



TIMBER NOTICE OF SALE

SALE NAME: JUNEAU

AGREEMENT NO: 30-102082

AUCTION: December 17, 2024 starting at 10:00 a.m., COUNTY: Thurston South Puget Sound Region Office, Enumclaw, WA

SALE LOCATION: Sale located approximately 6 miles west of Littlerock, WA.

PRODUCTS SOLD AND SALE AREA:

All timber, except trees bounded out by yellow leave tree area tags, trees marked with blue paint, all trees 60 inches or larger measured at diameter at breast height, snags, and down timber existing more than 5 years from the day of sale, bounded by the following: white Timber Sale Boundary tags, timber type change marked with pink flagging, and the E-9000, E-9050, and E-9100 roads in Unit #1; white Timber Sale Boundary tags, timber type change marked with pink flagging, and the E-Line in Unit #2; white Timber Sale Boundary tags in Unit #3; white Timber Sale Boundary tags, and the E-4000 Road in Unit #4;

All timber bounded by orange Right of Way Boundary tags in Unit #5, except that title to the timber within the Right of Way Boundary tags is not conveyed to the Purchaser unless the associated E-9300 Road is actually reconstructed;

Three trees marked with orange paint in daylighting Unit #6;

All timber bounded by orange Right of Way Boundary tags in Unit #7, except that title to the timber within the Right of Way Boundary tags is not conveyed to the Purchaser unless the associated E-6743A Road is actually constructed.

All forest products above located on part(s) of Sections 12, 13 and 23 all in Township 16 North, Range 4 West, Sections 4 and 5 all in Township 16 North, Range 3 West, Sections 32 all in Township 17 North, Range 3 West, W.M., containing 160 acres, more or less.

CERTIFICATION: This sale is certified under the Sustainable Forestry Initiative® program Standard (cert no: BVC-SFIFM-018227)

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 Douglas fir, Hemlock, Red alder, Redcedar, Maple, and Sale Total.

MINIMUM BID: \$3,157,000.00

BID METHOD: Sealed Bids

PERFORMANCE SECURITY: \$100,000.00

SALE TYPE: Lump Sum

EXPIRATION DATE: October 31, 2027

ALLOCATION: Export Restricted



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BID DEPOSIT: \$315,700.00 or Bid Bond. Said deposit shall constitute an opening bid at the appraised price.

HARVEST METHOD: Harvesting activities are estimated to be 6 percent cable and 94 percent ground based harvest. Cable and cable-tethered equipment allowed on all slopes. Non-tethered self-leveling equipment limited to sustained slopes of 55 percent or less. Tracked equipment and 6-wheeled rubber tired skidders with over-the-tire tracks spanning both sets of rear tires are allowed in all units on sustained slopes that are 45 percent or less. Yarding may be restricted during wet weather if rutting becomes excessive, per clause H-017.

The falling and yarding of forest products will not be permitted on weekends or State recognized holidays unless authority to do so is granted, in writing, by the Contract Administrator.

ROADS: 7.50 stations of required construction. 7.60 stations of required reconstruction. 35.40 stations of optional construction. 38.90 stations of optional reconstruction. 362.10 stations of required prehaul maintenance. 18.40 stations of abandonment, if constructed. 5.55 stations of abandonment, if reconstructed, 7.60 stations of closure. Purchaser maintenance on the E-4000, E-4001, E-4002, E-6740, E-6743, E-6743-EXT, E-9000, E-9050, E-9050-1, E-9050-EXT, E-9100, E-9100A, E-9300, E-9300-EXT, and E-6743A roads. Designated maintenance on all other roads used.

Rock for this proposal may be obtained from the State owned Scott Paper Quarry and possibly the Southview Quarry depending on results of exploratory drilling, and up to 1500cy of 1 1/2 inch minus from the existing stockpile at the Scott Paper Quarry and up to 100cy of 1 1/2 minus from the existing stockpile at the Vantage Quarry, at no cost to the Purchaser, or any commercial rock source at the Purchaser's expense. Rock exploration is required in the Southview Quarry per Road Plan clause 6-13.

The operation of road construction equipment will not be permitted from November 1 to April 30, 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, a maintenance plan may be required per Road Plan clause 1-26.

The hauling of forest products will not be permitted from November 1 to April 30, nor on weekends or State recognized holidays, unless authorized in writing by the Contract Administrator. If permission is granted to operate from November 1 to April 30, preventative measures may be required to protect water, soil, roads and other forest assets.

ACREAGE DETERMINATION

CRUISE METHOD: Unit acreage was determined by traversing boundaries by GPS in Units #1-#4. GPS data files are available at DNR's website for timber sale auction packets. See cruise narrative for cruise method.

FEES: \$122,655.00 is due on day of sale. \$9.00 per MBF is due upon removal. These are in addition to the bid price.

SPECIAL REMARKS: Purchaser shall cut all hardwood stems over 6 feet tall or greater within Units #1-#4, leaving a stump no more than 12 inches in height.



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Purchaser shall notify the Contract Administrator a minimum of 7 calendar days before the closure of the E-4000 Road for culvert replacement at station 0+60.

A minimum of 7 calendar day's notification is required prior to beginning any logging operations within Units #1 and #2.

Cedar bark stripping/pulling has and will occur within the sale area prior to harvest operations. Unless designated as a leave tree, all freshly stripped cedar is considered sale volume and shall be felled and removed during harvest operations.

This sale contains Douglas-fir high quality and pole logs. See cruise for details.

Non-Tradeable Leave Trees: Locations inside the sale boundary are identified as Non-Tradeable Leave Trees marked with yellow Leave Tree Area tags as shown on the Timber Sale and Logging Plan Maps inside which no trees may be used as tailholds and no equipment may operate within, nor logs felled into or yarded through or over. Within Units #1-#3, no cables may be suspended over or through Non-Tradeable Leave Tree Areas.

Locations of skid trails and/or equipment trails for Unit #1 must be marked by Purchaser and approved by the Contract Administrator prior to the felling of timber. Skid trails in Unit #1 shall be closed after use by constructing water bars every ten (10) vertical feet to intercept flow.

Locations outside the sale boundary are identified as Tailhold Restriction Areas on the Logging Plan and Timber Sale Maps. Trees within these areas shall not be used as tailholds. Tailhold locations must be identified in a harvest plan by the Purchaser and approved by the Contract Administrator prior to operations per clause H-040.

One Type 4 stream culvert replacement on the E-4000 Road at station 0+60. See Culvert List in the Road Plan for specifics. Waste from this culvert replacement may be wasted in the designated waste area off the E-4001 Road.

Three trees marked with a single band of orange paint along the E-4000 Road are take trees.

Unit #3 is a walk-in to the southeast part of the Unit off the E-9000 Road, to the E-9300 Road reconstruction, to the E-9300 EXT new construction to the Unit. You can also access the Unit through the northern part of Unit #1, through an RMZ to the south side of the Unit #3.

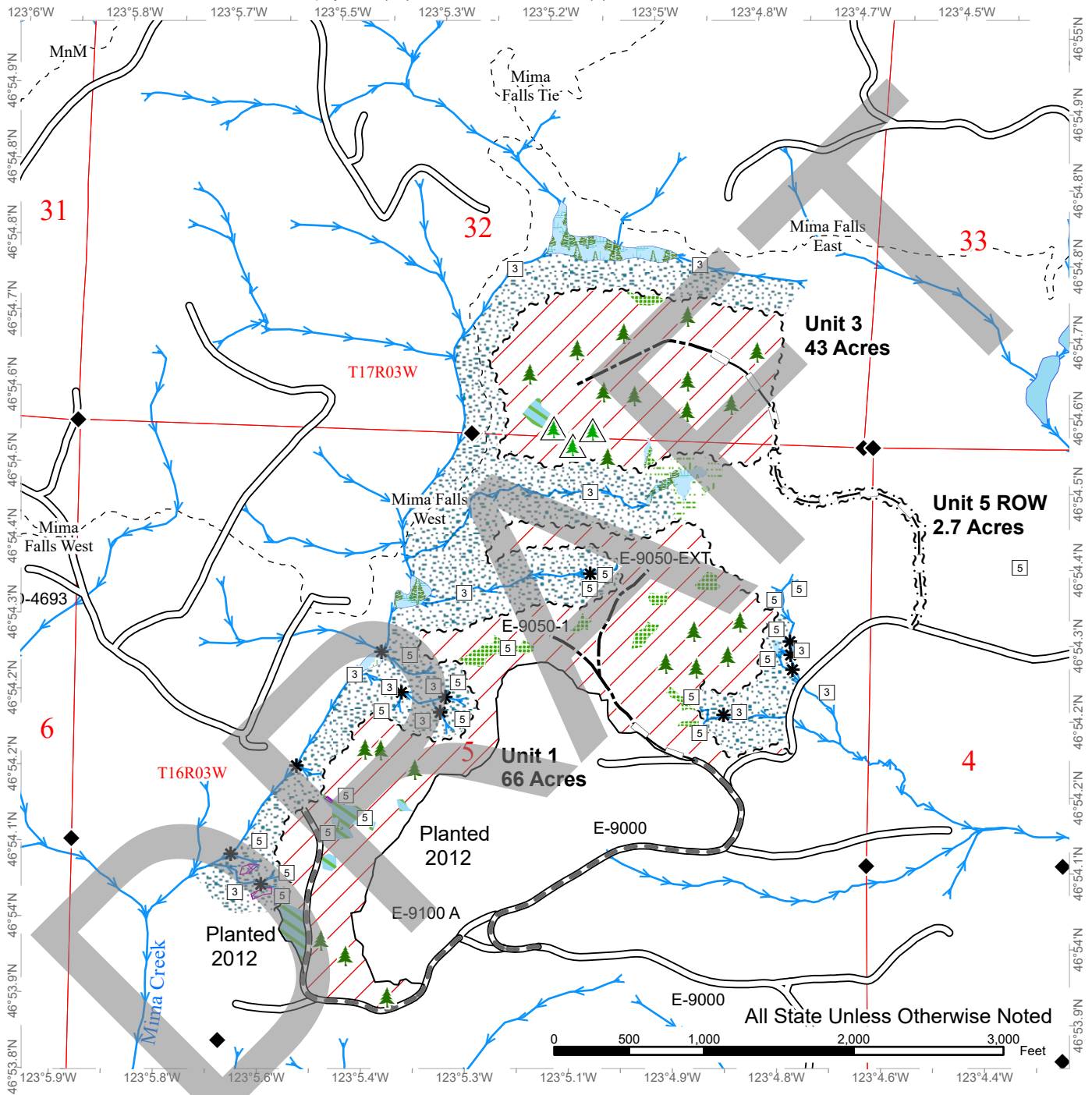
Note to cruisers and appraisers: Please refrain from leaving pink, orange or blue flagging from your cruises in or around the sale area to avoid confusion with DNR's marking. Additionally, for the safety of the public, please remove from roads and trails all string from string boxes used during appraising or cruising this sale.

See map for gate locations. Gate keys may be obtained by contacting the South Puget Sound Region office at (360) 825-1631 or by contacting Brady Dier at (360) 751-9188.

TIMBER SALE MAP

SALE NAME: JUNEAU
AGREEMENT #: 30-102082
TOWNSHIP(S): T16R3W, T16R4W, T17R3W
TRUST(S): Forest Board Repayment (42), State Forest Purchase (2)

REGION: South Puget Sound Region
COUNTY(S): Thurston
ELEVATION RGE: 400-1040



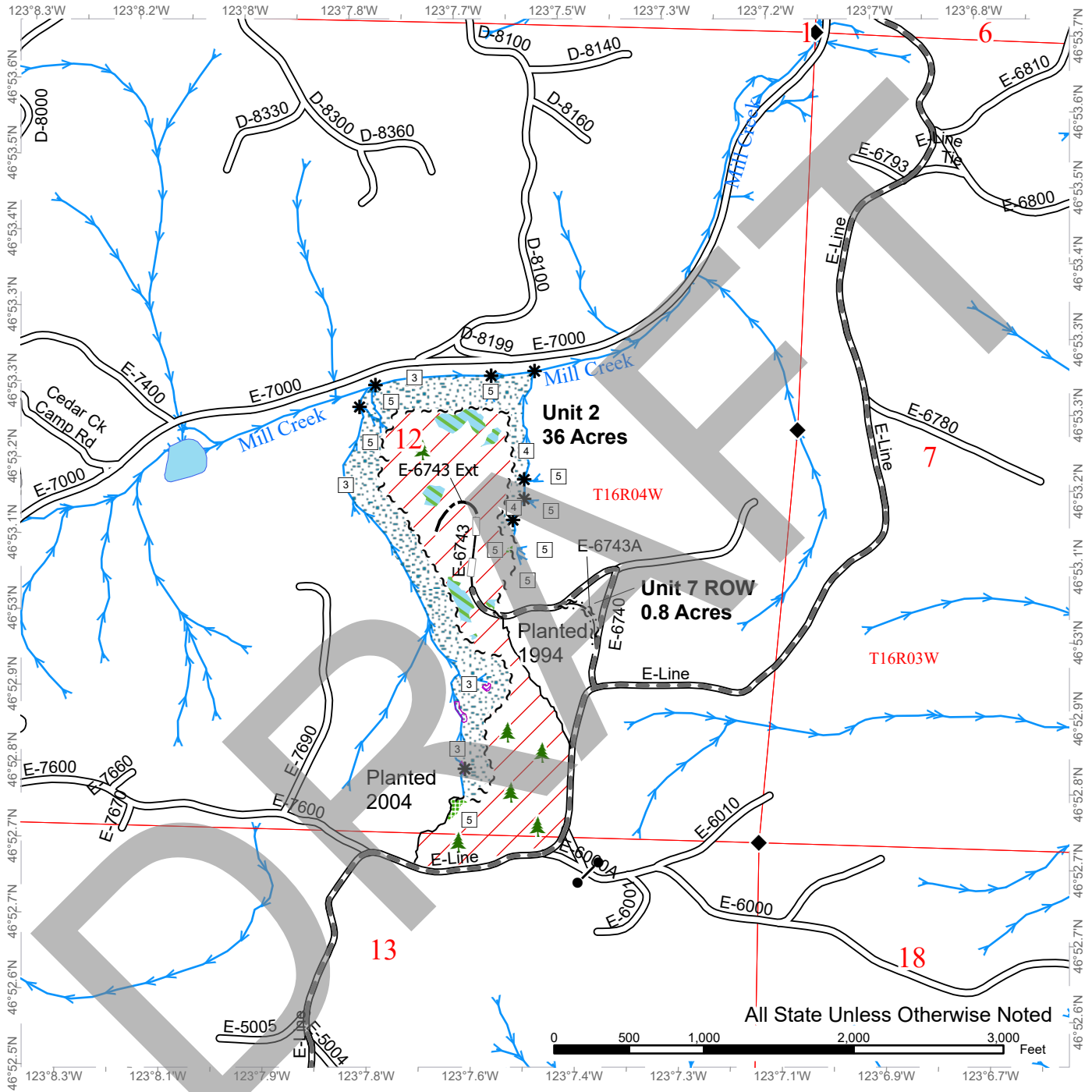
Sale Area	Sale Boundary Tags	Optional Construction
Wetlands - Non-forested	Right of Way Tags	Optional Reconstruction
Non-Tradeable Leave Tree Area	Timber Type Change	Streams
Leave Tree Area	Leave Tree Area <1/4-acre	Trail
Riparian Mgt Zone	Non-Tradeable Leave Trees	Stream Type
Forested Wetland	Survey Monument	Stream Type Break
Wetland Mgt Zone	Existing Roads	
Tailhold Restriction Area	Required Pre-Haul Maintenance	



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All State Unless Otherwise Noted

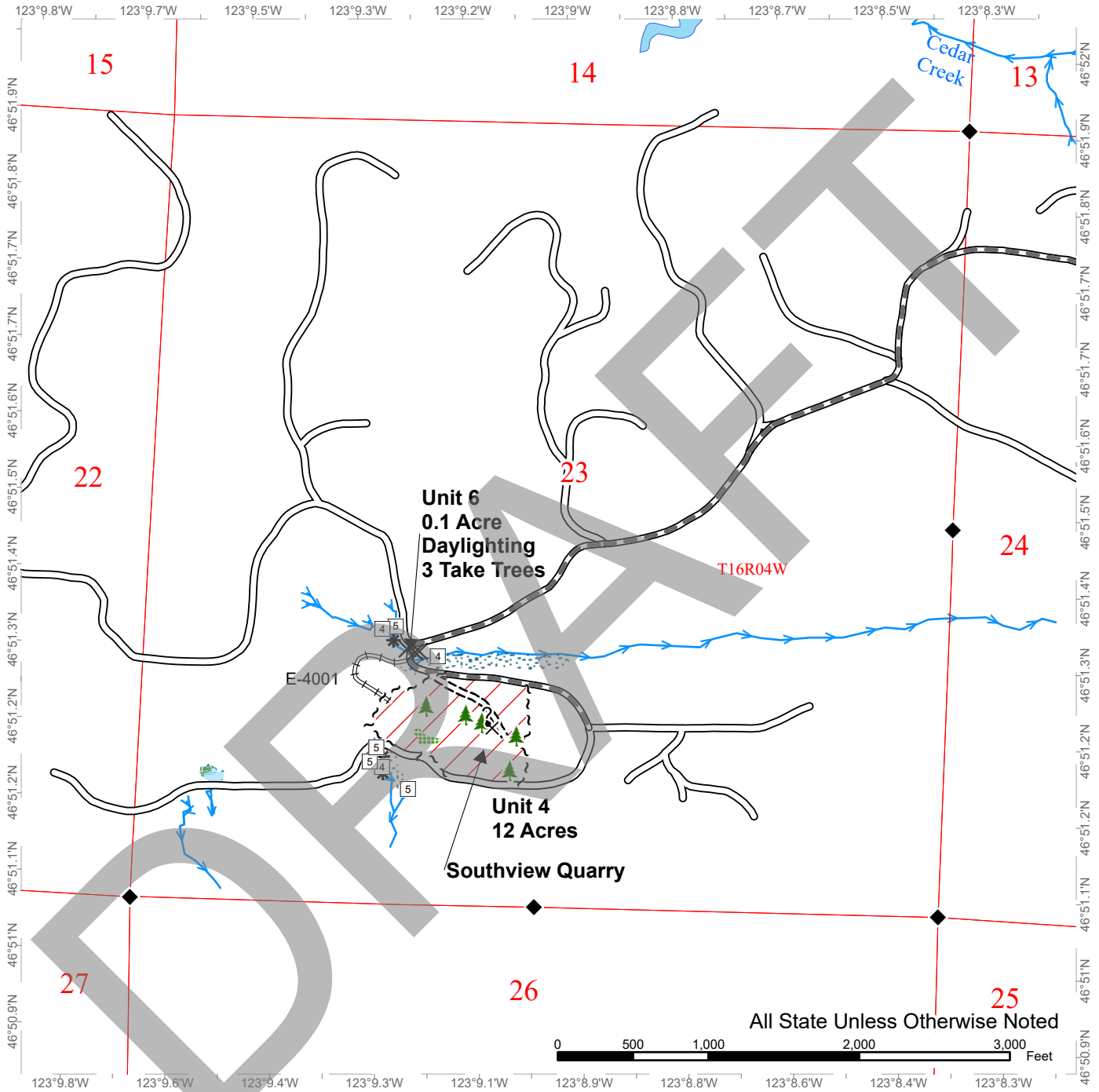
Sale Area	Right of Way Tags	Optional Construction
Non-Tradeable Leave Tree Area	Timber Type Change	Optional Reconstruction
Leave Tree Area	Leave Tree Area <1/4-acre	Streams
Riparian Mgt Zone	Survey Monument	Stream Type
Tailhold Restriction Area	Existing Roads	Stream Type Break
Sale Boundary Tags	Required Pre-Haul Maintenance	Gates



