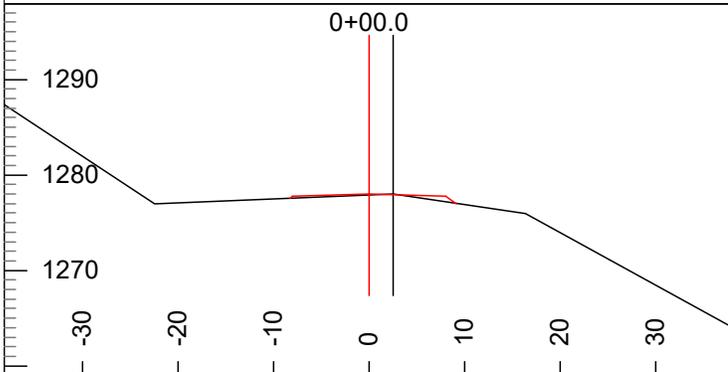
Ram's Horn Timber Sale
 B-1492
 Contract #: 30-093253

Washington State Department of Natural Resources
 South Puget Sound Region

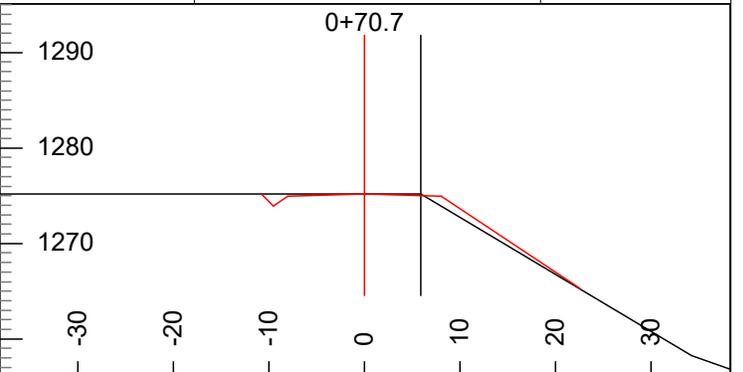
Plan Scale 1:1200
 Profile Vert Scale 1:240
 Profile Horz Scale 1:1200

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 16/05/12
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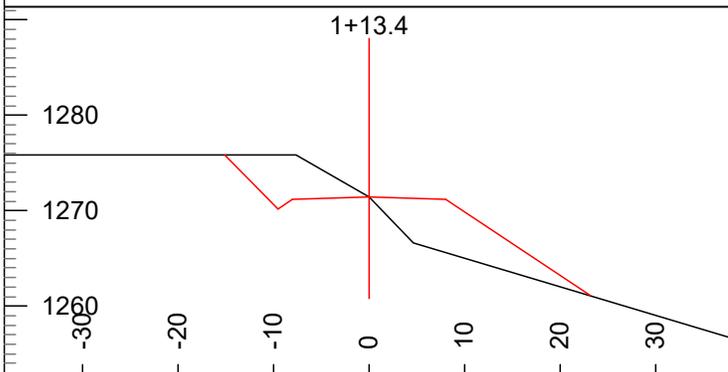
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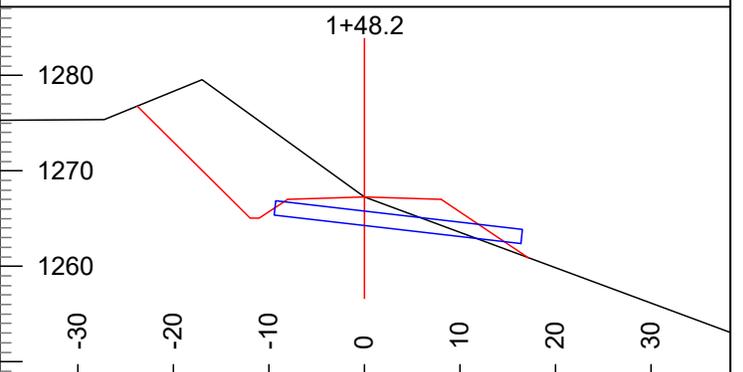
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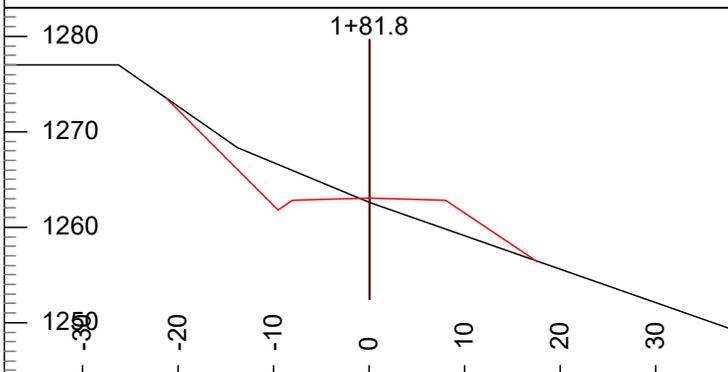
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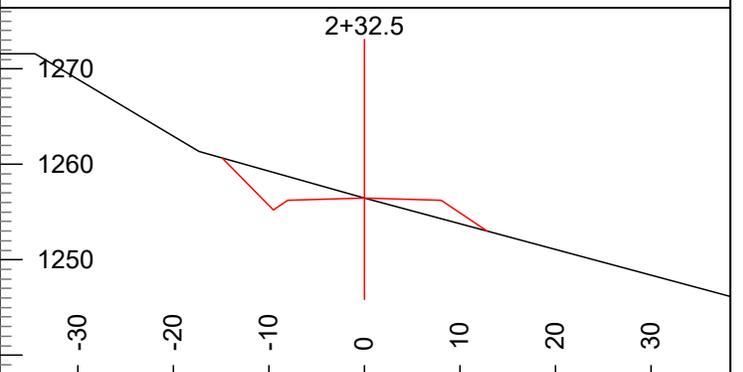
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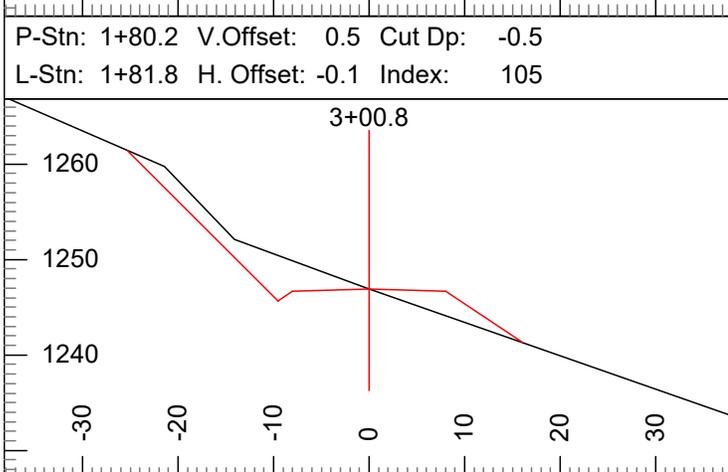
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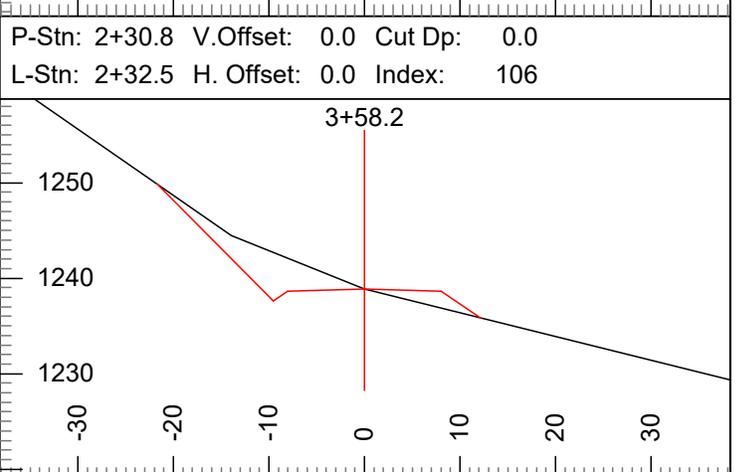
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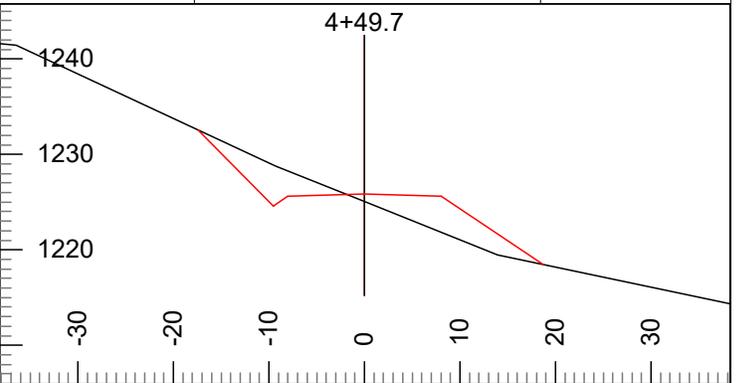
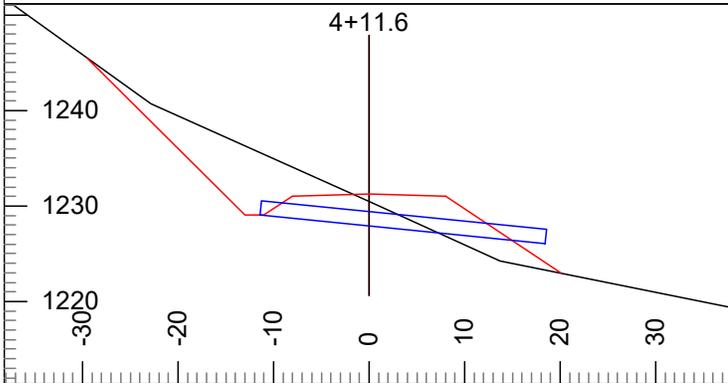