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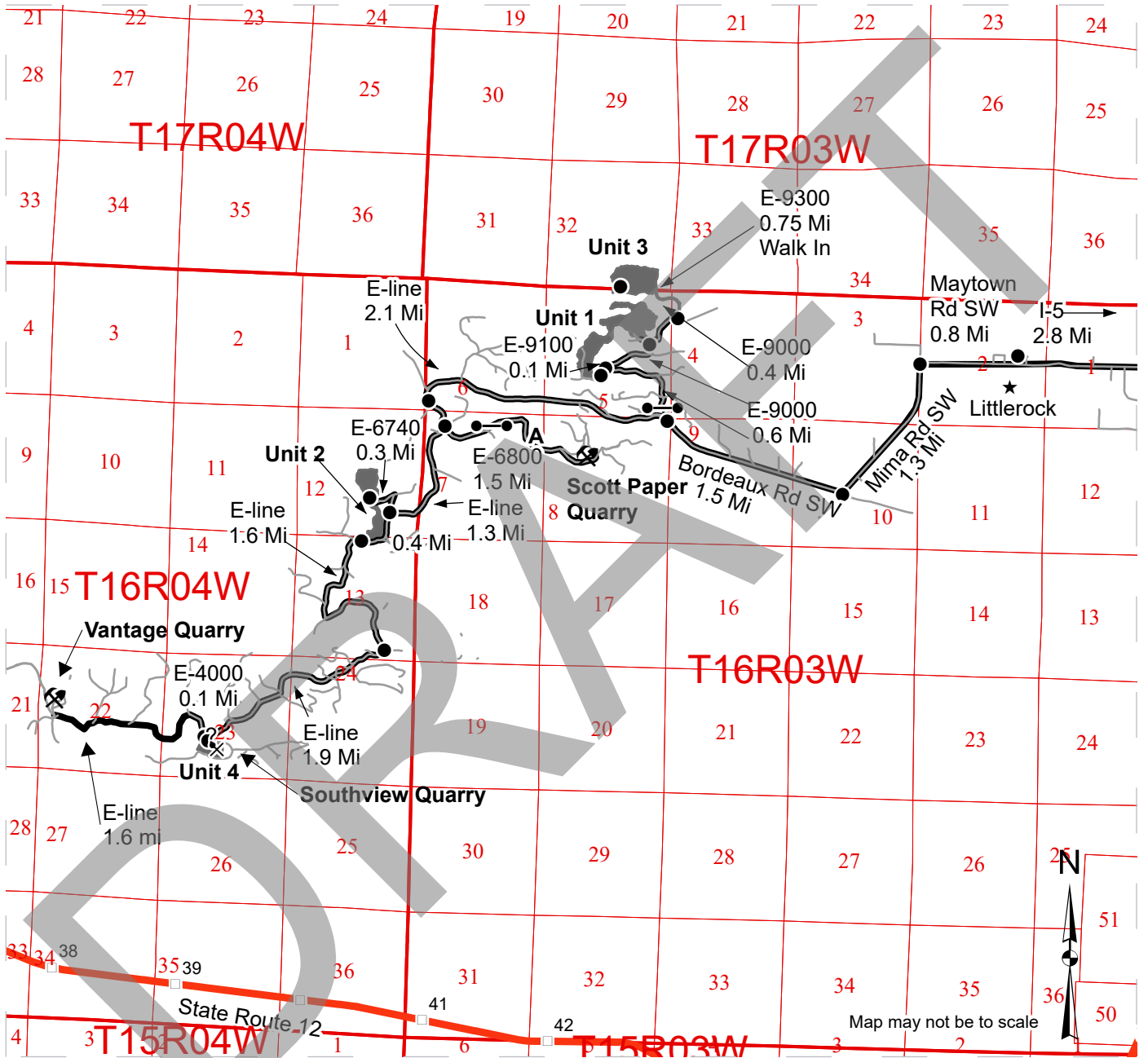
Sale Area	Potential Rock Source	Required Construction
Leave Tree Area	Take Tree	Required Reconstruction
Riparian Mgt Zone	Survey Monument	Streams
Forested Wetland	Existing Roads	Stream Type
Sale Boundary Tags	Required Pre-Haul Maintenance	Stream Type Break
Leave Tree Area <1/4-acre		



DRIVING MAP

SALE NAME: JUNEAU
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- Sale Area
- Haul Route
- Other Road
- Highway
- Distance Indicator
- Gate (H-957)
- Potential Rock
- Rock Pit
- Town

DRIVING DIRECTIONS:
 From I-5 (exit 95): Turn west onto Maytown Rd SW for 2.8 miles.
 Continue straight onto Littlerock Rd SW for 0.1 miles.
 Continue straight onto 128th Ave SE for 0.8 miles.
 Turn left onto Mima Rd SW for 1.3 miles.
 Turn right onto Bordeaux Rd SW for 1.5 miles
 *To Unit 1 and 3 turn right through the E-9000 gate. Continue 0.7 miles and turn left onto E-9100 for 0.1 mile to unit 1. Continue 1.4 miles after turning on E-9000 until you arrive at E-9300. Walk 0.75 mile to Unit 3.
 *To Scott Paper Quarry from indicator A stay on E-line for 0.3 miles then turn left onto E-6800 for 1.5 miles
 *To Unit 2, 4, and Southview Quarry Bordeaux becomes the E-line for an additional 2.1 miles. Then turn left to stay on E-line (Indicator "A" begin gravel up the hill). Stay on the E-Line for 1.5 miles to enter unit 2, continue on the E-line for another 1.9 miles to the intersection of the E-4000 continue 0.1 mile to Unit 4 and Southview Quarry.
 *To Vantage Quarry from the "A" stay on the E-line for 4.9 miles then turn right on E-3020, continue 0.1 mile to Quarry.

Timber Sale Cruise Report JUNEAU

Sale Name: JUNEAU

Sale Type: LUMP SUM

Region: SO PUGET

District: BLACK HILLS

Lead Cruiser: Alan Herrman

Other Cruisers: BEWarnstadt

Cruise Narrative:

Juneau is located approximately 4 miles west-southwest of Little Rock WA. The sale is reached via Bordeaux Rd and the E-Mainline forest road.

130 plots were installed to measure 311 trees. Trees were segmented into lengths based on a preference for long logs and taking into account location of defect/expected breakage in each tree cruised. Preferred length for conifers is 40'. Preferred length for hardwoods is 30'.

Units 1-4 contain a dominant cohort of Douglas-fir. Most trees display good form. Some are very large in diameter (>40") with tall merchantable boles (>130'). High quality segments and poles are present. Some of the units (1-3) contain scattered mortality pockets and/or patches of juvenile timber. Approximately 2/3s of Unit 3 contains non-merchantable cherry and cascara with small Douglas-firs and red alder sprinkled in.

Topography is flat. The understory in most units contains patches of vine maple and ferns.

Revised on 4/6/23 by AC: added U7 R/W.

Timber Sale Notice Volume (MBF)

Sp	DBH	Rings/In	Age	MBF Volume by Grade						
				All	Peeler	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	22.5	7.2		6,527	92	787	4,219	1,205	195	29
WH	24.7			266			211	43	2	10
RA	13.0			243			25	78	128	12
RC	23.9			164				153	9	2
MA	14.7			17			7	0	10	
ALL	21.0	7.2		7,215	92	787	4,461	1,479	343	52

Timber Sale Notice Weight (tons)

Sp	Tons by Grade						
	All	Peeler	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	41,537	480	4,345	24,968	9,776	1,796	171
RA	1,996			168	555	1,192	82
WH	1,939			1,402	441	22	74
RC	1,276				1,139	125	12

Tons by Grade							
Sp	All	Peeler	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
MA	124			49	1	75	
ALL	46,872	480	4,345	26,586	11,913	3,210	339

Timber Sale Overall Cruise Statistics (Cut + Leave Trees)

BA	BA SE	V-BAR	V-BAR SE	Net Vol	Vol SE
(sq ft/acre)	(%)	(bf/sq ft)	(%)	(bf/acre)	(%)
234.7	4.2	198.0	2.5	47,288	4.9

Timber Sale Unit Cruise Design

Unit	Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
JUNEAU U1	B1C: VR, 1 BAF (54.44) Measure/ Count Plots, Sighting Ht = 4.5 ft	71.9	72.8	50	26	1
JUNEAU U2	B1C: VR, 1 BAF (54.44) Measure/ Count Plots, Sighting Ht = 4.5 ft	38.5	38.7	30	16	0
JUNEAU U3	B1C: VR, 1 BAF (46.94) Measure/ Count Plots, Sighting Ht = 4.5 ft	45.4	45.4	33	18	1
JUNEAU U4	B1C: VR, 1 BAF (46.94) Measure/ Count Plots, Sighting Ht = 4.5 ft	12.8	13.0	12	8	0
JUNEAU U5	FX: FR plots (20 tree / acre expansion)	2.7	2.7	4	4	0
JUNEAU U6	ST: Strip/Percent Sample (1 tree expansion)	0.1		1	1	0
JUNEAU U7 ROW	ST: Strip/Percent Sample (1 tree expansion)	0.8	0.8	1	1	0
All		172.2	173.3	131	74	2

Timber Sale Log Grade x Sort Summary

Sp	Status	Grade	Sort	Dia	Len	BF Gross	BF Net	Defect %	Tons	MBF Net
DF	LIVE	2 SAW	Domestic	17.4	39	16,128	15,666	2.9	15,666.4	2,697.7
DF	LIVE	2 SAW	HQ-A	14.5	40	1,494	1,478	1.0	1,648.6	254.5
DF	LIVE	2 SAW	HQ-B	17.5	40	7,543	7,355	2.5	7,653.1	1,266.5
DF	LIVE	3 PEELER	Domestic	28.0	40	535	535	0.0	480.1	92.1
DF	LIVE	3 SAW	Domestic	8.8	39	6,218	6,119	1.6	8,668.2	1,053.6
DF	LIVE	3 SAW	HQ-B	10.6	40	892	879	1.5	1,108.0	151.3
DF	LIVE	4 SAW	Domestic	5.7	28	1,146	1,130	1.3	1,796.2	194.7
DF	LIVE	CULL	Cull	8.3	6	349	0	100.0	0.0	0.0
DF	LIVE	SPECIAL MILL	HQ-A	21.8	40	4,592	4,572	0.4	4,345.2	787.3

Sp	Status	Grade	Sort	Dia	Len	BF Gross	BF Net	Defect %	Tons	MBF Net
DF	LIVE	UTILITY	Pulp	5.9	13	167	167	0.0	171.4	28.7
MA	LIVE	2 SAW	Domestic	15.8	30	46	38	16.5	48.7	6.6
MA	LIVE	3 SAW	Domestic	11.1	30	1	1	20.0	0.9	0.1
MA	LIVE	4 SAW	Domestic	5.9	30	63	58	8.8	74.5	9.9
MA	LIVE	CULL	Cull	7.2	1	0	0	100.0	0.0	0.0
RA	LIVE	2 SAW	Domestic	13.0	30	145	142	1.6	167.5	24.5
RA	LIVE	3 SAW	Domestic	11.3	28	478	455	4.8	555.2	78.4
RA	LIVE	4 SAW	Domestic	5.8	32	775	744	4.0	1,191.8	128.2
RA	LIVE	CULL	Cull	5.8	6	34	0	100.0	0.0	0.0
RA	LIVE	UTILITY	Pulp	5.0	21	69	69	0.0	81.8	11.9
RC	LIVE	3 SAW	Domestic	13.4	37	950	889	6.4	1,139.3	153.2
RC	LIVE	4 SAW	Domestic	5.5	26	50	50	0.0	124.7	8.6
RC	LIVE	CULL	Cull	12.4	5	61	0	100.0	0.0	0.0
RC	LIVE	UTILITY	Pulp	7.1	15	10	10	0.0	11.6	1.8
WH	LIVE	2 SAW	Domestic	16.7	39	1,255	1,228	2.1	1,401.7	211.4
WH	LIVE	3 SAW	Domestic	8.8	36	253	247	2.5	441.0	42.5
WH	LIVE	4 SAW	Domestic	8.1	22	10	10	2.5	22.1	1.8
WH	LIVE	CULL	Cull	20.7	13	57	0	100.0	0.0	0.0
WH	LIVE	UTILITY	Pulp	9.6	15	66	57	12.6	74.1	9.9

Timber Sale Log Sort x Diameter Bin Summary

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	5 - 7	LIVE	Pulp	5.4	13	109	0.0	99.7	18.8
DF	5 - 7	LIVE	Cull	5.5	5	0	100.0	0.0	0.0
DF	5 - 7	LIVE	Domestic	6.0	32	2,338	1.2	3,553.8	402.6
DF	8 - 11	LIVE	Cull	9.4	5	0	100.0	0.0	0.0
DF	8 - 11	LIVE	Pulp	9.7	13	27	0.0	40.1	4.7
DF	8 - 11	LIVE	Domestic	10.0	38	4,850	1.7	6,839.0	835.2
DF	8 - 11	LIVE	HQ-B	10.5	40	879	1.5	1,108.0	151.3
DF	12 - 15	LIVE	Cull	12.3	6	0	100.0	0.0	0.0
DF	12 - 15	LIVE	Pulp	13.5	14	30	0.0	31.6	5.2
DF	12 - 15	LIVE	Domestic	13.8	38	4,252	2.8	5,075.5	732.2
DF	12 - 15	LIVE	HQ-B	13.9	40	1,585	2.4	1,954.2	272.9
DF	12 - 15	LIVE	HQ-A	14.2	40	1,339	0.6	1,504.2	230.6
DF	16 - 19	LIVE	Domestic	17.7	40	4,306	2.2	4,241.3	741.5
DF	16 - 19	LIVE	HQ-B	17.7	40	1,875	1.6	1,969.8	323.0
DF	16 - 19	LIVE	Cull	18.8	5	0	100.0	0.0	0.0

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	16 - 19	LIVE	HQ-A	18.8	40	1,150	0.0	1,162.4	198.0
DF	20+	LIVE	HQ-B	22.8	40	3,895	2.9	3,729.1	670.6
DF	20+	LIVE	HQ-A	23.4	40	3,561	0.8	3,327.2	613.3
DF	20+	LIVE	Domestic	24.0	40	7,704	3.0	6,901.3	1,326.6
DF	20+	LIVE	Cull	32.0	11	0	100.0	0.0	0.0
MA	5 - 7	LIVE	Domestic	5.1	30	50	6.3	54.1	8.7
MA	5 - 7	LIVE	Cull	6.5	2	0	100.0	0.0	0.0
MA	8 - 11	LIVE	Domestic	9.0	30	8	23.0	21.4	1.4
MA	12 - 15	LIVE	Domestic	15.8	30	38	16.5	48.7	6.6
RA	5 - 7	LIVE	Pulp	5.0	21	69	0.0	81.8	11.9
RA	5 - 7	LIVE	Cull	5.1	6	0	100.0	0.0	0.0
RA	5 - 7	LIVE	Domestic	5.4	30	614	4.1	987.7	105.8
RA	8 - 11	LIVE	Cull	9.0	9	0	100.0	0.0	0.0
RA	8 - 11	LIVE	Domestic	10.3	29	585	4.5	759.3	100.7
RA	12 - 15	LIVE	Domestic	13.0	30	142	1.6	167.5	24.5
RC	5 - 7	LIVE	Pulp	5.4	15	5	0.0	6.9	0.9
RC	5 - 7	LIVE	Domestic	5.7	28	76	1.1	185.6	13.1
RC	5 - 7	LIVE	Cull	6.1	5	0	100.0	0.0	0.0
RC	8 - 11	LIVE	Cull	8.3	7	0	100.0	0.0	0.0
RC	8 - 11	LIVE	Domestic	10.2	36	211	4.6	343.1	36.3
RC	12 - 15	LIVE	Pulp	12.0	15	5	0.0	4.7	0.8
RC	12 - 15	LIVE	Domestic	14.2	35	163	6.4	229.5	28.1
RC	12 - 15	LIVE	Cull	14.3	3	0	100.0	0.0	0.0
RC	16 - 19	LIVE	Domestic	17.6	37	180	1.3	189.7	31.0
RC	16 - 19	LIVE	Cull	18.9	4	0	100.0	0.0	0.0
RC	20+	LIVE	Domestic	23.7	35	309	10.5	316.1	53.3
RC	20+	LIVE	Cull	26.4	5	0	100.0	0.0	0.0
WH	5 - 7	LIVE	Cull	5.8	9	0	100.0	0.0	0.0
WH	5 - 7	LIVE	Pulp	5.9	13	11	0.0	15.4	1.9
WH	5 - 7	LIVE	Domestic	6.9	34	61	0.4	122.5	10.5
WH	8 - 11	LIVE	Domestic	9.7	36	196	3.1	340.6	33.7
WH	12 - 15	LIVE	Domestic	13.9	39	466	1.9	605.5	80.3
WH	16 - 19	LIVE	Pulp	17.3	20	46	15.2	58.7	8.0
WH	16 - 19	LIVE	Domestic	18.6	40	453	2.2	497.9	78.1
WH	20+	LIVE	Domestic	24.1	40	308	2.4	298.3	53.1
WH	20+	LIVE	Cull	30.3	16	0	100.0	0.0	0.0

Cruise Unit Report JUNEAU U1

Unit Sale Notice Volume (MBF): JUNEAU U1

Sp	DBH	Rings/In	Age	MBF Volume by Grade						
				All	Peeler	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	23.0	7.4		2,965	57	392	1,973	462	69	12
WH	26.0			220			184	25	1	9
RA	15.8			119			25	67	27	
RC	26.3			96				91	4	1
MA	22.0			8			7		1	
ALL	22.4	7.4		3,408	57	392	2,188	646	103	21