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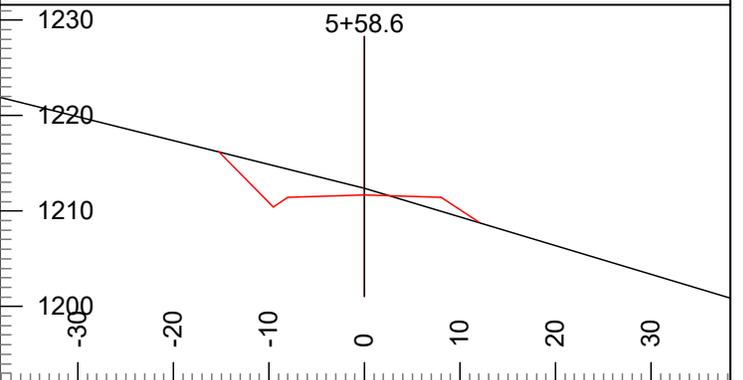
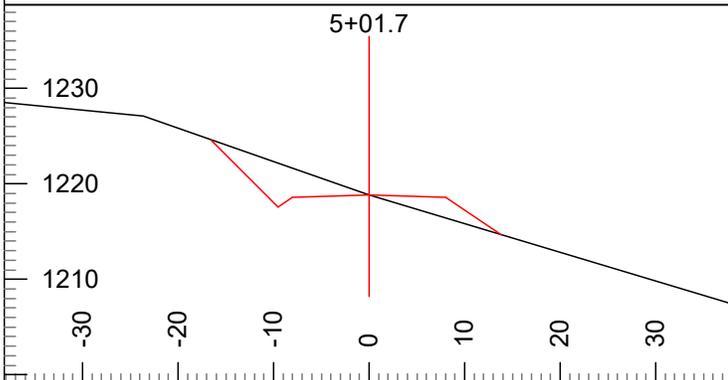
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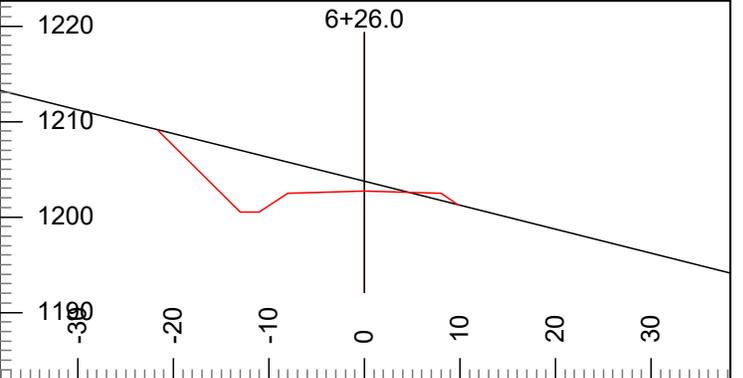
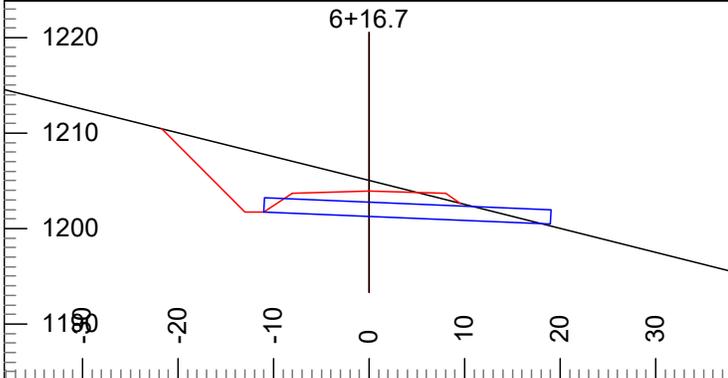
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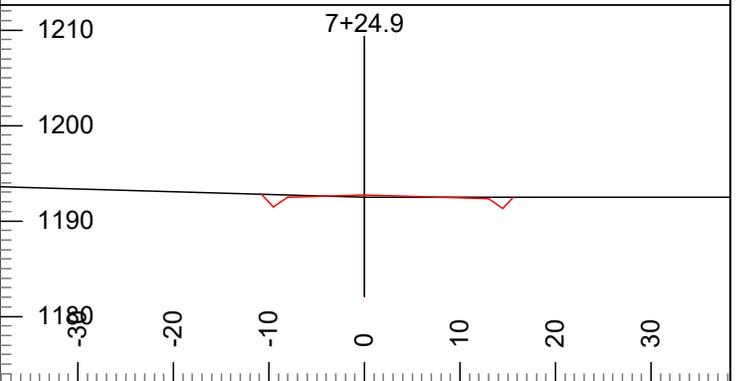
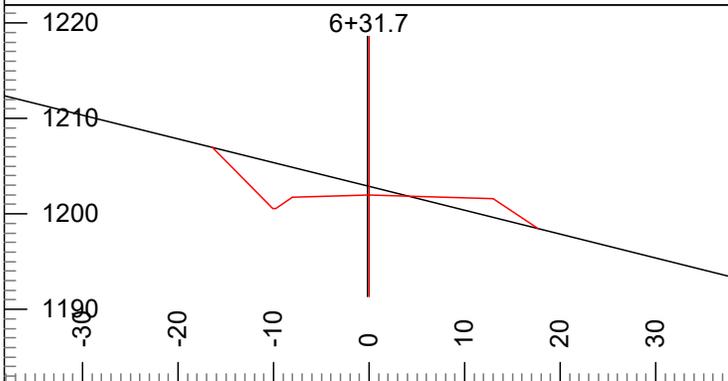
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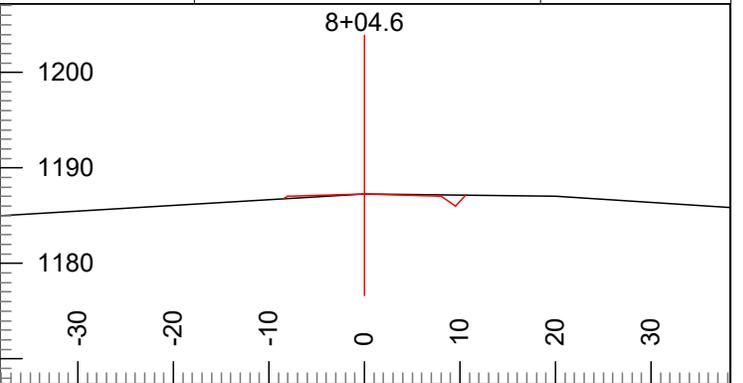
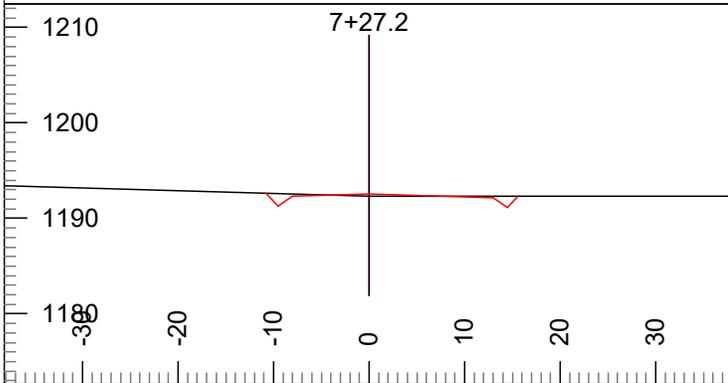