Unit Cruise Design: JUNEAU U1

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (54.44) Measure/Count Plots, Sighting Ht = 4.5 ft	71.9	72.8	50	26	1

Unit Cruise Summary: JUNEAU U1

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	76	180	3.6	2
WH	8	12	0.2	0
RC	8	22	0.4	0
RA	8	16	0.3	0
MA	1	1	0.0	0
ALL	101	231	4.6	2

Unit Cruise Statistics (Cut + Leave Trees): JUNEAU U1

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
DF	196.0	62.5	8.8	231.0	31.8	3.6	45,266	70.1	9.6
WH	13.1	321.2	45.4	255.0	10.5	3.7	3,332	321.4	45.6
RC	24.0	201.0	28.4	111.9	64.0	22.6	2,680	210.9	36.3
RA	17.4	248.1	35.1	116.6	20.7	7.3	2,032	248.9	35.8
MA	1.1	707.1	100.0	100.4	0.0	0.0	109	707.1	100.0
ALL	251.5	47.1	6.7	212.4	38.1	3.8	53,419	60.6	7.7

Unit Summary: JUNEAU U1

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	75	ALL	23.0	97	125	41,607	40,236	3.3	60.4	174.2	36.3	2,893.0
DF	LIVE	POLE	1	ALL	18.9	102	130	1,040	1,006	3.3	2.2	4.4	1.0	72.3
MA	LIVE	CUT	1	ALL	22.0	64	79	133	109	18.0	0.4	1.1	0.2	7.9
RA	LIVE	CUT	8	ALL	15.8	65	82	1,765	1,651	6.5	10.4	14.2	3.6	118.7
RC	LIVE	CUT	8	ALL	26.3	61	76	1,530	1,340	12.4	3.2	12.0	2.3	96.4
WH	LIVE	CUT	8	ALL	26.0	116	147	3,261	3,054	6.3	3.2	12.0	2.3	219.6
ALL	LIVE	CUT	100	ALL	22.5	92	118	48,296	46,391	3.9	77.6	213.4	44.8	3,335.5
ALL	LIVE	POLE	1	ALL	18.9	102	130	1,040	1,006	3.3	2.2	4.4	1.0	72.3
ALL	ALL	ALL	101	ALL	22.4	92	118	49,337	47,397	3.9	79.8	217.8	45.8	3,407.8

Cruise Unit Report JUNEAU U2

Unit Sale Notice Volume (MBF): JUNEAU U2

Sp	DBH	Rings/In	Age	MBF Volume by Grade					
				All	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	26.1	7.0		1,868	208	1,414	212	28	6
RA	12.1			36			11	25	
RC	18.0			17			14	3	
ALL	23.7	7.0		1,922	208	1,414	238	56	6

Unit Cruise Design: JUNEAU U2

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (54.44) Measure/Count Plots, Sighting Ht = 4.5 ft	38.5	38.7	30	16	0

Unit Cruise Summary: JUNEAU U2

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	58	129	4.3	1
RA	3	6	0.2	0
RC	3	3	0.1	0
ALL	64	138	4.6	1

Unit Cruise Statistics (Cut + Leave Trees): JUNEAU U2

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
DF	234.1	44.9	8.2	240.9	26.9	3.5	56,389	52.4	8.9
RA	10.9	242.1	44.2	86.6	27.1	15.6	943	243.6	46.9
RC	5.4	305.1	55.7	82.7	57.0	32.9	450	310.4	64.7
ALL	250.4	42.2	7.7	230.7	33.4	4.2	57,782	53.8	8.8

Unit Summary: JUNEAU U2

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	55	ALL	26.3	109	139	47,291	45,898	2.9	50.5	190.5	37.2	1,767.1
DF	LIVE	POLE	3	ALL	24.5	123	159	2,702	2,623	2.9	3.3	10.9	2.2	101.0

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
RA	LIVE	CUT	3	ALL	12.1	44	61	1,022	943	7.8	13.6	10.9	3.1	36.3
RC	LIVE	CUT	2	ALL	18.5	47	60	328	300	8.5	1.9	3.6	0.8	11.6
RC	LIVE	POLE	1	ALL	17.0	58	71	164	150	8.5	1.2	1.8	0.4	5.8
ALL	LIVE	POLE	4	ALL	22.7	106	135	2,866	2,773	3.3	4.5	12.7	2.6	106.8
ALL	LIVE	CUT	60	ALL	23.9	94	120	48,641	47,141	3.1	66.0	205.1	41.1	1,814.9
ALL	ALL	ALL	64	ALL	23.8	95	121	51,508	49,914	3.1	70.5	217.8	43.8	1,921.7

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Cruise Unit Report JUNEAU U3

Unit Sale Notice Volume (MBF): JUNEAU U3

Sp	DBH	Rings/In	Age	MBF Volume by Grade						
				All	Peeler	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	16.7	7.2		1,241	35	187	559	383	70	8
RA	9.7			81					69	12
RC	20.8			45				43	1	1
WH	16.6			20			9	10		1
ALL	14.6	7.2		1,387	35	187	569	435	140	22

Unit Cruise Design: JUNEAU U3

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (46.94) Measure/Count Plots, Sighting Ht = 4.5 ft	45.4	45.4	33	18	1

Unit Cruise Summary: JUNEAU U3

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
MA		1	0.0	0
DF	58	107	3.2	1
RA	13	19	0.6	0
RC	5	10	0.3	0
WH	2	3	0.1	0
ALL	78	140	4.2	1

Unit Cruise Statistics (Cut + Leave Trees): JUNEAU U3

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
MA	1.4	574.5	100.0						
DF	152.2	74.4	12.9	196.1	45.1	5.9	29,852	87.0	14.2
RA	27.0	225.7	39.3	66.2	20.1	5.6	1,788	226.6	39.7
RC	14.2	291.5	50.7	86.8	49.8	22.3	1,234	295.7	55.4
WH	4.3	321.1	55.9	102.9	28.3	20.0	439	322.4	59.4
ALL	199.1	55.0	9.6	168.5	55.4	6.3	33,553	78.1	11.4

Unit Summary: JUNEAU U3

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	57	ALL	16.7	76	100	27,700	27,062	2.3	90.7	138.0	33.8	1,228.6
DF	LIVE	POLE	1	ALL	26.0	132	170	286	279	2.3	0.4	1.4	0.3	12.7
MA	LIVE	CUT	0	ALL	13.0						1.5	1.4	0.4	
RA	LIVE	CUT	13	ALL	9.7	33	50	1,884	1,788	5.1	52.7	27.0	8.7	81.2
RC	LIVE	CUT	5	ALL	16.6	59	73	1,109	988	10.9	7.6	11.4	2.8	44.8
WH	LIVE	CUT	2	ALL	16.6	63	77	444	439	1.2	2.8	4.3	1.0	19.9
ALL	LIVE	CUT	77	ALL	14.7	60	81	31,137	30,277	2.8	155.3	182.1	46.7	1,374.6
ALL	LIVE	POLE	1	ALL	26.0	132	170	286	279	2.3	0.4	1.4	0.3	12.7
ALL	ALL	ALL	78	ALL	14.7	60	81	31,422	30,556	2.8	155.7	183.5	47.0	1,387.2

Cruise Unit Report JUNEAU U4

Unit Sale Notice Volume (MBF): JUNEAU U4

Sp	DBH	Rings/In	Age	MBF Volume by Grade				
				All	2 Saw	3 Saw	4 Saw	Utility
DF	20.7	7.0		442	273	141	25	3
WH	20.0			26	18	8	1	
MA	8.0			9			9	
RC	23.0			4		3	1	
ALL	18.6	7.0		480	291	152	34	3

Unit Cruise Design: JUNEAU U4

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (46.94) Measure/Count Plots, Sighting Ht = 4.5 ft	12.8	13.0	12	8	0

Unit Cruise Summary: JUNEAU U4

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	38	59	4.9	1
WH	4	5	0.4	0
MA	1	4	0.3	0
RC	1	1	0.1	0
ALL	44	69	5.8	1

Unit Cruise Statistics (Cut + Leave Trees): JUNEAU U4

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
DF	230.8	48.6	14.0	163.3	19.5	3.2	37,695	52.4	14.4
WH	19.6	160.5	46.3	129.7	28.3	14.2	2,537	162.9	48.4
MA	15.6	233.5	67.4	85.9	0.0	0.0	1,345	233.5	67.4
RC	3.9	346.4	100.0	73.8	0.0	0.0	289	346.4	100.0
ALL	269.9	28.8	8.3	155.1	24.0	3.6	41,866	37.5	9.1

Unit Summary: JUNEAU U4

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	38	ALL	20.7	91	116	35,520	34,500	2.9	90.4	211.2	46.4	441.6
MA	LIVE	CUT	1	ALL	8.0	31	52	717	672	6.3	22.4	7.8	2.8	8.6
RC	LIVE	CUT	1	ALL	23.0	64	80	302	289	4.5	1.4	3.9	0.8	3.7
WH	LIVE	CUT	4	ALL	20.0	79	98	2,172	2,030	6.5	7.2	15.6	3.5	26.0
ALL	LIVE	CUT	44	ALL	19.0	79	103	38,711	37,492	3.1	121.4	238.6	53.5	479.9
ALL	ALL	ALL	44	ALL	19.0	79	103	38,711	37,492	3.1	121.4	238.6	53.5	479.9

Cruise Unit Report JUNEAU U5

Unit Sale Notice Volume (MBF): JUNEAU U5

Sp	DBH	Rings/In	Age	MBF Volume by Grade			
				All	3 Saw	4 Saw	Utility
DF	13.7			9	6	2	0
RA	8.9			7		7	
ALL	10.5			15	6	9	0

Unit Cruise Design: JUNEAU U5

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
FX: FR plots (20 tree / acre expansion)	2.7	2.7	4	4	0

Unit Cruise Summary: JUNEAU U5

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	6	6	1.5	0
RA	15	15	3.8	0
ALL	21	21	5.3	0

Unit Cruise Statistics (Cut + Leave Trees): JUNEAU U5

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
DF	30.5	200.0	100.0	103.1	16.4	6.7	3,150	200.7	100.2
RA	32.2	83.1	41.5	77.4	21.9	5.6	2,495	85.9	41.9
ALL	62.8	68.0	34.0	89.9	21.3	4.6	5,645	71.3	34.3

Unit Summary: JUNEAU U5

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	6	ALL	13.7	53	75	3,150	3,150	0.0	29.8	30.5	8.3	8.5
RA	LIVE	CUT	15	ALL	8.9	31	49	2,495	2,495	0.0	74.6	32.2	10.8	6.7
ALL	LIVE	CUT	21	ALL	10.5	37	56	5,645	5,645	0.0	104.4	62.8	19.1	15.2
ALL	ALL	ALL	21	ALL	10.5	37	56	5,645	5,645	0.0	104.4	62.8	19.1	15.2

Cruise Unit Report JUNEAU U6

Unit Sale Notice Volume (MBF): JUNEAU U6

Sp	DBH	Rings/In	Age	MBF Volume by Grade		
				All	3 Saw	4 Saw
RC	35.0			1	1	
MA	16.5			0	0	0
ALL	24.3			1	1	0

Unit Cruise Design: JUNEAU U6

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
ST: Strip/Percent Sample (1 tree expansion)	0.1		1	1	0

Unit Cruise Summary: JUNEAU U6

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
RC	1	1	1.0	0
MA	2	2	2.0	0
ALL	3	3	3.0	0

Unit Cruise Statistics (Cut + Leave Trees): JUNEAU U6

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
RC	66.8	0.0	0.0	189.5	0.0	0.0	12,660	0.0	0.0
MA	29.7	0.0	0.0	54.5	49.2	34.8	1,620	49.2	34.8
ALL	96.5	0.0	0.0	147.9	54.7	31.6	14,280	54.7	31.6

Unit Summary: JUNEAU U6

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
MA	LIVE	CUT	2	ALL	16.5	43	50	1,950	1,620	16.9	20.0	29.7	7.3	0.2
RC	LIVE	CUT	1	ALL	35.0	90	115	12,660	12,660	0.0	10.0	66.8	11.3	1.3
ALL	LIVE	CUT	3	ALL	24.3	58	72	14,610	14,280	2.3	30.0	96.5	18.6	1.4
ALL	ALL	ALL	3	ALL	24.3	58	72	14,610	14,280	2.3	30.0	96.5	18.6	1.4

Cruise Unit Report JUNEAU U7 ROW

Unit Sale Notice Volume (MBF): JUNEAU U7 ROW

Sp	DBH	Rings/In	Age	MBF Volume by Grade		
				All	3 Saw	4 Saw
DF	9.9			2	1	1
WH	11.0			0		0
ALL	9.9			2	1	1

Unit Cruise Design: JUNEAU U7 ROW

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
ST: Strip/Percent Sample (1 tree expansion)	0.8	0.8	1	1	0

Unit Cruise Summary: JUNEAU U7 ROW

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	11	44	44.0	0
WH	1	1	1.0	0
ALL	12	45	45.0	0

Unit Cruise Statistics (Cut + Leave Trees): JUNEAU U7 ROW

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
DF	29.3	0.0	0.0	72.4	10.1	3.0	2,120	10.1	3.0
WH	0.8	0.0	0.0	65.5	0.0	0.0	54	0.0	0.0
ALL	30.1	0.0	0.0	72.2	10.0	2.9	2,174	10.0	2.9

Unit Summary: JUNEAU U7 ROW

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	11	ALL	9.9	56	56	2,120	2,120	0.0	54.8	29.3	9.3	1.7
WH	LIVE	CUT	1	ALL	11.0	63	63	54	54	0.0	1.2	0.8	0.2	0.0
ALL	LIVE	CUT	12	ALL	9.9	57	57	2,174	2,174	0.0	56.0	30.1	9.6	1.7
ALL	ALL	ALL	12	ALL	9.9	57	57	2,174	2,174	0.0	56.0	30.1	9.6	1.7



A common sight within Juneau. Large Douglas-firs in the over story. Red cedar and hemlock filling in the bole zone. Waist high brush below.



High quality segments and Douglas-fir poles are on site.

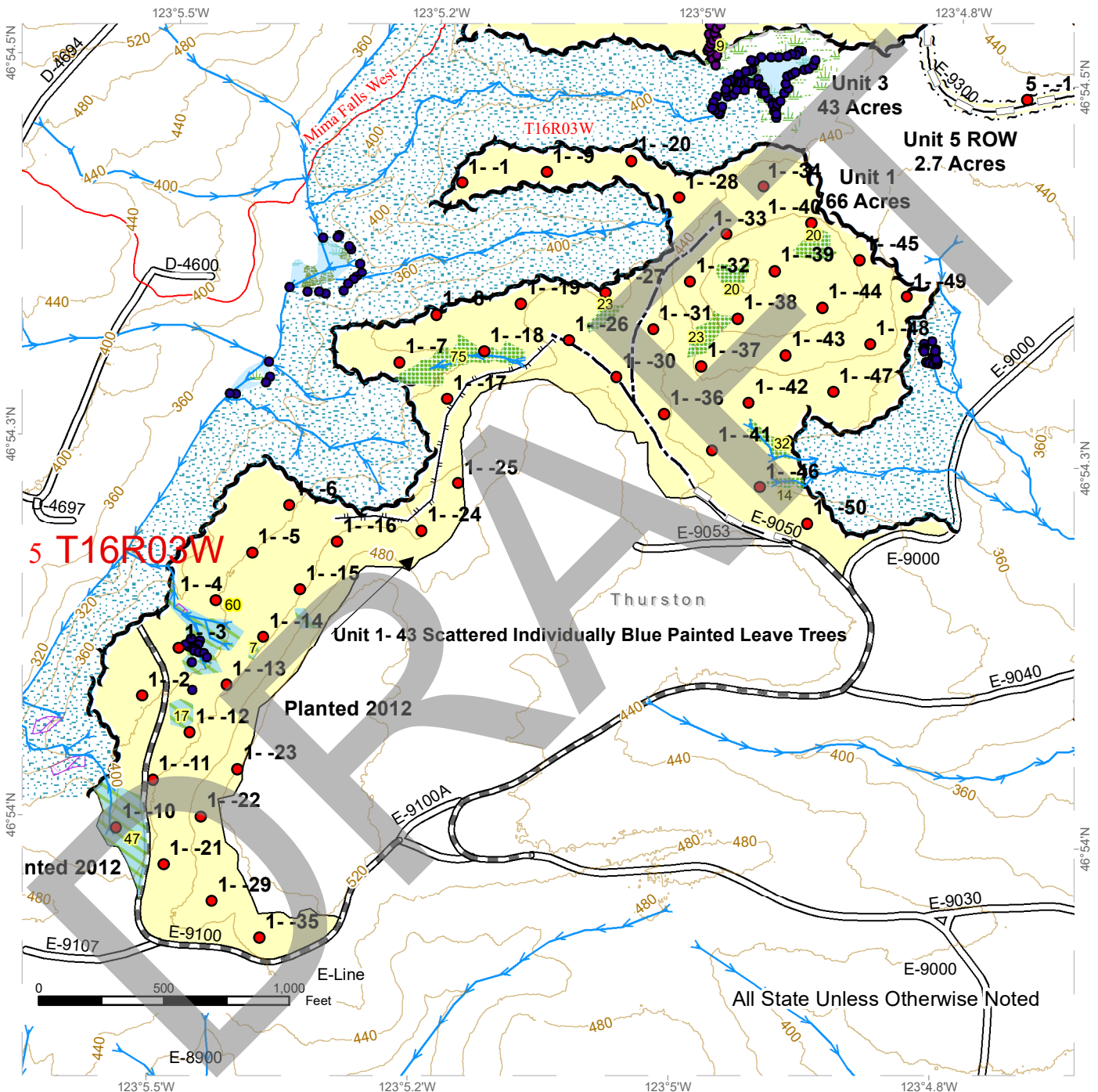


Timber type change in Unit 3. A majority of the unit resembles the right side of the photo.

LOGGING PLAN MAP

SALE NAME: JUNEAU
AGREEMENT#: 30-102082
TOWNSHIP(S): T16R3W, T16R4W, T17R3W
TRUST(S): Forest Board Repayment (42), State Forest Purchase (2)

REGION: South Puget Sound Region
COUNTY(S): Thurston
ELEVATION RGE: 400-1040

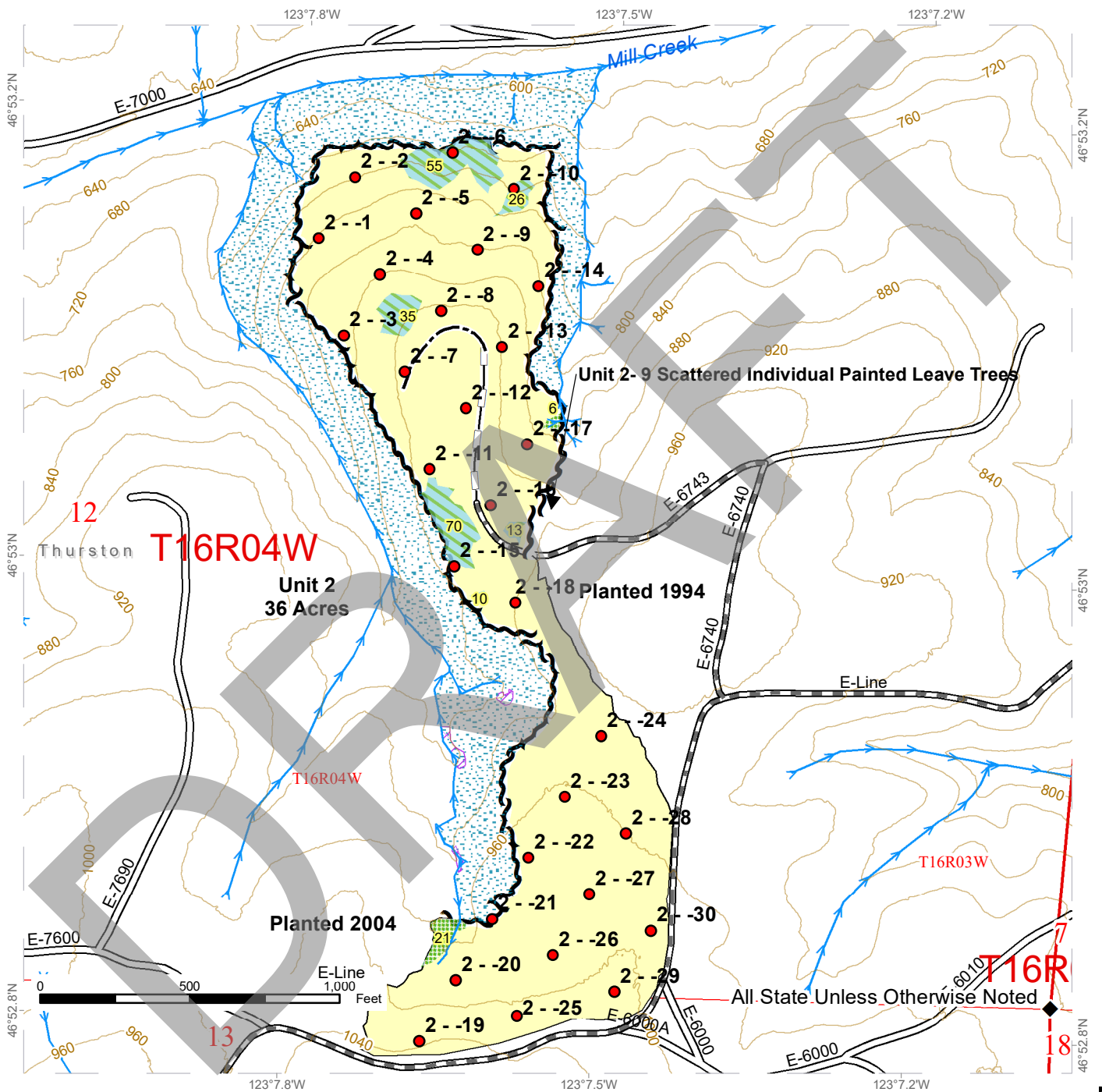


Sale Area	Existing Roads	Sale Boundary Tags
Wetlands - Non-forested	Required Pre-Haul Maintenance	Right of Way Tags
Non-Tradeable Leave Clump	Optional Construction	Timber Type Change
Leave Tree Area	Optional Reconstruction	Stream Type
Riparian Mgt Zone	Designated Skid Trail	Stream Type Break
Forested Wetland	Designated Trails	Contours 40 ft
Wetland Mgt Zone	Streams	Survey Monument
Tailhold Restriction Area		

LOGGING PLAN MAP

SALE NAME: JUNEAU
AGREEMENT#: 30-102082
TOWNSHIP(S): T16R3W, T16R4W, T17R3W
TRUST(S): Forest Board Repayment (42), State Forest Purchase (2)

REGION: South Puget Sound Region
COUNTY(S): Thurston
ELEVATION RGE: 400-1040

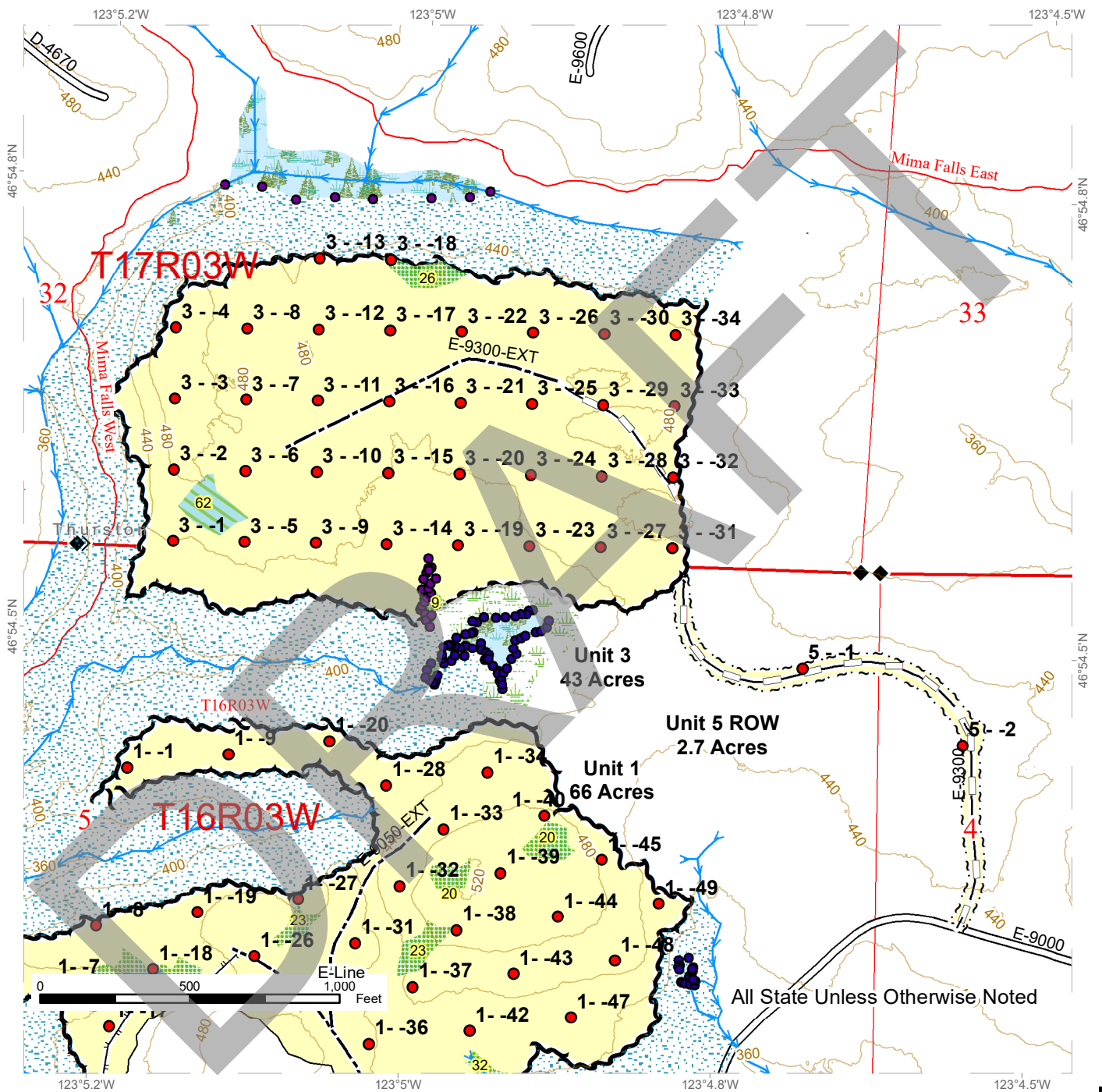


Sale Area	Optional Reconstruction	Survey Monument
Non-Tradeable Leave Clump	Streams	
Leave Tree Area	Sale Boundary Tags	
Riparian Mgt Zone	Timber Type Change	
Tailhold Restriction Area	Stream Type	
Existing Roads	Stream Type Break	
Required Pre-Haul Maintenance	Contours 40 ft	
Optional Construction		

LOGGING PLAN MAP

SALE NAME: JUNEAU
AGREEMENT#: 30-102082
TOWNSHIP(S): T16R3W, T16R4W, T17R3W
TRUST(S): Forest Board Repayment (42), State Forest Purchase (2)

REGION: South Puget Sound Region
COUNTY(S): Thurston
ELEVATION RGE: 400-1040

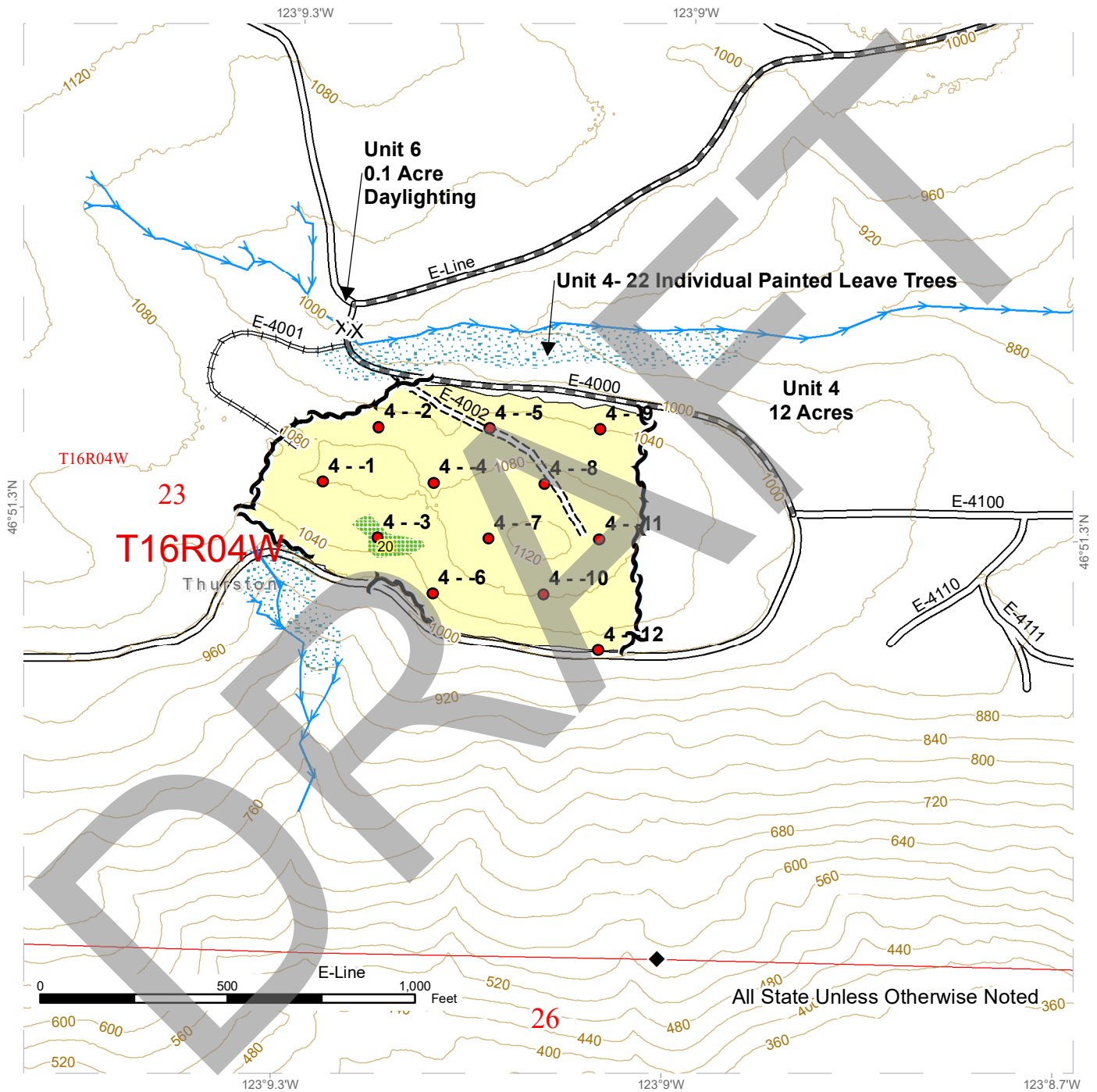


Sale Area	Optional Reconstruction	Stream Type
Non-Tradeable Leave Clump	Designated Skid Trail	Stream Type Break
Leave Tree Area	Designated Trails	Contours 40 ft
Riparian Mgt Zone	Streams	Survey Monument
Forested Wetland	Sale Boundary Tags	
Wetland Mgt Zone	Right of Way Tags	
Existing Roads	Timber Type Change	
Optional Construction		

LOGGING PLAN MAP

SALE NAME: JUNEAU
AGREEMENT#: 30-102082
TOWNSHIP(S): T16R3W, T16R4W, T17R3W
TRUST(S): Forest Board Repayment (42), State Forest Purchase (2)

REGION: South Puget Sound Region
COUNTY(S): Thurston
ELEVATION RGE: 400-1040

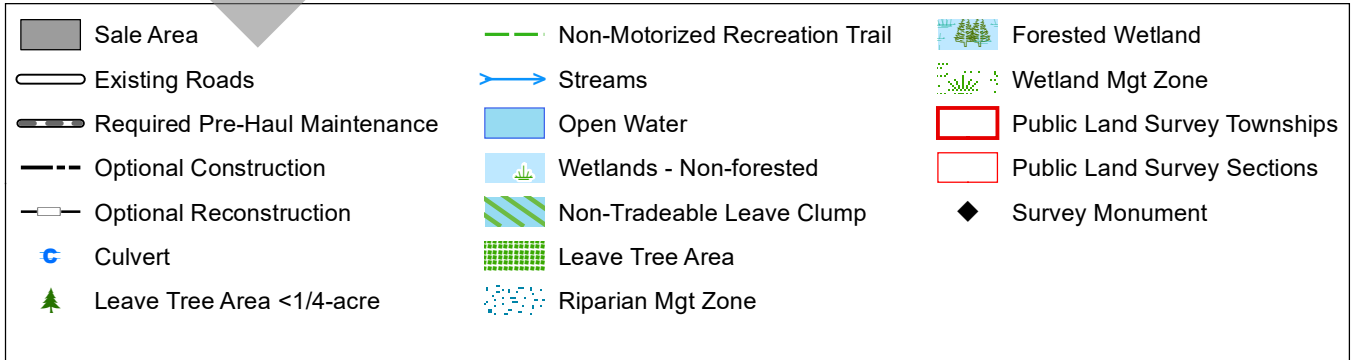
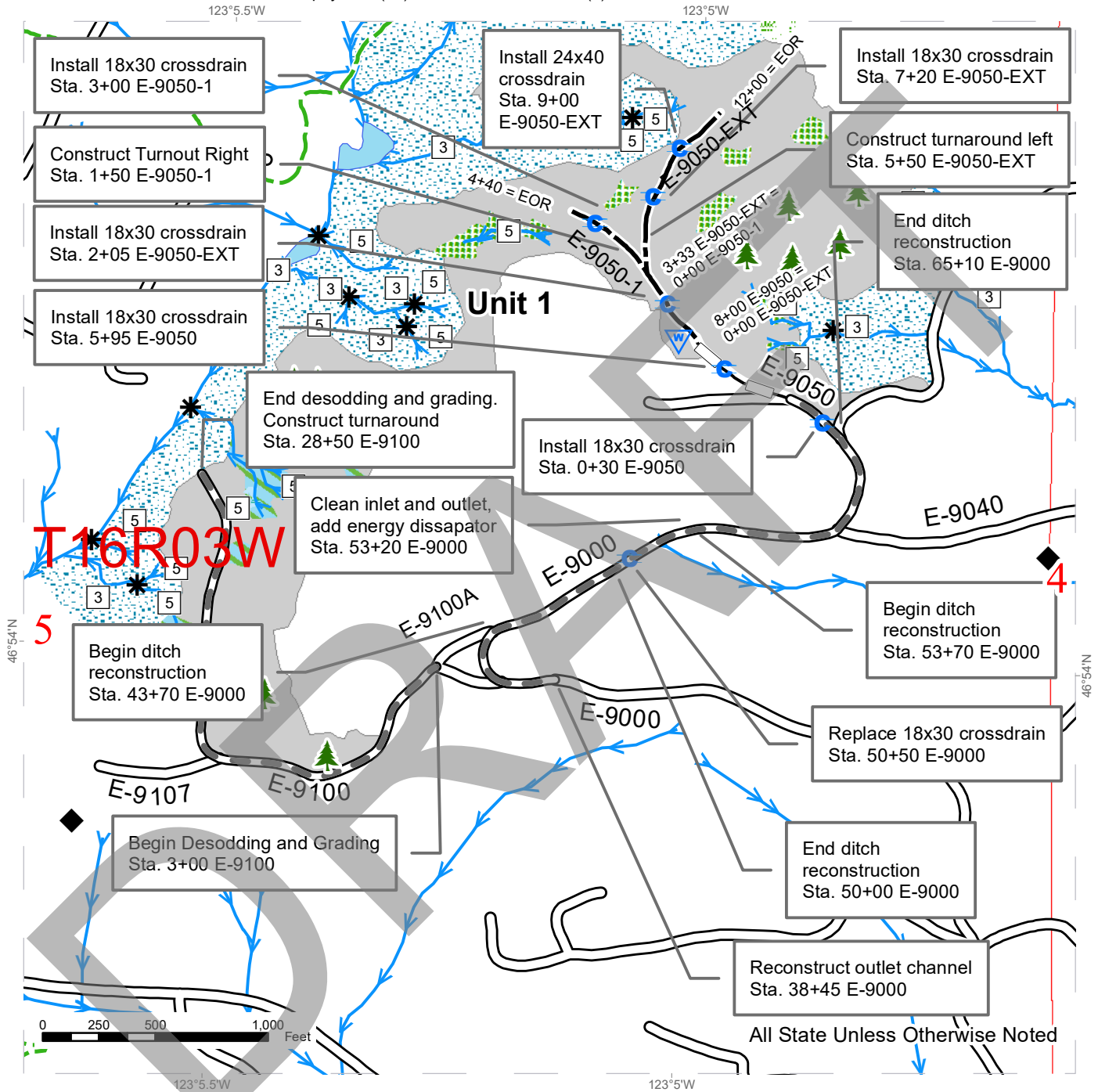