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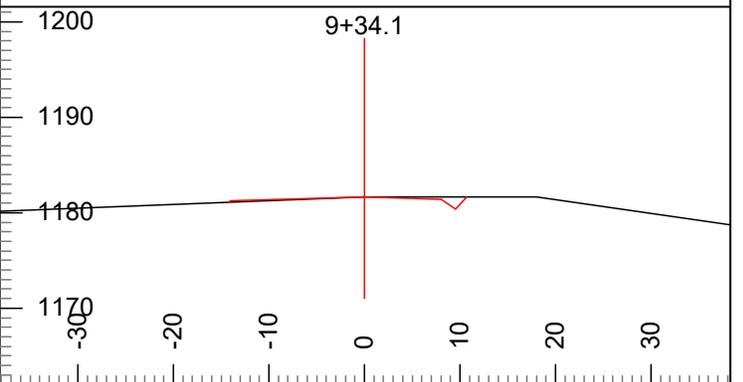
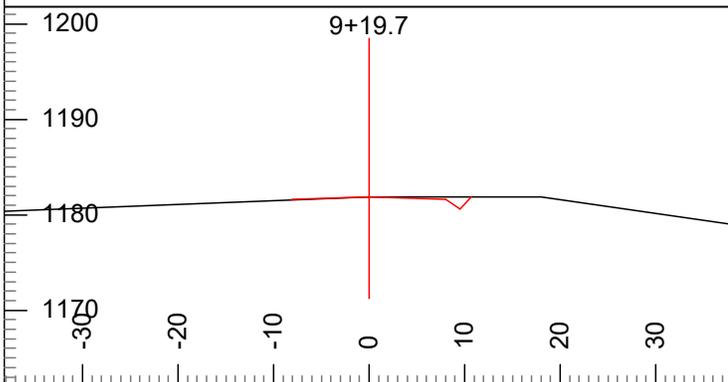
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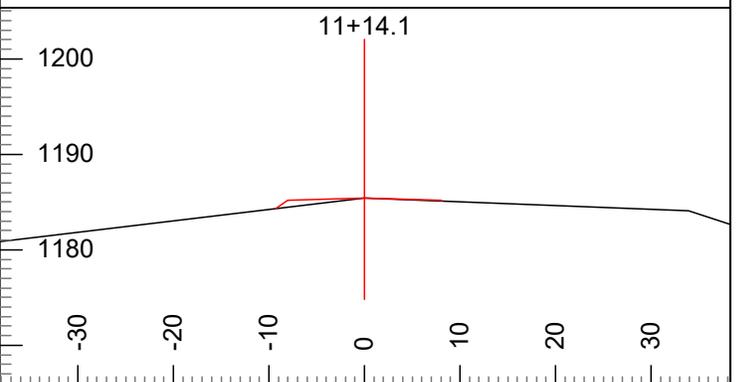
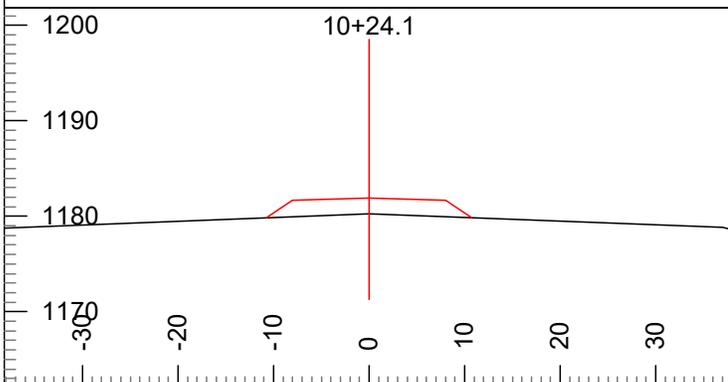
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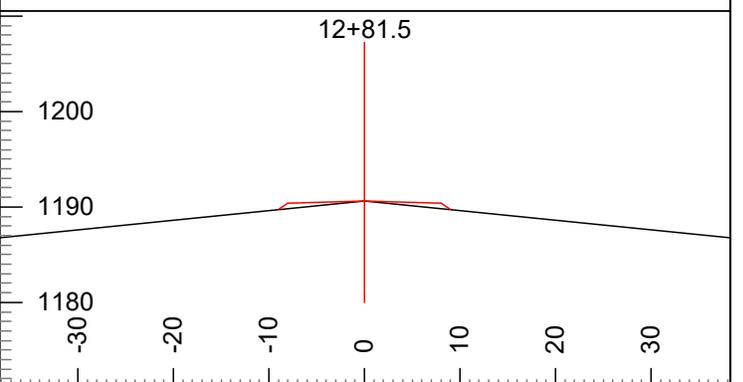
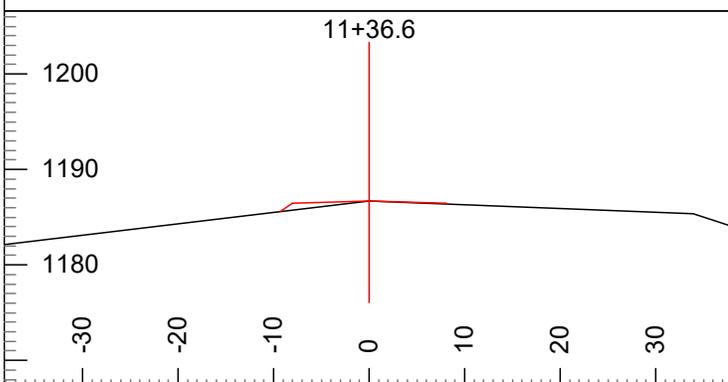
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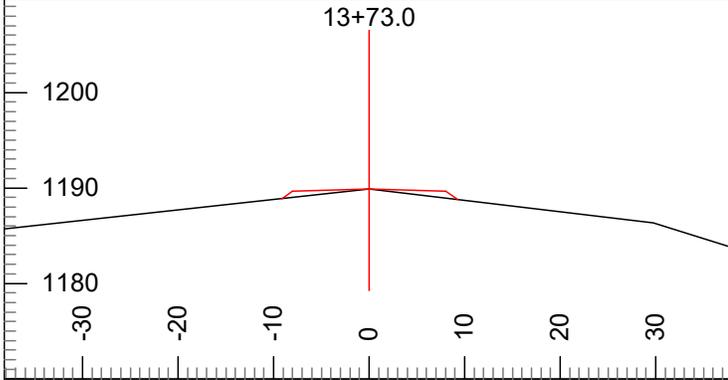
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 L-Stn: 11+36.6 H. Offset: 0.0 Index: 118