Sale Area	Sale Boundary Tags
Leave Tree Area	Stream Type
Riparian Mgt Zone	Stream Type Break
Existing Roads	Contours 40 ft
Required Pre-Haul Maintenance	Survey Monument
Required Construction	
Required Reconstruction	
Streams	

ROAD WORK MAP 1 OF 6

SALE NAME: JUNEAU
AGREEMENT #: 30-102082
TOWNSHIP(S): T16R3W, T16R4W, T17R3W
TRUST(S): Forest Board Repayment (42), State Forest Purchase (2)

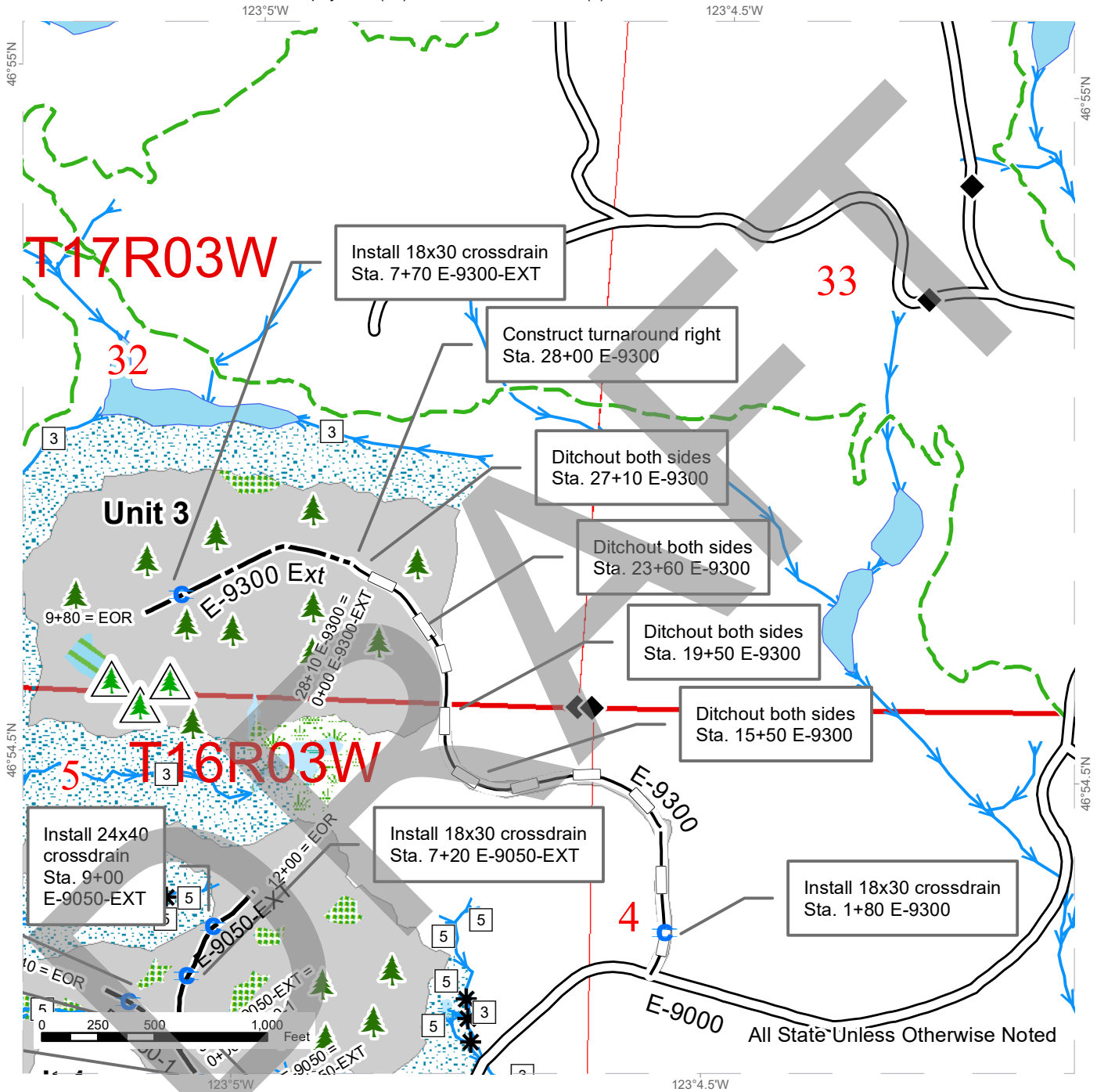
REGION: South Puget Sound Region
COUNTY(S): Thurston
ELEVATION RGE: 400-1040



ROAD WORK MAP 2 OF 6

SALE NAME: JUNEAU
AGREEMENT #: 30-102082
TOWNSHIP(S): T16R3W, T16R4W, T17R3W
TRUST(S): Forest Board Repayment (42), State Forest Purchase (2)

REGION: South Puget Sound Region
COUNTY(S): Thurston
ELEVATION RGE: 400-1040



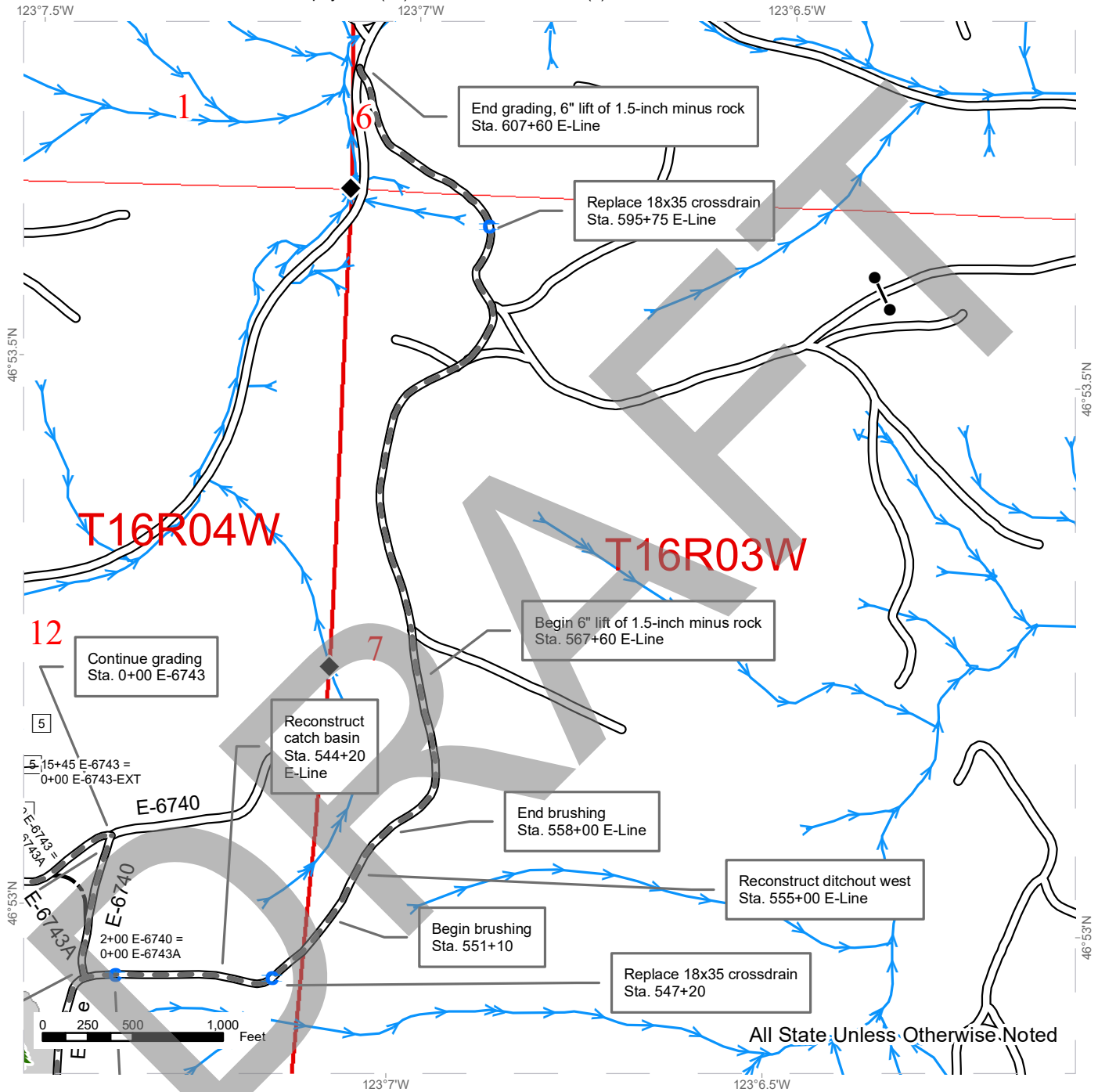
Sale Area	Non-Tradeable Leave Trees	Riparian Mgt Zone
Existing Roads	Non-Motorized Recreation Trail	Forested Wetland
Optional Construction	Streams	Wetland Mgt Zone
Optional Reconstruction	Open Water	Public Land Survey Townships
Culvert	Non-Tradeable Leave Clump	Public Land Survey Sections
Leave Tree Area <1/4-acre	Leave Tree Area	Survey Monument



ROAD WORK MAP 3 OF 6

SALE NAME: JUNEAU
AGREEMENT #: 30-102082
TOWNSHIP(S): T16R3W, T16R4W, T17R3W
TRUST(S): Forest Board Repayment (42), State Forest Purchase (2)

REGION: South Puget Sound Region
COUNTY(S): Thurston
ELEVATION RGE: 400-1040

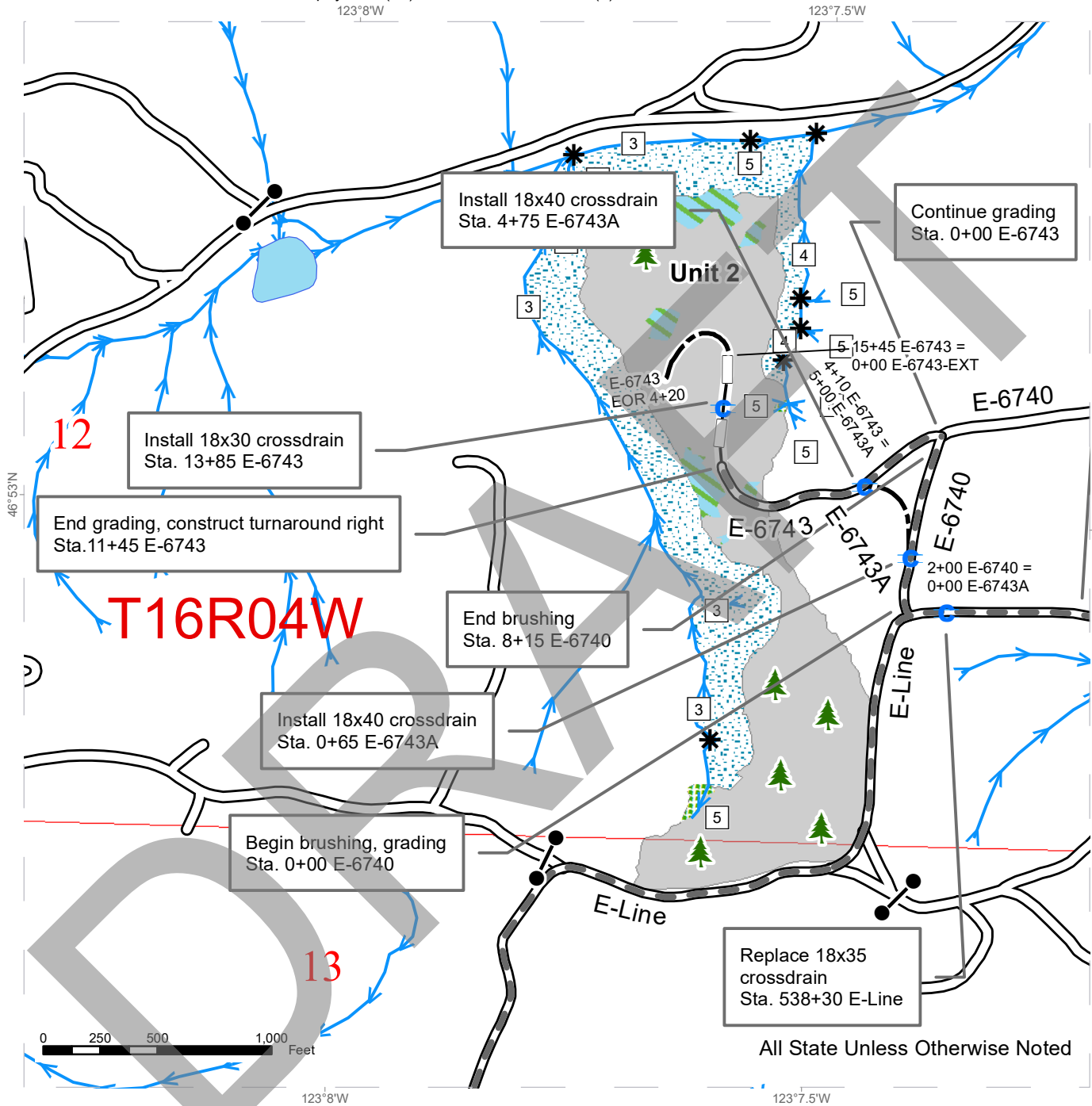


Sale Area	Public Land Survey Townships
Existing Roads	Public Land Survey Sections
Required Pre-Haul Maintenance	Gates
Optional Construction	Survey Monument
Culvert	
Leave Tree Area <1/4-acre	
Streams	

ROAD WORK MAP 4 OF 6

SALE NAME: JUNEAU
AGREEMENT #: 30-102082
TOWNSHIP(S): T16R3W, T16R4W, T17R3W
TRUST(S): Forest Board Repayment (42), State Forest Purchase (2)

REGION: South Puget Sound Region
COUNTY(S): Thurston
ELEVATION RGE: 400-1040

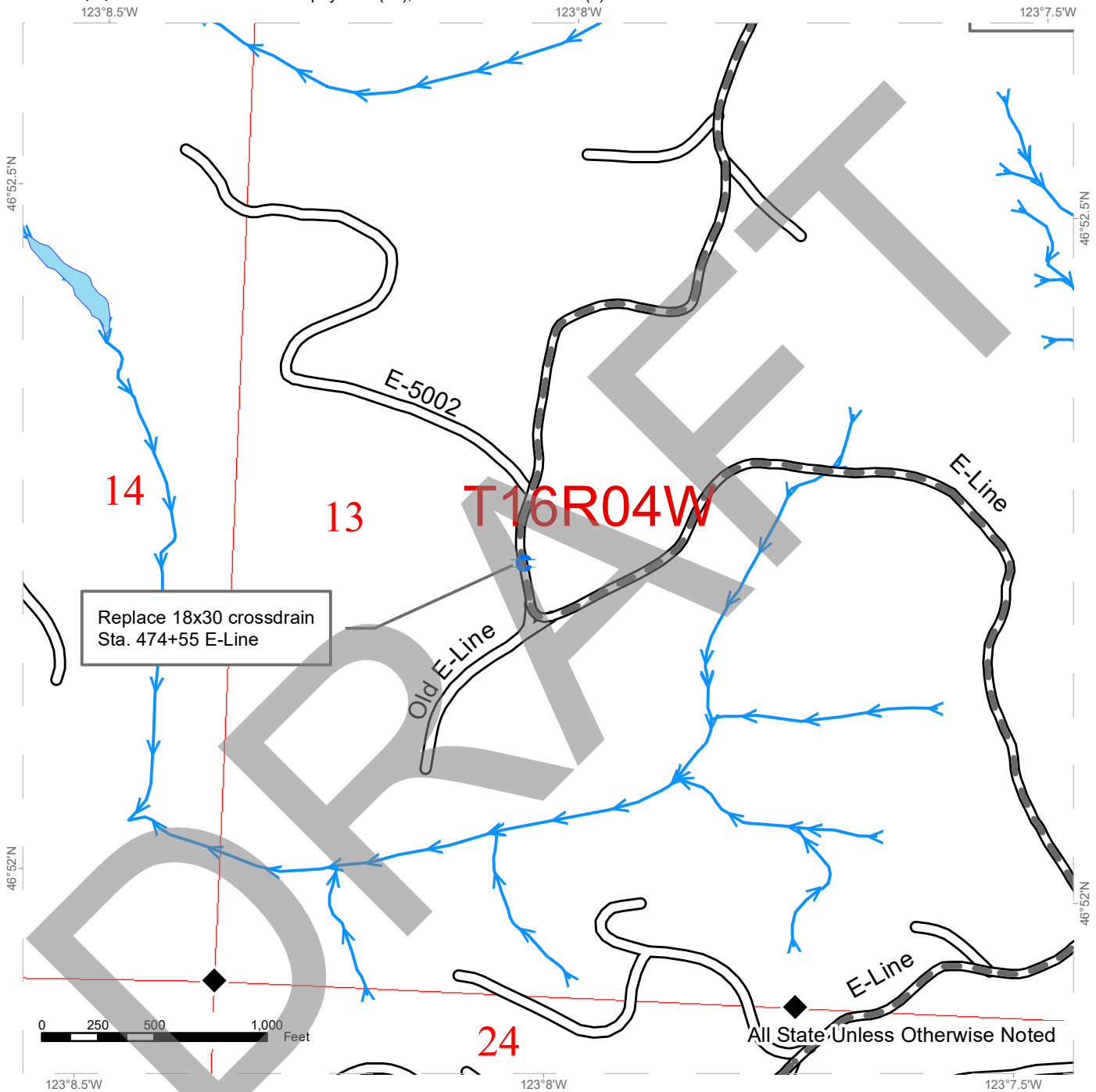


Sale Area	Streams	Gates
Existing Roads	Open Water	Survey Monument
Required Pre-Haul Maintenance	Non-Tradeable Leave Clump	
Optional Construction	Leave Tree Area	
Optional Reconstruction	Riparian Mgt Zone	
Culvert	Public Land Survey Townships	
Leave Tree Area <1/4-acre	Public Land Survey Sections	

ROAD WORK MAP 5 OF 6

SALE NAME: JUNEAU
AGREEMENT #: 30-102082
TOWNSHIP(S): T16R3W, T16R4W, T17R3W
TRUST(S): Forest Board Repayment (42), State Forest Purchase (2)

REGION: South Puget Sound Region
COUNTY(S): Thurston
ELEVATION RGE: 400-1040



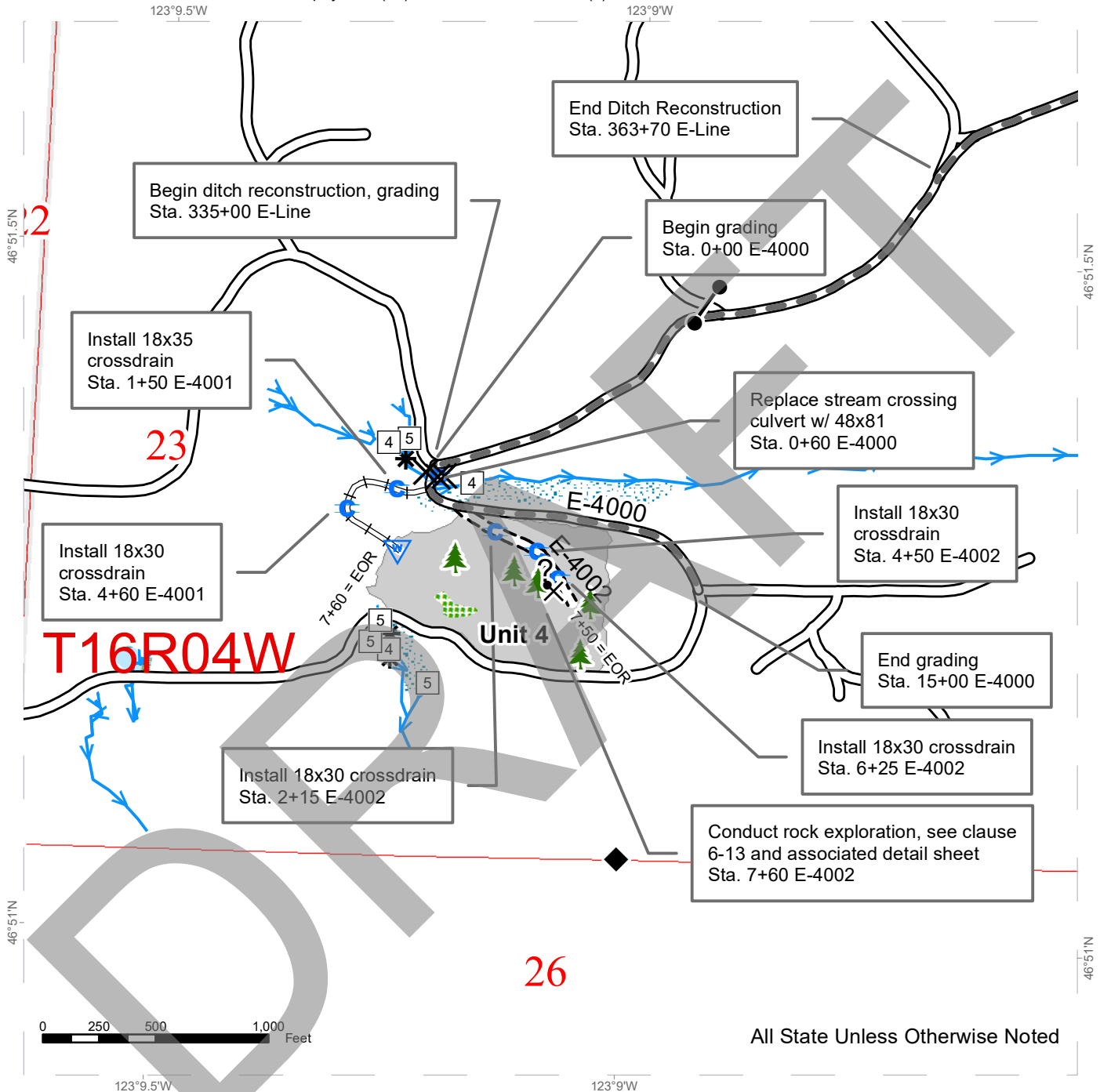
	Existing Roads		Survey Monument
	Required Pre-Haul Maintenance		
	Culvert		
	Streams		
	Open Water		
	Public Land Survey Townships		
	Public Land Survey Sections		



ROAD WORK MAP 6 OF 6

SALE NAME: JUNEAU
AGREEMENT #: 30-102082
TOWNSHIP(S): T16R3W, T16R4W, T17R3W
TRUST(S): Forest Board Repayment (42), State Forest Purchase (2)

REGION: South Puget Sound Region
COUNTY(S): Thurston
ELEVATION RGE: 400-1040



Sale Area	Leave Tree Area <1/4-acre	Forested Wetland
Existing Roads	Potential Rock Source	Public Land Survey Townships
Required Pre-Haul Maintenance	Take Tree	Public Land Survey Sections
Required Construction	Streams	Gates
Required Reconstruction	Leave Tree Area	Survey Monument
Culvert	Riparian Mgt Zone	

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

JUNEAU TIMBER SALE ROAD PLAN
THURSTON COUNTY
LITTLEROCK UNIT
BLACK HILLS DISTRICT
SOUTH PUGET SOUND REGION

AGREEMENT NO.: 30-102082

STAFF ENGINEER: G. GERRITSEN

DATE: 10/26/2022

DRAWN & COMPILED BY: G. GERRITSEN

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>
E-Line	335+00 to 607+60	Pre-Haul Maintenance
E-4000	0+00 to 15+00	Pre-Haul Maintenance
E-4001	0+00 to 7+60	Reconstruction, Closure
E-4002	0+00 to 7+50	Construction
E-6740	0+00 to 8+15	Pre-Haul Maintenance
E-6743	0+00 to 11+45	Pre-Haul Maintenance
E-6743	11+45 to 17+00	Abandonment if Reconstructed
E-6743-EXT	0+00 to 4+20	Abandonment if Constructed
E-9000	38+45 to 65+10	Pre-Haul Maintenance
E-9050	0+00 to 2+75	Pre-Haul Maintenance
E-9050-1	0+00 to 4+40	Abandonment if Constructed
E-9100	3+00 to 28+50	Pre-Haul Maintenance
E-9300-EXT	0+00 to 9+80	Abandonment if Constructed

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>
E-6743	11+45 to 17+00	Reconstruction
E-6743-EXT	0+00 to 4+20	Construction
E-6743A	0+00 to 5+00	Construction
E-9050	2+75 to 8+00	Reconstruction
E-9050-EXT	0+00 to 12+00	Construction
E-9050-1	0+00 to 4+40	Construction
E-9300	0+00 to 28+10	Reconstruction
E-9300-EXT	0+00 to 9+80	Construction

0-4 CONSTRUCTION

Construction includes, but is not limited to:

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

0-5 RECONSTRUCTION

Reconstruction includes, but is not limited to:

- Clearing;
- Grubbing;
- Re-establishment of existing subgrade;
- Acquisition and installation of drainage structures;
- Acquisition, manufacture, and application of rock.

0-6 PRE-HAUL MAINTENANCE

Pre-haul maintenance includes, but is not limited to:

- Acquisition and installation of drainage structures;
- Acquisition, manufacture, and application of rock;
- Grading road surfaces;
- Ditching and/or ditch reconstruction;
- Turnout and turnaround reconstruction;
- Realignment of existing mainline road;
- Brushing.

0-7 POST-HAUL MAINTENANCE

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

0-8 CLOSURE

This project includes road closure listed in Clause 9-15 ROAD CLOSURE.

0-10 ABANDONMENT

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

0-12 DEVELOP ROCK SOURCE

Purchaser may develop an existing rock source. Work for developing rock sources is listed in Section 6 ROCK AND SURFACING.

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 the submitted 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.

Tolerance Class	<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.
7. Road Work maps.

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 7 calendar days before the closure of any road.

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 cut ends, or 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 or cold galvanizing compound.

1-15 ROAD MARKING

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

- Construction: Orange ribbon tied at eye-height along centerline, with orange-flagged stakes marking centerline. Triple orange ribbon signals the end of construction.
- Reconstruction: Existing road prism.

1-16 CONSTRUCTION STAKES SET BY STATE

Purchaser shall perform work on the following road(s) in accordance with the construction stakes and 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.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
E-4002	0+00 to 7+50	Centerline Alignment Staking
E-6743-EXT	0+00 to 4+20	Centerline Alignment Staking
E-6743A	0+00 to 5+00	Centerline Alignment Staking
E-9050-EXT	0+00 to 12+00	Centerline Alignment Staking
E-9050-1	0+00 to 4+40	Centerline Alignment Staking
E-9300-EXT	0+00 to 9+80	Centerline Alignment Staking

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.

1-21 HAUL APPROVAL

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

1-22 WORK NOTIFICATIONS

On the following road(s), Purchaser shall notify the Contract Administrator a minimum of 7 calendar days before work begins.

<u>Road</u>	<u>Stations</u>
E-4000	0+60

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:

- Subgrade construction including compaction prior to rock application
- Grading of existing roads prior to rock application
- Haul approval

1-25 ACTIVITY TIMING RESTRICTION

The operation of road construction equipment is not allowed on weekends or state recognized holidays, unless authorized in writing by the Contract Administrator. 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>
Operation of road construction equipment	November 1 through April 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 or Contract Clause H-130 HAULING SCHEDULE, Purchaser shall comply with a maintenance plan, when a plan is determined necessary by the Contract Administrator, 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 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.

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:

- Surface or base stability problems persist.
- Weather is such that satisfactory results cannot be obtained in an area of operations.
- When, in the opinion of the Contract Administrator excessive road damage or rutting may occur.

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. Before and during any suspension, Purchaser shall protect the work from damage or deterioration.

1-32 BRIDGE OR 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 road construction and hauling 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 by the Region Engineer or their designee for any damage caused by transporting equipment.

1-33 SNOW PLOWING RESTRICTION

Snowplowing will be allowed after the execution of a SNOW PLOWING AGREEMENT, which is available from the Contract Administrator upon request. If damage occurs while plowing, further permission to plow may be revoked by the Contract Administrator.

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.

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.

2-5 MAINTENANCE GRADING – EXISTING ROAD

On the following road(s), Purchaser shall use a grader to shape the existing surface to the specifications shown on the TYPICAL SECTION SHEET before application of rock, or if not applying rock, before timber haul. Purchaser shall accomplish all grading using a motor grader with a minimum of 175 horsepower.

<u>Road</u>	<u>Stations</u>
E-Line	335+00 to 607+60
E-4000	0+00 to 15+00
E-6740	0+00 to 8+15
E-6743	0+00 to 11+45
E-9100	0+00 to 28+50

2-6 CLEANING CULVERTS

On the following road(s), Purchaser shall clean the inlets and outlets of the listed culverts before timber haul.

<u>Road</u>	<u>Stations</u>
E-9000	38+45, 53+20

2-7 CLEANING DITCHES, HEADWALLS, AND CATCH BASINS

On the following road(s), Purchaser shall ensure that ditches, headwalls, and catch basins meet all specifications shown on the CULVERT AND DRAINAGE SPECIFICATION DETAIL. Work must be completed before the application of rock and must be done in accordance with the TYPICAL SECTION SHEET. Pulling ditch material across the road or mixing in with the road surface is not allowed.

<u>Road</u>	<u>Stations</u>
E-Line	335+00 to 363+70, 544+20
E-9000	43+70 to 50+00, 53+70 to 65+10

SECTION 3 – CLEARING, GRUBBING, AND DISPOSAL

3-1 BRUSHING

On the following road(s), Purchaser shall cut vegetative material up to 6 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>
E-Line	551+10 to 558+00
E-6740	0+00 to 8+15

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 and within waste and debris areas, 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 50 feet of any stream.
- In locations that interfere with the construction of the road prism.
- In locations that impede drainage.
- On slopes greater than 45%.
- Against standing trees.

3-10 GRUBBING

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

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 timber haul.

3-23 PROHIBITED DISPOSAL AREAS

Purchaser shall not place organic debris in the following areas:

- Within 50 feet of a crossdrain culvert.
- Within 100 feet of a live stream, or wetland.
- On road subgrades, or excavation and embankment slopes.
- On slopes greater than 45%.
- 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 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 more than 1000 feet beyond completed construction unless approved in writing by the Contract Administrator. In addition, the following actions must be taken as pioneering progresses:

- Drainage must be provided on all uncompleted construction.
- Road pioneering operations may not undercut the final cut slope 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 12 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.

4-5 CUT SLOPE RATIO

Purchaser shall construct excavation slopes no steeper than shown on the following table, unless construction staked or designed:

<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, unless construction staked or designed:

<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 feet for curves of 50 to 79 feet radius.
- 4 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 2 to 6 feet.
- 4 feet for embankment heights at centerline of greater than 6 feet.

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

4-21 TURNOUTS

Purchaser shall construct turnouts as designated on the TURNOUT AND TURNAROUND LIST, and may also construct optional turnouts within the unit boundary. Locations may be adjusted to fit the final subgrade alignment and sight distances. Minimum dimensions are listed on the TURNOUT AND TURNAROUND LIST.

4-22 TURNAROUNDS

Purchaser shall construct turnarounds as designated on the TURNOUT AND TURNAROUND LIST, and may construct optional turnarounds on roads designated for Construction or Reconstruction. Turnarounds must be no larger than 30 feet long and 30 feet wide. Optional turnarounds outside the unit boundary are subject to written approval by the Contract Administrator.

4-25 DITCH CONSTRUCTION AND RECONSTRUCTION

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

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 disposed of as specified in Clause 4-36 DISPOSAL OF WASTE MATERIAL.

4-28 DITCH DRAINAGE

Ditches must drain to crossdrain culverts or ditchouts.

4-29 DITCHOUTS

Purchaser shall construct ditchouts as identified on the CULVERT AND DRAINAGE LIST. 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.

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 45% if the waste material is compacted and free of organic debris. On side slopes greater than 45%, all waste material must be end hauled or pushed to the designated embankment sites and waste areas identified in Clause 4-37 WASTE AREA LOCATION.

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.

<u>Road</u>	<u>Waste Area Location</u>	<u>Volume (cy)</u>
E-4001	7+60	3,000
E-9050-EXT	0+50	1,000

4-38 PROHIBITED WASTE DISPOSAL AREAS

Purchaser shall not deposit waste material in the following areas:

- Within 50 feet of a crossdrain culvert.
- Within 100 feet of a live stream or wetland.
- Within a riparian management zone.
- Within a wetland management zone.
- On side slopes steeper than 45%.
- In locations that interfere with the construction of the road prism.
- In locations that impede drainage.
- Within the operational area for cable landings.
- Against standing timber.

4-45 SELECT BORROW

Select borrow consists of granular material, either naturally occurring or processed, and contains no more than 5% clay, organic debris, or trash by volume. Select borrow material must be free of rocks greater than 6 inches in any dimension.

4-48 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.

4-55 ROAD SHAPING

Purchaser shall shape 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.

4-60 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. A plate compactor must be used for embankment and waste area segments too narrow to accommodate equipment. 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 and reconstructed subgrades in accordance with the COMPACTION LIST by routing equipment over the entire width.

4-63 EXISTING SURFACE COMPACTION

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

SECTION 5 – DRAINAGE

5-1 REMOVAL OF SHOULDER BERMS

Purchaser shall remove berms from road shoulders, except as specified in Clause 8-7 ROAD SHOULDER BERM INSTALLATION. The construction of ditchouts is required where ponding could result from the effects of sidecast debris.

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 10-24.

5-7 USED CULVERT MATERIAL

On the following road(s), Purchaser may install used culverts. All other roads must have new culverts installed. Culverts must meet the specifications in Clauses 10-15 through 10-24.

<u>Road</u>	<u>Stations</u>
E-6743	13+85
E-9050-1	3+00
E-9300-EXT	7+70

5-10 CULVERT MARKER INSTALLATION

On the following road(s), Purchaser shall provide and install culvert markers at the inlet in accordance with the CULVERT MARKER DETAIL.

<u>Road</u>	<u>Stations</u>
E-4001	0+00 to 7+60
E-4002	0+00 to 7+50
E-6743A	0+65, 4+75
E-9050	0+00 to 8+00
E-9050-EXT	0+00 to 12+00
E-9300	0+00 to 28+10

5-12 UNUSED MATERIALS STATE PROPERTY

On required roads, any materials listed on the CULVERT AND DRAINAGE LIST and materials listed in Clause 5-13 CONTINGENCY CULVERTS that are not installed will become the property of the state. Purchaser shall stockpile materials at Mima Mounds Pit (SW¼ NW¼ Section 10 T16R03W).

5-13 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.	18" x 30' culvert 18" culvert band

5-15 CULVERT INSTALLATION

Culvert 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”. Corrugated Polyethylene pipe must be installed in a manner consistent with the manufacturer’s recommendations. Culverts shall be banded using lengths of no less than 10 feet, and no more than one length less than 16 feet. Shorter section of banded culvert shall be installed at the inlet end.

5-16 APPROVAL FOR LARGER CULVERT INSTALLATION

Purchaser shall obtain written approval from the Contract Administrator for the installation of culverts 30 inches in diameter and greater before backfilling.

5-17 CROSSDRAIN SKEW AND SLOPE

Crossdrains, on road grades in excess of 3%, must be skewed at least 30 degrees from perpendicular to the road centerline, except where the crossdrain is at the low point in the road culverts will not be skewed. Crossdrain culverts must be installed at a slope steeper than the incoming ditch grade, but not less than 3% or more than 10%.

5-18 CULVERT DEPTH OF COVER

All culverts must be installed with a depth of cover of not less than 6 inches of compacted subgrade over the top of the culvert at the shallowest point.

5-20 ENERGY DISSIPATERS

Purchaser shall install energy dissipaters in accordance with the CULVERT AND DRAINAGE SPECIFICATION DETAIL at all crossdrain culverts at all culverts 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 AND DRAINAGE LIST. Energy dissipaters must extend a minimum of 1 foot to each side of the culvert at the outlet and a minimum of 2 feet beyond the outlet.

5-25 CATCH BASINS

Purchaser shall construct catch basins 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 CROSSDRAIN CULVERTS

Purchaser shall construct headwalls in accordance with the CULVERT AND DRAINAGE SPECIFICATION DETAIL at all culverts on the CULVERT AND DRAINAGE LIST. Rock must be placed on shoulders, slopes, and around culvert inlets and outlets. Minimum specifications require that rock be placed at a width of one culvert diameter on each side of the culvert opening, and to a height of one culvert diameter above the top of the culvert. Rock may not restrict the flow of water into culvert inlets or catch basins.

5-27 ARMORING FOR STREAM CROSSING CULVERTS

At the following culvert(s), Purchaser shall place Light Loose Rip Rap immediately following construction of the embankment. Rock must be placed around culvert inlets and outlets as per E-4000 0+60 Culvert Replacement Detail. Rock may not restrict the flow of water into culvert inlets or catch basins. No placement by end dumping or dropping of rock is allowed. Light Loose Rip Rap must meet the specifications in Clause 6-50 LIGHT LOOSE RIP RAP.