P-Stn: 12+89.6 V.Offset: 0.0 Cut Dp: 0.0
 L-Stn: 12+81.5 H. Offset: 0.0 Index: 119



P-Stn:	13+81.1	V.Offset:	0.0	Cut Dp:	0.0
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STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES
SOUTH PUGET SOUND REGION

LARCH PILLAR QUARRY DEVELOPMENT PLAN

SW ¼, Section 2, Township 17 North, Range 04 West,
W.M. (Page 1 of 5)

1. Rock for manufacture may be obtained from Area A, B or C in that order.
2. All vegetation including stumps shall be cleared a minimum of 30 feet beyond the top of all working faces. Trees shall be cleared to a minimum of ¾ of the height of the tallest tree adjacent to the pit. The Contractor shall maintain a minimum of 25 foot wide stripped area from the pit face at all times.
3. Overburden shall be end hauled to the designated waste area and compacted. Minimal acceptable compaction is achieved by placing waste material in 2 foot or shallower lifts and routing excavation equipment over entire width of the lifts.
4. Root wads and organic debris larger than one cubic foot in volume shall be separated from overburden material and piled in the designated waste area.
5. Quarry faces shall not exceed 40 feet in height and shall be sloped no steeper than 1/4:1.
6. Working bench width shall be a minimum of 25 feet.
7. The quarry floor shall have continuity of slope be left in a smooth and neat condition, providing drainage to the south at a minimum of 2 percent. All knobs, bumps, or extrusions shall be removed to the designated floor level by excavation or drill and shoot techniques. No sediment shall enter live water.
8. Oversize material remaining in the rock source at the conclusion of use shall not exceed 2 percent of the total volume mined during that operation. Oversize material is defined as rock fragments larger than two feet in any direction. At the conclusion of operations, oversize material shall be placed as directed by the Contract Administrator.
9. At the end of operations, quarry faces and walls shall be scaled and cleared of loose and overhanging material, benches shall have safety berms constructed or access blocked to highway vehicles.
10. Reclamation will not be required following use.
11. All operations shall be carried out in compliance with all regulations of:
 - a. Regulations and Standards Applicable to Metal and Nonmetal Mining and Milling Operations (30 CFR) U.S. Department of Labor, Mine Safety and Health Administration.
 - b. "Safety Standards for Construction Work" (296-155 WAC), Washington Department of Labor and Industries.

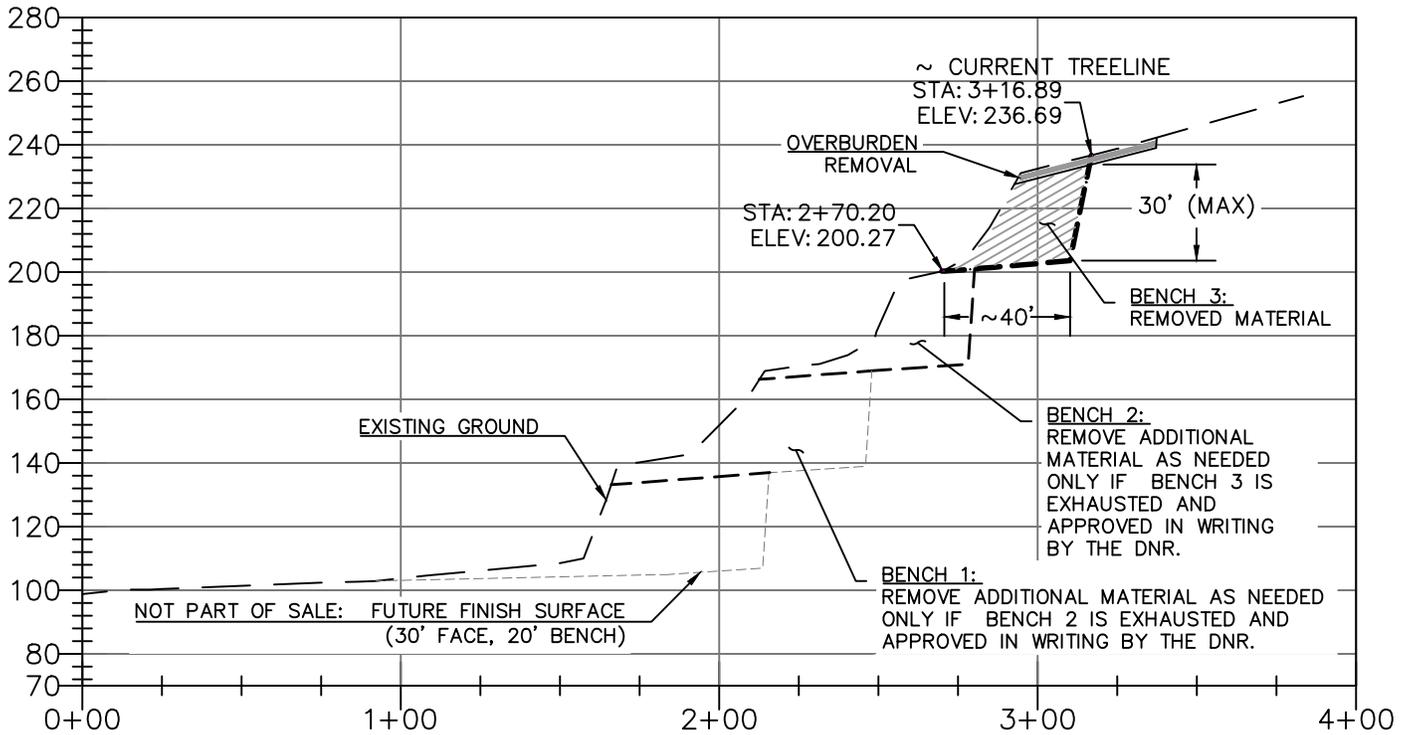
LARCH PILLAR QUARRY DEVELOPMENT PLAN

SW ¼, Section 2, Township 17 North, Range 04 West,
W.M. (Page 2 of 5)

13. The Operator shall submit an informational drilling and shooting plan to the Contract Administrator 3 working days prior to any drilling (Form #M-126PAC). This plan should include how the operator will implement safety measures for all trail recreational users within proximity to the pit area (See Larch Pillar Quarry Plan Map attached).
14. At the completion of rock source operations, Purchaser shall ask Contract Administrator for written approval of final rock source condition and compliance with the terms of this plan.
15. The quarry area shall be worked and left in a condition that future operations may proceed in an orderly manner.
16. Upon completion of operations, the site shall be cleared of all temporary structures, equipment and rubbish, and shall be left in a neat and presentable condition.