<u>Road</u>	<u>Stations</u>	<u>Rock Type</u>
E-4000	0+60	Light Loose Rip Rap

SECTION 6 – ROCK AND SURFACING

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. 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 7 calendar days before starting any operations in the listed location(s).

<u>Source</u>	<u>Location</u>	<u>Rock Type</u>
Scott Paper Quarry	SE ¼ NW ¼ Sec. 8 T16R03W	Light Loose Rip Rap, 4-Inch In-Place, 4-Inch Minus, 1 ½ - Inch Minus
Southview Quarry	SE ¼ SW ¼ Sec. 23 T16R04W	TBD Upon Results of Exploratory Drilling

6-3 ROCK SOURCE STATE LAND, EXISTING STOCKPILE

Rock used in accordance with the quantities on the ROCK LIST may be obtained from the following existing stockpile(s) on state land at no charge to the Purchaser. Purchaser shall not remove additional yardage without prior written approval from the Contract Administrator. Other stockpiles may not be used without prior written approval from the Contract Administrator.

<u>Source</u>	<u>Location</u>	<u>Rock Type</u>	<u>Quantity (cy)</u>
Scott Paper Quarry	SE ¼ NW ¼ Sec. 8 T16R03W	1 ½ - Inch Minus	1,500
Vantage Quarry	SW ¼ NW ¼ Sec. 22 T16R04W	1 ½ - Inch Minus	100

6-5 ROCK FROM COMMERCIAL SOURCE

Rock used in accordance with the quantities on the ROCK LIST may 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.

<u>Possible Sources</u>	<u>Location</u>
Black Lake Resources	10201 Littlerock Rd SW Olympia, WA 98512
Northwest Rock Inc.	6801 State Route 12 Oakville, WA 98568

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 SCOTT PAPER QUARRY 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 SCOTT PAPER QUARRY DEVELOPMENT PLAN, and approved in writing by the Contract Administrator. Purchaser shall notify the Contract Administrator a minimum of 7 calendar days before starting any operations in the rock source.

<u>Source</u>	<u>Rock Type</u>
Scott Paper Quarry	Light Loose Rip Rap, 4-Inch In-Place, 4-Inch Minus, 1 ½ - Inch Minus

6-11 ROCK SOURCE DEVELOPMENT PLAN BY PURCHASER

Purchaser may conduct rock source development and use at the following sources, in accordance with a written ROCK SOURCE DEVELOPMENT PLAN to be prepared by the Purchaser. The plan is subject to written approval by the Contract Administrator before any rock source operations. 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 7 calendar days before starting any operations in the rock source.

<u>Source</u>	<u>Rock Type</u>
Southview Quarry	TBD Upon Results of Exploratory Drilling

Rock source development plans prepared by the Purchaser must show the following information:

- Rock source location.
- Rock source overview showing access roads, development areas, stockpile locations, waste areas, and floor drainage.
- Rock source profiles showing development areas, bench locations including widths, and wall faces including heights.

6-12 ROCK SOURCE SPECIFICATIONS

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

- Quarry 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

- Quarry walls must be maintained in a condition to minimize the possibility of the walls sliding or failing.
- The width of quarry benches must be a minimum of 20ft.
- The surface of quarry floors and benches must be uniform and free-draining at a minimum 2% outslope gradient.
- All vegetation including stumps shall be cleared a minimum of 35 feet beyond the top of all working faces. Surface shall be scalped of all overburden within 20 feet of working face at all times. Overburden faces shall be sloped no steeper than 1:1.
- Oversize material remaining in the rock source at the conclusion of the timber sale may not exceed 500 cubic yards. Oversize material is defined as rock fragments larger than two feet in any direction.
- 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 quarry faces must be blocked.

6-13 ROCK EXPLORATION

Purchaser shall provide a rock drill with operator for exploration of rock at the following site(s). See ROCK EXPLORATION PLAN MAP for test hole locations.

<u>Site</u>	<u>Location</u>	<u>Test Holes</u>
Southview Quarry	E-4002 sta 7+50	6x40ft (240 Vertical Feet)

6-14 DRILL AND SHOOT

Rock drilling and shooting must meet the following specifications:

- Purchaser shall notify the Contract Administrator a minimum of 7 calendar days before blasting operations.
- Purchaser shall submit an informational drilling and shooting plan to the Contract Administrator 7 calendar days before any drilling (Form #M-126PAC).
- 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 and trails before blasting operations.

6-20 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.
- At the request of the Contract Administrator, Purchaser shall produce a sieve analysis for manufactured rock. Purchaser may use a commercial testing lab to produce sieve analysis.
- The crushing operation must be concluded within 30 working days from the time it begins.

6-21 IN-PLACE PROCESSING

Purchaser may use in-place processing, such as a grid roller or other method, if suitable crushing can be demonstrated to meet the surfacing size-specified in Clause 6-38 4-INCH IN-PLACE ROCK. Purchaser shall remove any existing organic debris before the start of in-place crushing operations.

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 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. The exact point of evaluation for conformance to specifications will be determined by the Contract Administrator.

6-25 FINES

% Passing U.S. #40 sieve	100%
% Passing U.S. #200 sieve	0%

The portion of aggregate retained on the No. 200 sieve may not contain more than 0.2 percent organic debris and trash. All percentages are by weight.

6-29 1 ½-INCH MINUS CRUSHED ROCK

% Passing 1 ½" square sieve	100%
% Passing 1" square sieve	50 - 85%
% Passing U.S. #4 sieve	30 - 50%
% 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.

6-36 4-INCH MINUS CRUSHED ROCK

% Passing 4" square sieve	100%
% Passing 2" square sieve	55 - 75%
% Passing U.S. #4 sieve	15 - 45%

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.

6-38 4-INCH IN-PLACE ROCK

4-inch in-place rock must have a minimum of 90 percent of the top 4 inches of the running surface pass a 4-inch square opening.

In-place rock may not contain more than 5 percent by weight of organic debris and trash. No more than 50 percent of rock may be larger than 8 inches in any dimension and no rock may be larger than 12 inches in any dimension.

6-50 LIGHT LOOSE RIP RAP

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

<u>Quantity</u>	<u>Approximate Size Range</u>
20% to 90%	18" - 28"
15% to 80%	8" - 18"
10% to 20%	3" - 8"

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, unless otherwise stated in Clause 6-75 OPTIONAL ROCK EXCEPTION.

6-70 APPROVAL BEFORE ROCK APPLICATION

Purchaser shall obtain written approval from the Contract Administrator for subgrade construction and compaction on all new construction, and road grading on all existing roads 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. 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.

6-75 OPTIONAL ROCK EXCEPTION

On the following roads, Purchaser may place less rock than shown on the ROCK LIST.

<u>Road</u>	<u>Stations</u>	<u>Options</u>
E-6743	11+45 to 17+00	4-Inch In-Place
E-6743-EXT	0+00 to 4+20	4-Inch In-Place
E-9050-1	0+00 to 4+40	4-Inch In-Place
E-9300	0+00 to 28+10	4-Inch In-Place
E-9300-EXT	0+00 to 9+80	4-Inch In-Place
Designated Landings	All	4-Inch In-Place
New Turnouts and Turnarounds	All	4-Inch In-Place

SECTION 7 – STRUCTURES

7-5 STRUCTURE DEBRIS

Purchaser shall not allow debris from the installation or removal of structures to enter any stream. Components removed from existing structures(s) must be removed from state land. 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, engineered drawings and CULVERT AND DRAINAGE SPECIFICATION DETAIL.

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.

7-70 GATE CLOSURE

On the following road(s), Purchaser shall keep gates closed and locked except during periods of rock haul. All gates that remain open during haul must be locked or securely fastened in the open position. All gates must be closed at termination of use.

<u>Road</u>	<u>Station</u>
E-6800	25+50

SECTION 8 – EROSION CONTROL

8-2 PROTECTION FOR EXPOSED SOIL

Purchaser shall provide and evenly spread a layer of straw to all exposed soils within 100 feet of a stream or wetland. Soils may not sit exposed during any rain event.

8-7 ROAD SHOULDER BERM INSTALLATION

On the following road(s), Purchaser shall construct a berm on the road shoulder as shown on the E-4000 0+60 Culvert Replacement Sheet 2 of 4.

<u>Road</u>	<u>Stations</u>	<u>Remarks</u>
E-4000	0+10 to 1+10	Following stream crossing culvert install, East side of the road (downstream side).

8-15 REVEGETATION

Purchaser shall spread grass seed on all exposed soils resulting from road work activities within 100 feet of a stream or wetland. Purchaser shall revegetate during the first available opportunity after road work is completed.

<u>Qty</u>	<u>Type</u>	<u>Road</u>	<u>Stations</u>
50lbs/acre	Pasture Mix	E-4000	0+00 to 1+60

8-16 REVEGETATION SUPPLY

The Purchaser shall provide the Pasture Mix grass seed and straw.

SECTION 9 – POST-HAUL ROAD WORK

9-1 EARTHEN BARRICADES

Purchaser shall construct barricades in accordance with the BARRICADE DETAIL.

<u>Road</u>	<u>Stations</u>
E-4001	0+10
E-6743	11+45
E-9050-1	0+10
E-9300-EXT	0+10

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.

9-5 POST-HAUL MAINTENANCE

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

9-10 LANDING DRAINAGE

Purchaser shall provide for drainage of the landing surface.

9-15 ROAD CLOSURE

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

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
E-4001	0+00 to 7+60	See Clause 9-16 CLOSURE

9-16 CLOSURE

At a minimum, closure consists of:

- Maintain road according to the FOREST ACCESS ROAD SPECIFICATIONS.
- Block roads with earthen barricades in accordance with the attached BARRICADE DETAIL.

9-21 ROAD ABANDONMENT

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

<u>Road</u>	<u>Stations</u>
E-6743	11+45 to 17+00
E-6743-EXT	0+00 to 4+20
E-9050-1	0+00 to 4+40
E-9300-EXT	0+00 to 9+80

9-22 ABANDONMENT

- Remove road shoulder berms except as directed.
- Construct non-drivable water bars according to the attached NON-DRIVABLE WATER BAR DETAIL at a maximum spacing that will produce a vertical drop of no more than 10 feet between water bars or between natural drainage paths and with a maximum spacing of 100 feet, or as marked in the field.
- Skew water bars at least 30 degrees from perpendicular to the road centerline on roads in excess of 3 percent grade.
- Key water bars into the cut-slope to intercept the ditch. Water bars must be outsloped to provide positive drainage. Outlets must be on stable locations.
- Block roads with earthen barricades in accordance with the attached BARRICADE DETAIL.
- Remove culverts.
- Remove ditch crossdrain 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 in accordance with Section 8 EROSION CONTROL.

SECTION 10 MATERIALS

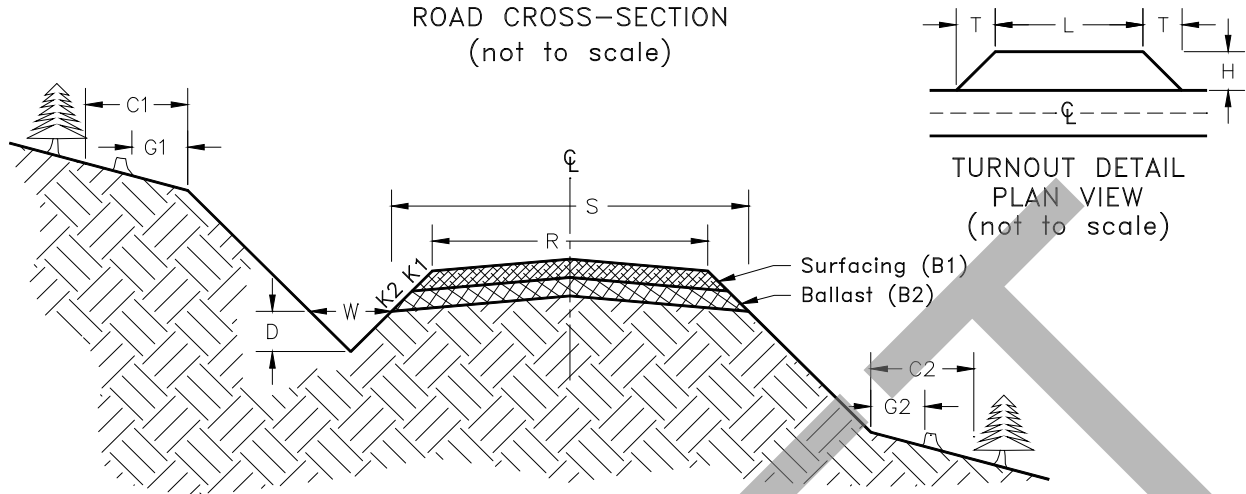
10-17 CORRUGATED PLASTIC CULVERT

Polyethylene culverts must meet AASHTO M-294 specifications, or ASTM F-2648 specifications for recycled polyethylene. Culverts 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. Split coupling bands must have a minimum of four corrugations, two on each side of the pipe joint.

TYPICAL SECTION SHEET



Road Number	From Station	To Station	Tolerance Class	Subgrade Width	Road Width	Ditch		Crown in. @ CL	Grubbing Limits		Clearing Limits	
						Width	Depth		G1	G2	C1	C2
			C	S	R	W	D		G1	G2	C1	C2
E-Line	335+00	718+95	A	19	16	3	1	4	-		-	-
E-4000	0+00	1+00	C	25	22	3		4	-	-	-	-
	1+00	15+00	C	15	12	3	1	4	-	-	-	-
E-4001	0+00	7+60	C	15	12	3	1	4	-	-	-	-
E-4002	0+00	7+50	C	15	12	3	1	4	5	5	10	10
E-6740	0+00	8+15	C	15	12	3	1	4	-	-	-	-
E-6743	0+00	11+45	C	15	12	3	1	4	-	-	-	-
E-6743	11+45	17+00	C	15	12	3	1	4	-	-	-	-
E-6743-EXT	0+00	4+20	C	15	12	3	1	4	-	-	-	-
E-6743A	0+00	5+00	C	19	16	3	1	4	5	5	ROW Tags	ROW Tags
E-6800	0+00	81+20	C	15	12	3	1	4	-	-	-	-
E-6800-1	0+00	31+00	C	15	12	3	1	4	-	-	-	-
E-9000	0+00	84+25	C	19	16	3	1	4	-	-	-	-
E-9100	0+00	28+50	C	15	12	3	1	4	-	-	-	-
E-9100A	0+00	3+00	C	15	12	3	1	4	-	-	-	-
E-9050	0+00	2+25	C	15	12	3	1	4	-	-	-	-
E-9050	2+25	8+00	C	15	12	3	1	4	5	5	10	10
E-9050-EXT	0+00	12+00	C	15	12	3	1	4	5	5	10	10
E-9050-1	0+00	4+40	C	15	12	3	1	4	-	-	-	-
E-9300	0+00	28+10	C	15	12	3	1	4	5	5	ROW Tags	ROW Tags
E-9300-EXT	0+00	9+80	C	15	12	3	1	4	-	-	-	-

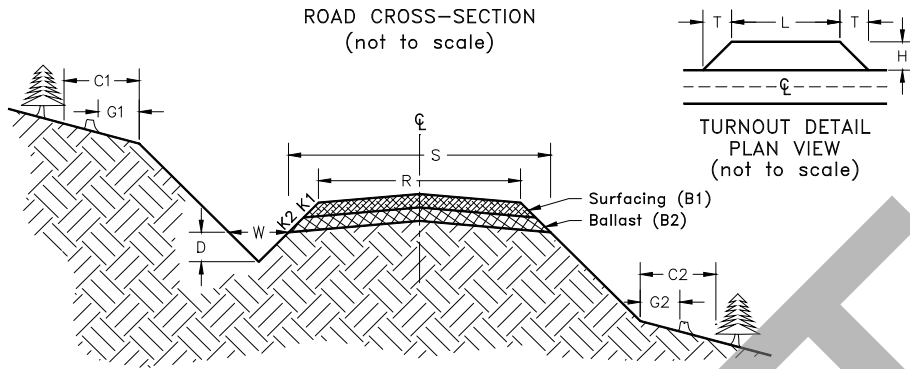
TURNOUT & TURNAROUND LIST

Road Number	Stations	Turnaround Length (ft)	Turnaround Width (ft)	Turnout Length (ft)	Turnout Width (ft)	Turnout Transition Length (ft)	Notes
E-6743	11+45	30	30				Turnaround Right (East)
E-9050-EXT	5+50	30	30				Turnaround Left (West)
E-9050-1	1+50			75	10	25	Turnout Right (Northeast)
E-9300	28+00	30	30				Turnaround Right (North)

COMPACTION LIST

Activity	Section Layer	Maximum Depth Per Lift (in)	Equipment Type	Minimum Equipment Weight (lbs)	Minimum Number Of Passes	Maximum Operating Speed (mph)
All Construction	Subgrade	12"	Smooth Drum Vibratory Roller	12,000	3 on low freq. vibe	3.5
All Construction	Rock	6"	Smooth Drum Vibratory Roller	12,000	3 on low freq. vibe	3.5
All Reconstruction	Subgrade	12"	Smooth Drum Vibratory Roller	12,000	3 on low freq. vibe	3.5
All Reconstruction	Rock	6"	Smooth Drum Vibratory Roller	12,000	3 on low freq. vibe	3.5
Prehaul Maintenance Involving Application of Rock (before rock application)	Existing Surface	N/A	Smooth Drum Vibratory Roller	12,000	3 on low freq. vibe	3.5
Prehaul Maintenance Involving Application of Rock (after rock application)	Surfacing	6"	Smooth Drum Vibratory Roller	12,000	3 on low freq. vibe	3.5
Waste Areas	Embankment	12"	Smooth Drum Vibratory Roller	12,000	3 on low freq. vibe	3.5

ROCK LIST



Road Number	From Station	To Station	Rock Slope	Compacted Rock Depth	C.Y./ Station	# of Stations	C.Y. Subtotal	Rock Source
			K2	B2	4-Inch In-Place			
E-4000	0+10	1+10	1 ½:1	12"	65	1	65	Scott Paper Quarry or Commercial Source
E-4001	0+00	7+60	1 ½:1	6"	25	7.6	190	
E-4002	0+00	7+50	1 ½:1	12"	53	7.5	398	
E-9050-EXT	0+00	12+00	1 ½:1	12"	53	12	636	
*E-6743	11+45	17+00	1 ½:1	12"	53	5.55	295	
*E-6743-EXT	0+00	4+20	1 ½:1	12"	53	4.2	223	
E-6743A	0+00	5+00	1 ½:1	12"	65	5	325	
*E-9050-1	0+00	4+40	1 ½:1	12"	53	4.4	234	
*E-9300	0+00	28+10	1 ½:1	12"	53	28.1	1490	
*E-9300-EXT	0+00	9+80	1 ½:1	12"	53	9.8	520	
*Turnouts and Turnarounds				12"	37	4	148	
*Landing Rock				12"	73	11	803	
					1 ½ - Inch Minus			
E-Line	567+60	607+60	1 ½:1	6"	25	40	1000	Scott Paper Quarry Stockpile, Vantage Quarry Stockpile or Commercial Source
E-4000	0+10	1+10	1 ½:1	6"	25	1	25	
E-6743A	0+00	5+00	1 ½:1	6"	44	5	220	
Crossdrain Culvert Bedding					10	19	190	
E-4000 0+60 Culvert Bedding					30	1	30	
					Light Loose Rip Rap			
Culvert Headwalls and Dissipaters					4	19	76	Scott Paper Quarry, Scott Paper Quarry Stockpile or Commercial Source
E-4000 0+60 Inlet and Outlet Armoring/Apron					15	1	15	

*Optional Rock: Purchaser is allowed the above rock depths from State-owned rock sources, but application of rock is not required. If Purchaser elects to haul on optional rock roads in dry weather, the depth listed above is recommended but not required. Reference Clause 6-75. 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 volumes for estimating purposes.