Alignment A PROFILE

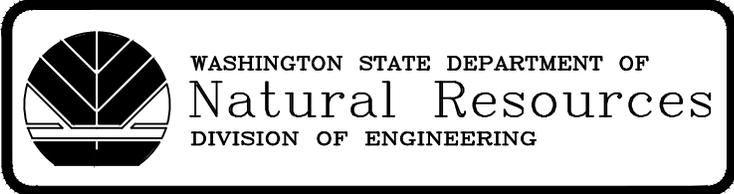
Station



100.34	101.33	102.32	103.71	106.12	108.53	140.20	151.79	170.40	182.59	202.99	200.567	232.44	202.656	238.68	245.78	252.88
										↑	↑					
										EXISTING	FINISH					
										ELEV	ELEV					
			1+00			2+00			3+00							

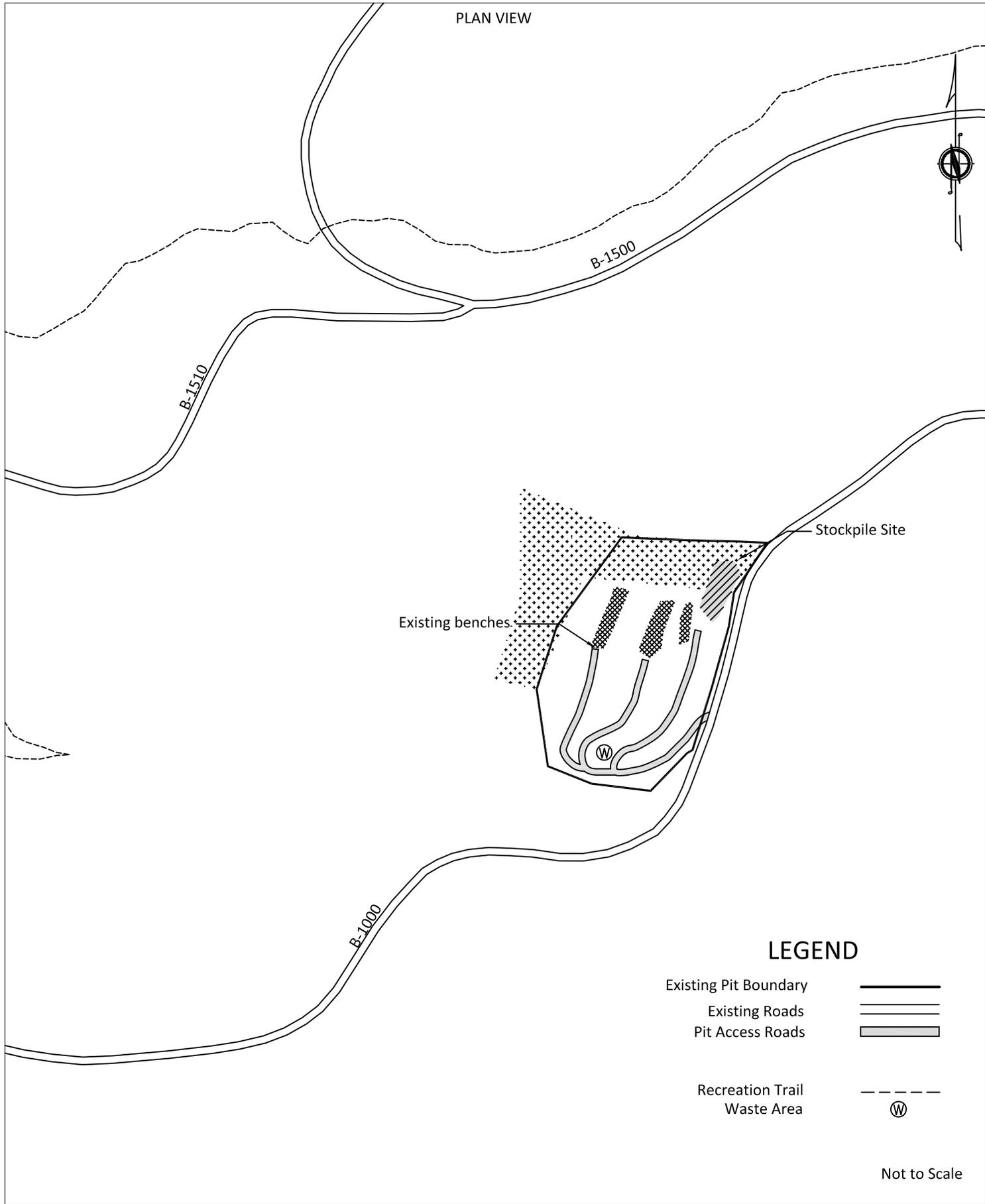
A-LINE PROFILE
1"=60' HORIZ, 1" =60' VERT

PROJECT.: Rams Horn T.S.	PROJECT LOCATION:
DRAWN BY: K.D.	LOCATED OFF OF B-1000 ROAD
SHEET: 2 OF 2	LATITUDE= 46.9817
DATE: 5/12/2016	LONGITUDE = -123.1508
REVISION:	DATUM:
1- ADD AREAS	HORIZ. - Assumed
	VERT.- Assumed
SHEET TITLE: LARCH PILLAR PIT PROFILE	



LARCH PILLAR QUARRY DEVELOPMENT PLAN
 SW ¼, Section 2, Township 17 North, Range 04 West,
 W.M. (Page 5 of 5)

PLAN VIEW



LEGEND

- Existing Pit Boundary 
- Existing Roads 
- Pit Access Roads 
- Recreation Trail 
- Waste Area 

Not to Scale

DEPARTMENT OF NATURAL RESOURCES - SOUTH PUGET SOUND REGION

FORM 9-87(Rev. 01-09)

Road Development Cost Estimate

(For internal DNR use only. Costs are estimates only & are not guaranteed by the State or part of the Road Plan.)

REGION: SPS

UNIT: Delphi

SALE/PROJECT NAME: Ram's Horn

CONTRACT NUMBER: 30-093253

LEGAL DESCRIPTION: 0

ROAD NUMBER:	B-1045A, B-1300 Reroute, B-1310, B-1430, B-1430A, B-1470, B-1492	B-1300	B-1000, B-1300, B-1400, B-1410, B-1490
ROAD STANDARD:	Construction	Reconstruction	Pre-haul maintenance
NUMBER OF STATIONS:	84.26	9.00	570.71
SIDESLOPE:	17-91%	0-25%	0
CLEARING AND GRUBBING:	\$13,234	\$878	
EXCAVATION AND FILL:	\$101,367	\$2,376	
MISC. MAINTENANCE:			\$31,969
ROCK TOTALS (Cu. Yds.):			
2½" Minus:	9958 \$1,604	\$13,546	\$168,178
Light Loose	104 \$0	\$1,231	\$0
Quarry Spalls	193 \$2,752	\$408	\$2,901
4" Jaw	6,075 \$ 102,630	\$ 5,899	\$ -
CULVERTS AND FLUMES:	\$21,676	\$897	\$25,563
STRUCTURES:	\$0	\$22,722	\$0
GENERAL EXPENSES:	\$19,461	\$4,316	\$18,289
MOBILIZATION:	\$4,947	\$4,947	\$4,947
TOTAL COSTS:	\$267,669	\$57,220	\$251,847
COST PER STATION:	\$3,177	\$6,358	\$441

ROAD DEACTIVATION AND ABANDONMENT COSTS: \$7,672

NOTE¹: This appraisal has no allowance for profit and risk.

NOTE²: This appraisal accounts for all optional rock.

TOTAL (All Roads) = \$584,408

SALE VOLUME MBF = 7,000

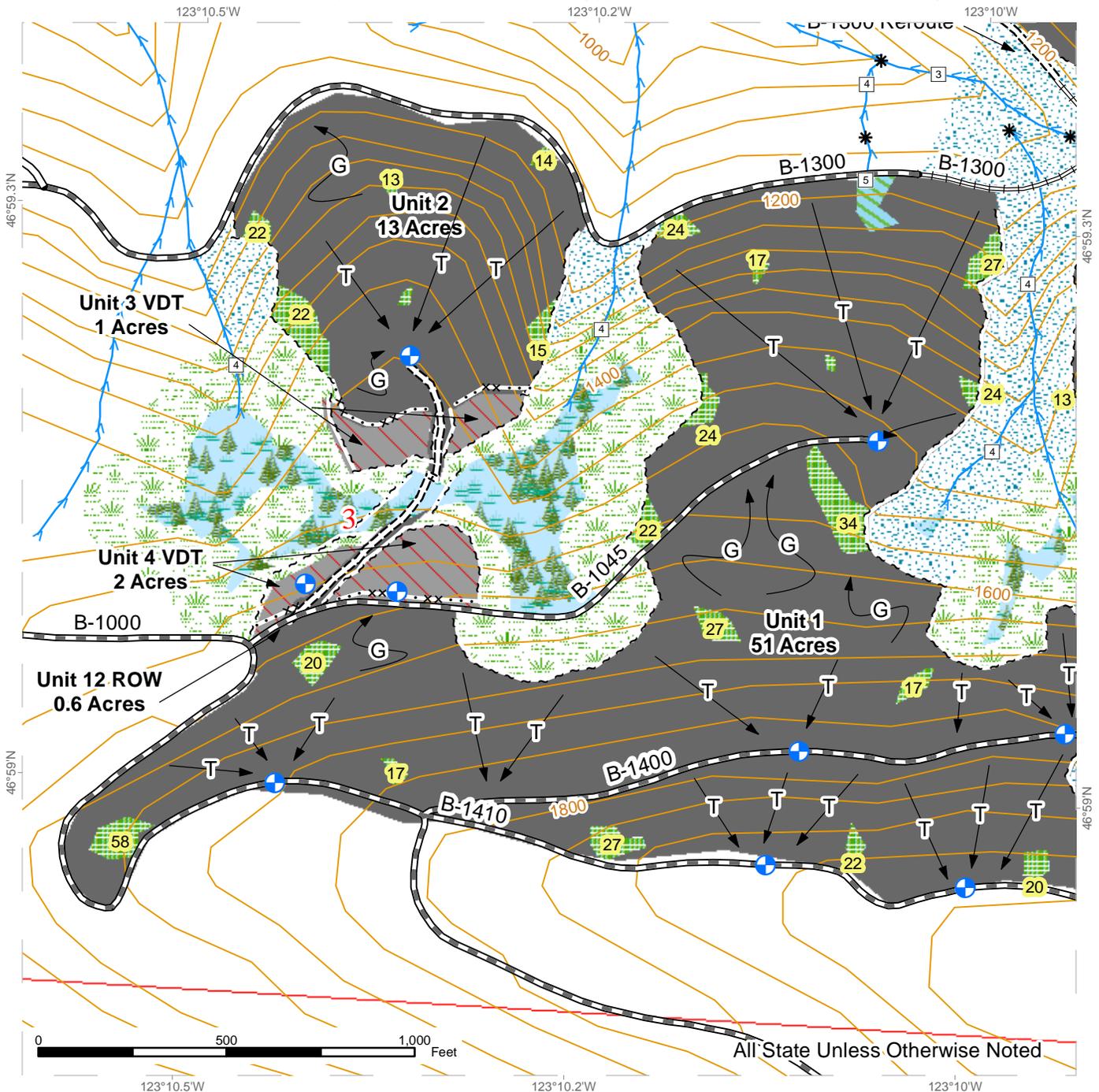
TOTAL COST PER MBF = \$83.49

Date: 05/03/16

LOGGING PLAN MAP

SALE NAME: RAMS HORN VRH & VDT
AGREEMENT#: 93253
TOWNSHIP(S): T18R04W, T17R04W
TRUST(S): State Forest Purchase(2), Common School and Indemnity(3), Charitable/Educational/Penal & Reformatory Instit.(6)

REGION: South Puget Sound Region
COUNTY(S): GRAYS HARBOR, THURSTON
ELEVATION RGE: 805-1815



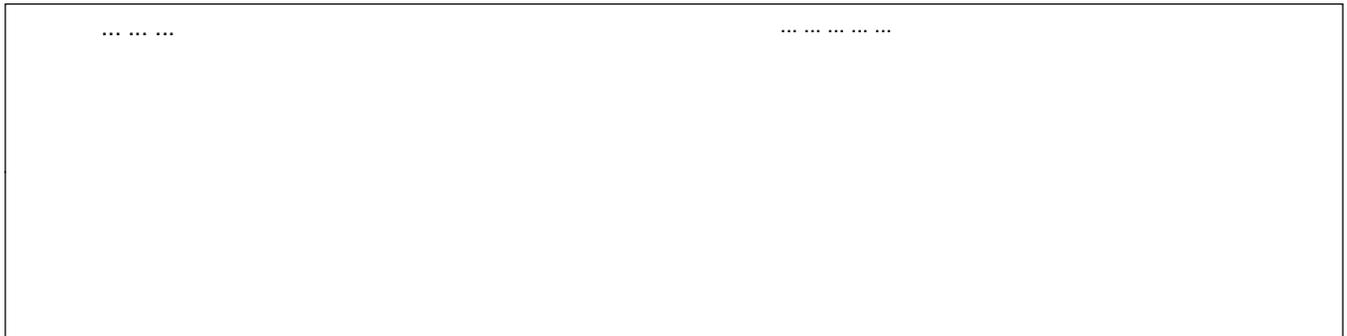
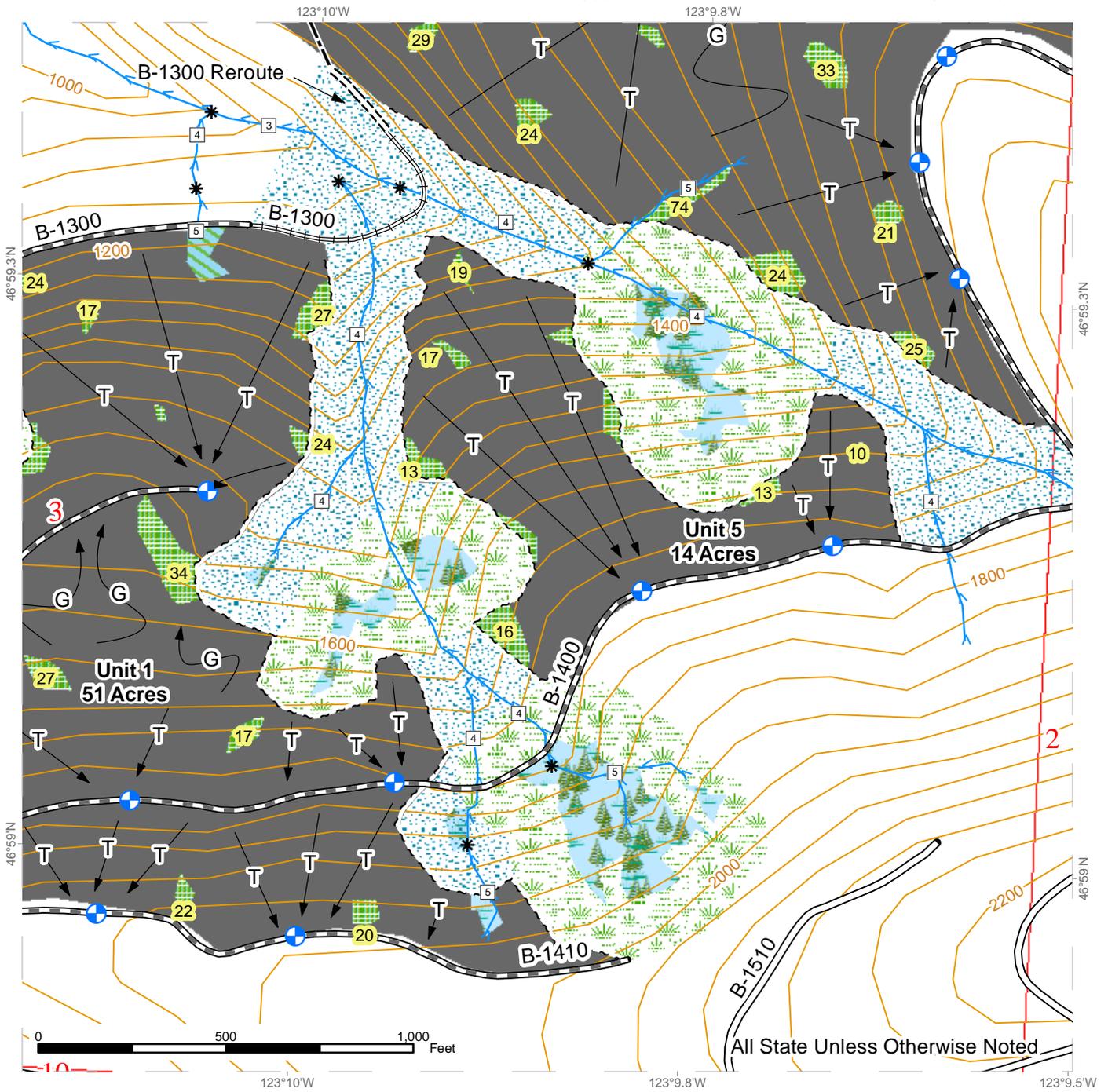
Variable Density Thinning	White "Timber Sale Boundary" Tags	Ground Harvest
Variable Retention Harvest	Blue "Special Mgmt Area" Tags	Cable Harvest
Forested Wetland	Orange "Right of Way Boundary" Tags	Streams
Leave Tree Area - Marked with Yellow "Leave Tree Area" Tags	Existing Roads	Stream Type
Riparian Mgt Zone	Required Pre-Haul Maintenance	Stream Type Break
Non-Tradeable Leave Tree Area - Marked with Yellow "Leave Tree Area" Tags	Required Construction	Landing - Proposed
Wetland Mgt Zone	Required Reconstruction	Contours 40-foot



LOGGING PLAN MAP

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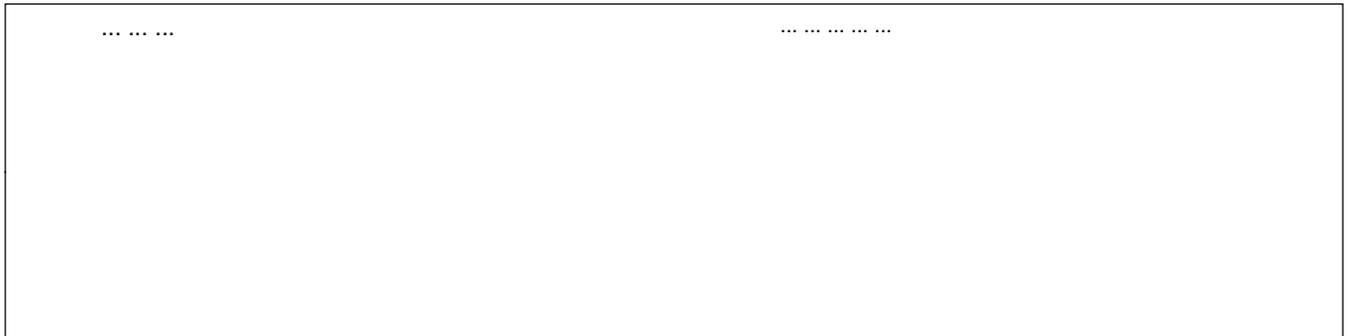
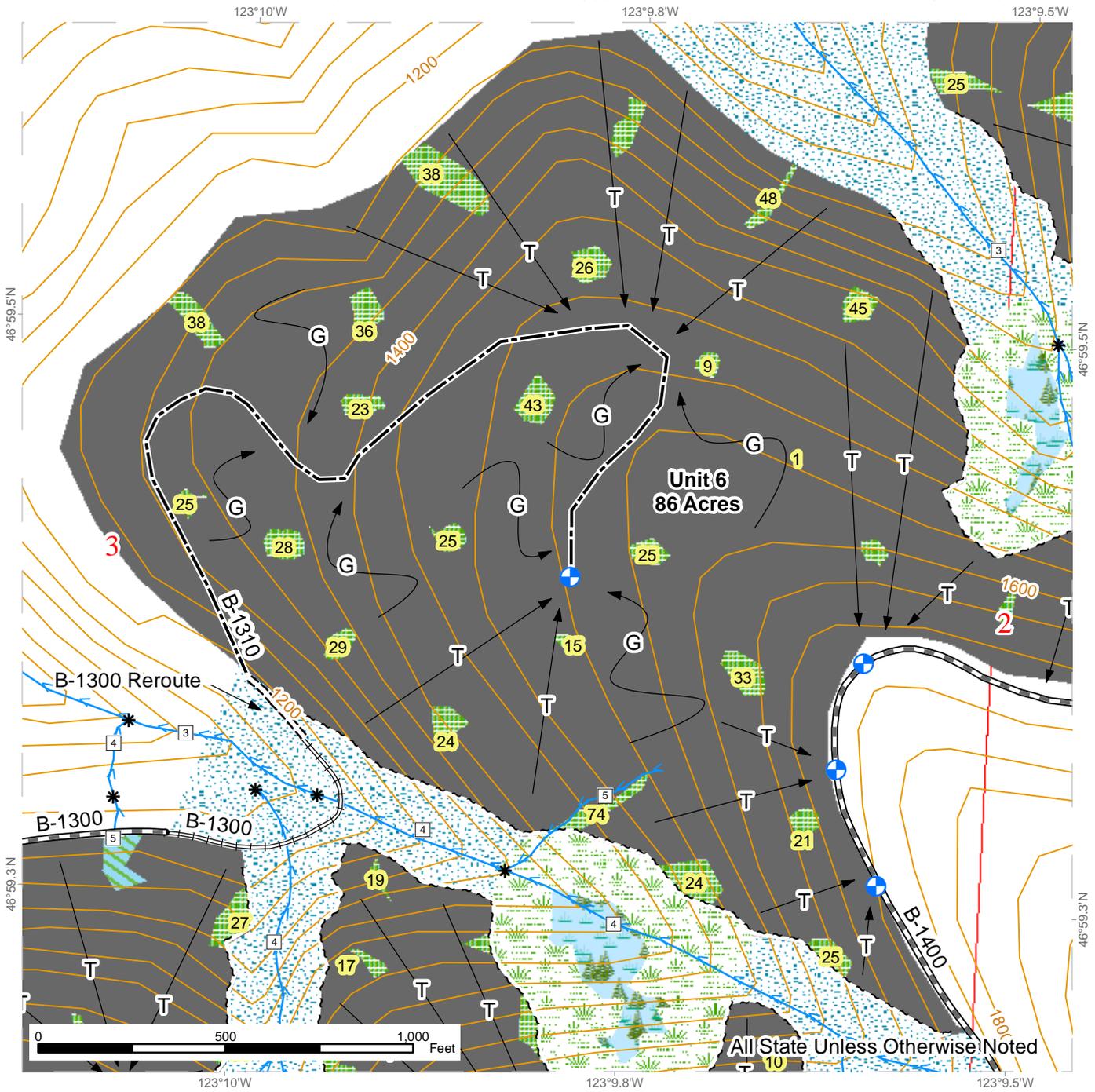
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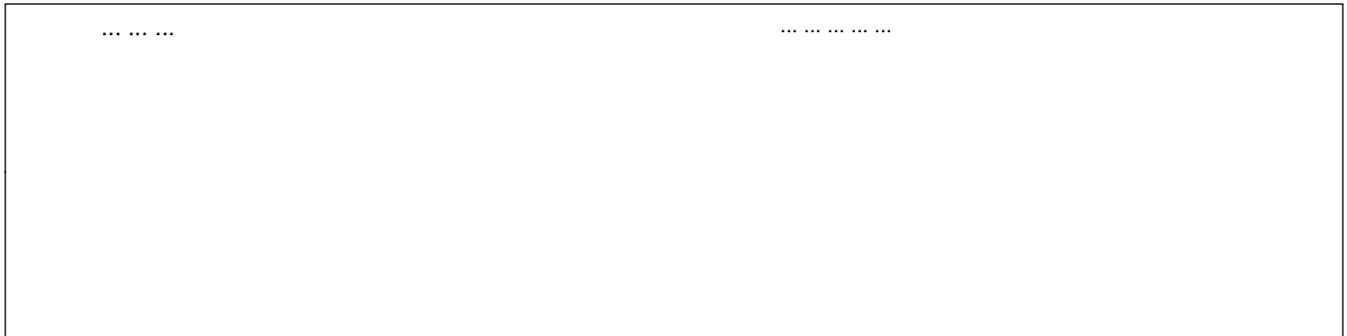
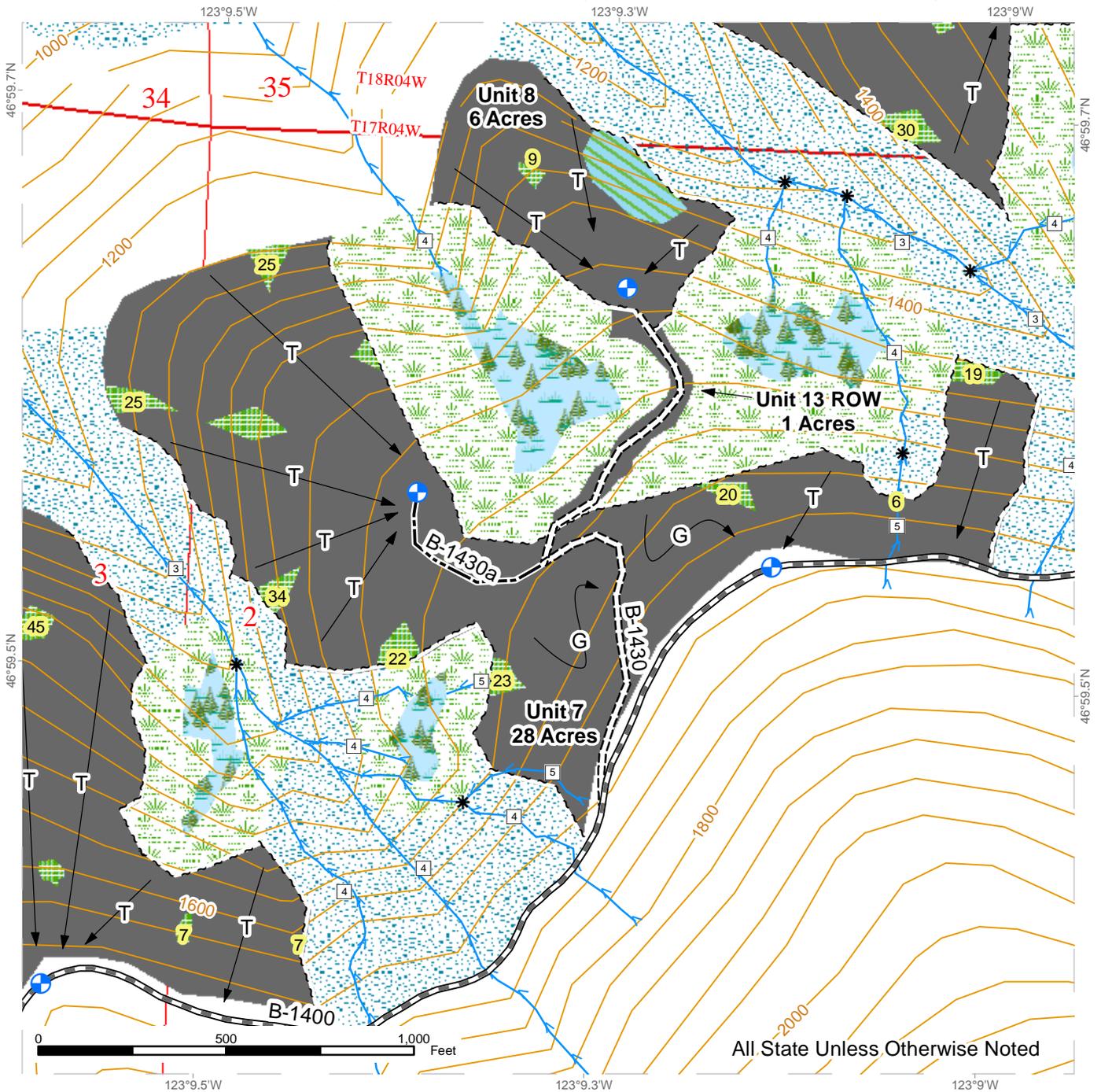
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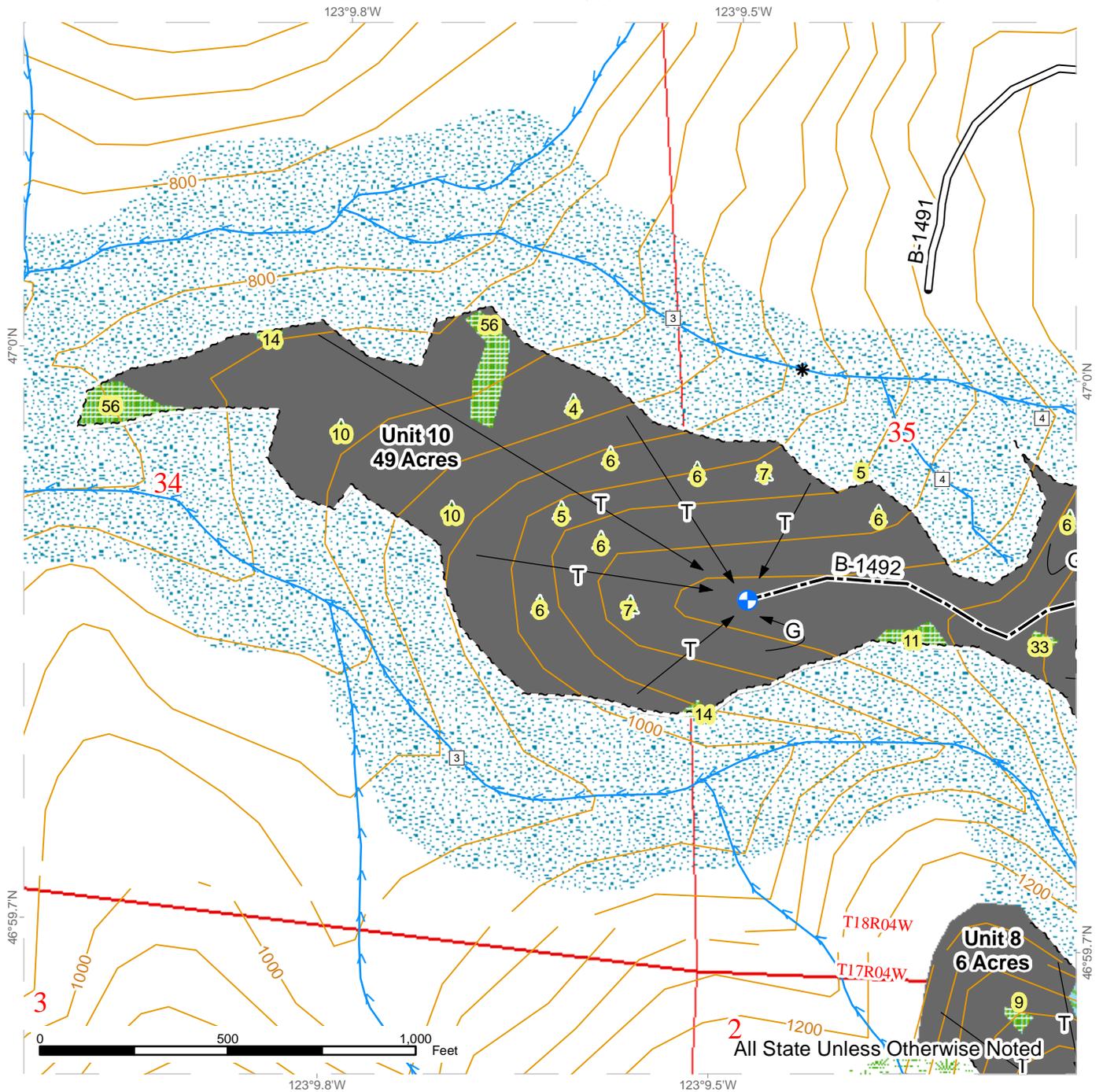
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