*4-Inch In-Place Total: 5,559 Cubic Yards
 1 ½-Inch Minus Total: 1,465 Cubic Yards
 Light Loose Rip Rap Total: 91 Cubic Yards
 Total Rock: 7,115 Cubic Yards

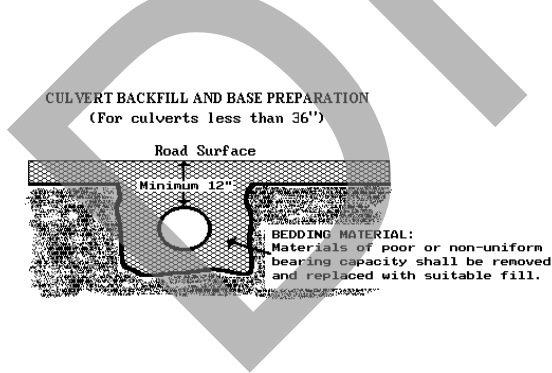
CULVERT AND DRAINAGE LIST

Road Number	Location	Culvert		Length (ft)			Riprap (C.Y.)			Bedding	Remarks
		Dia.	Type	Culvert	Downspout	Flume	Inlet	Outlet	Type	Material	
E-Line	474+55	18	PD	30			1	3	LL	CR	Replace Existing
	538+30	18	PD	35			1	3	LL	CR	Replace Existing
	547+20	18	PD	35			1	3	LL	CR	Replace Existing
	595+75	18	PD	35			1	3	LL	CR	Replace Existing
E-4000	0+60	48	PD	80			5	10	LL	CR	Stream Crossing Culvert Replacement
E-4001	1+50	18	PD	35			1	3	LL	CR	New Install
	4+60	18	PD	30			1	3	LL	CR	New Install
E-4002	2+15	18	PD	30			1	3	LL	CR	New Install
	4+50	18	PD	30			1	3	LL	CR	New Install
	6+25	18	PD	30			1	3	LL	CR	New Install
E-6743	13+85	18	TEMP	30			1	3	LL	NT	New Install
E-6743A	0+65	18	PD	40			1	1	LL	NT	New Install
	4+75	18	PD	40			1	1	LL	NT	New Install
E-9000	50+50	18	PD	30			1	3	LL	CR	Replace Existing
E-9050	0+30	18	PD	30			1	1	LL	CR	Ditch Continuity along E-9000
	5+95	18	PD	30			1	3	LL	CR	New Install
E-9050-EXT	2+05	18	PD	35			1	3	LL	CR	New Install
	7+20	18	PD	25			1	3	LL	CR	New Install
	9+00	36	PD	50			1.5	6	LL	CR	New Install
E-9050-1	3+00	18	TEMP	25			1	3	LL	NT	New Install
E-9300	1+80	18	PD	25			1	3	LL	CR	New Install
	15+50										Ditchout Both Sides
	19+50										Ditchout Both Sides
	23+60										Ditchout Both Sides
	27+10										Ditchout Both Sides
E-9300-EXT	2+50										Ditchout Right (North)
	7+70	18	TEMP	30			1	3	LL	NT	New Install

PD = Polyethylene Pipe Dual Wall AASHTO No. M294 Type S or ASTM F2648

AS10 = Aluminized Steel AASHTO No. M274, 10 Gauge

TEMP = Temporary Culvert

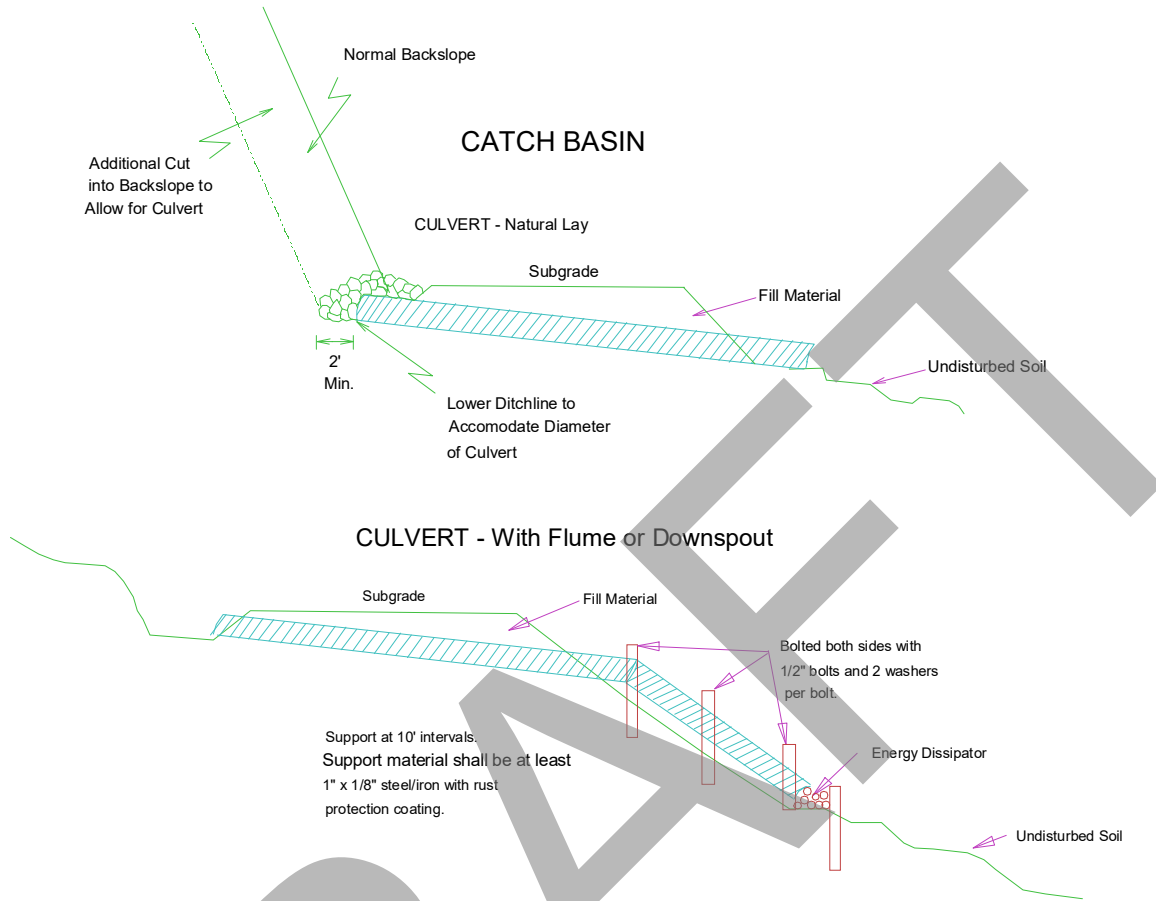


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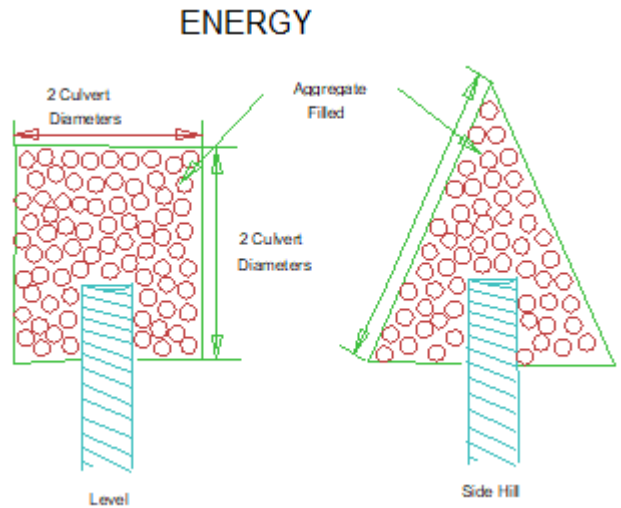
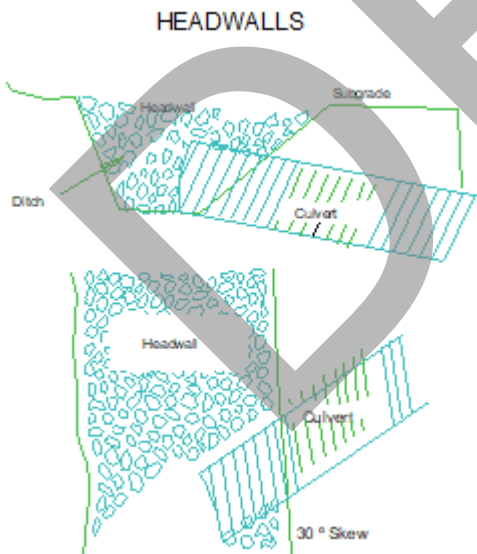
- CR - 1 ½ - Inch minus crushed rock
- QS - Quarry Spalls
- SR - Shot Rock
- NT - Native (bank run)
- SL - Select Fill
- HL - Heavy Loose Riprap
- LL - Light Loose Riprap
- Flume - Half round pipe
- Downspout - Full round pipe

CULVERT AND DRAINAGE SPECIFICATION DETAIL

(Page 1 of 2)



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.



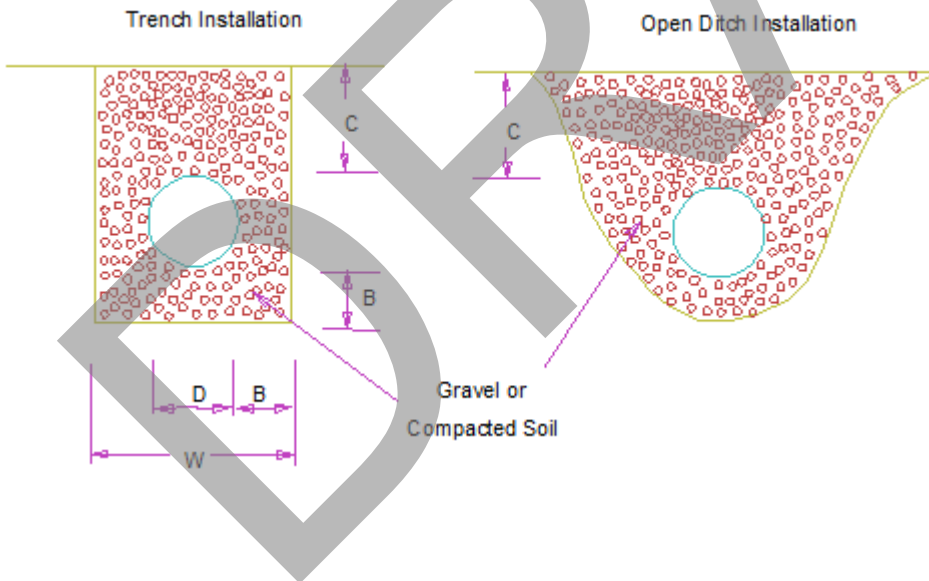
CULVERT AND DRAINAGE SPECIFICATION DETAIL

(Page 2 of 2)

POLYETHYLENE PIPE INSTALLATION

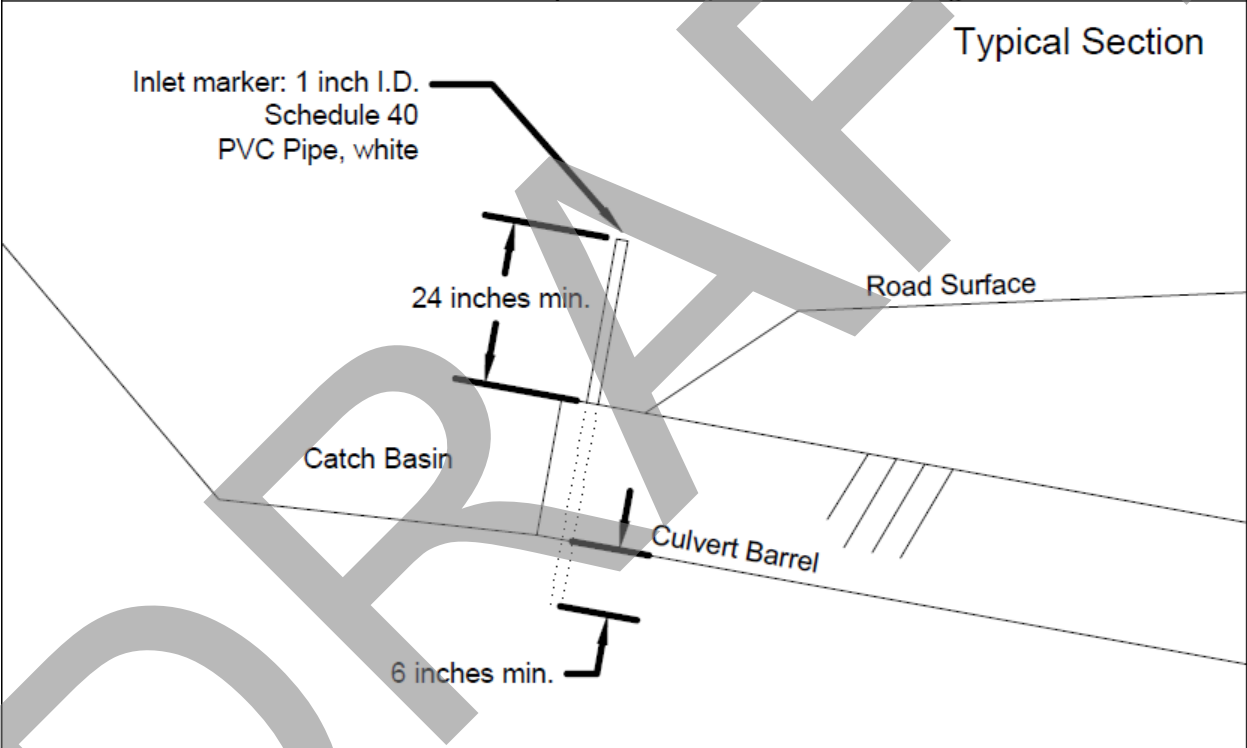
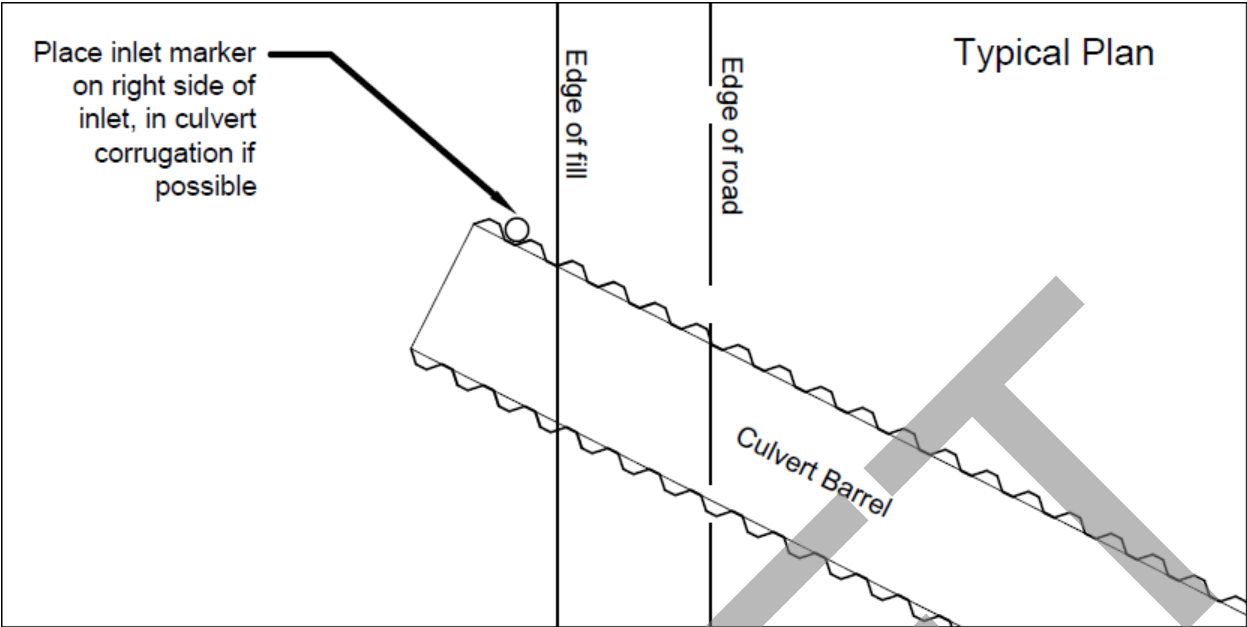
INSTALLATION REQUIREMENTS:

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% of that material is required. This minimum compaction can be achieved by either hand or mechanical tamping. Purchaser shall test the compaction level and bare all associated costs.



MINIMUM DIMENSIONS
Trench or Open Ditch Installation

Nominal Diameter	Minimum Thickness	Minimum Cover	Min. Trench Width
D	B	C	W
18"	6"	12"	36"
24"	6"	12"	42"
30"	6"	12"	48"
36"	6"	12"	54"



CULVERT MARKER DETAIL (INLET SHOWN)
WASHINGTON STATE DEPARTMENT OF
Natural Resources

Drawn by: WP Hoskins

FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS

Cuts and Fills

- Maintain slope lines to a stable gradient compatible with the cut slope/fill slope ratios. Remove slides up to 100 cubic yards in volume from ditches and the roadway. Repair fill-failures, in accordance with Clause 4-6 EMBANKMENT SLOPE RATIO, 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 shape and compact the road surface, turnouts, and shoulders to the original shape on the TYPICAL SECTION SHEET. Inslope or outslope as directed, 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.
- 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

Preventative Maintenance

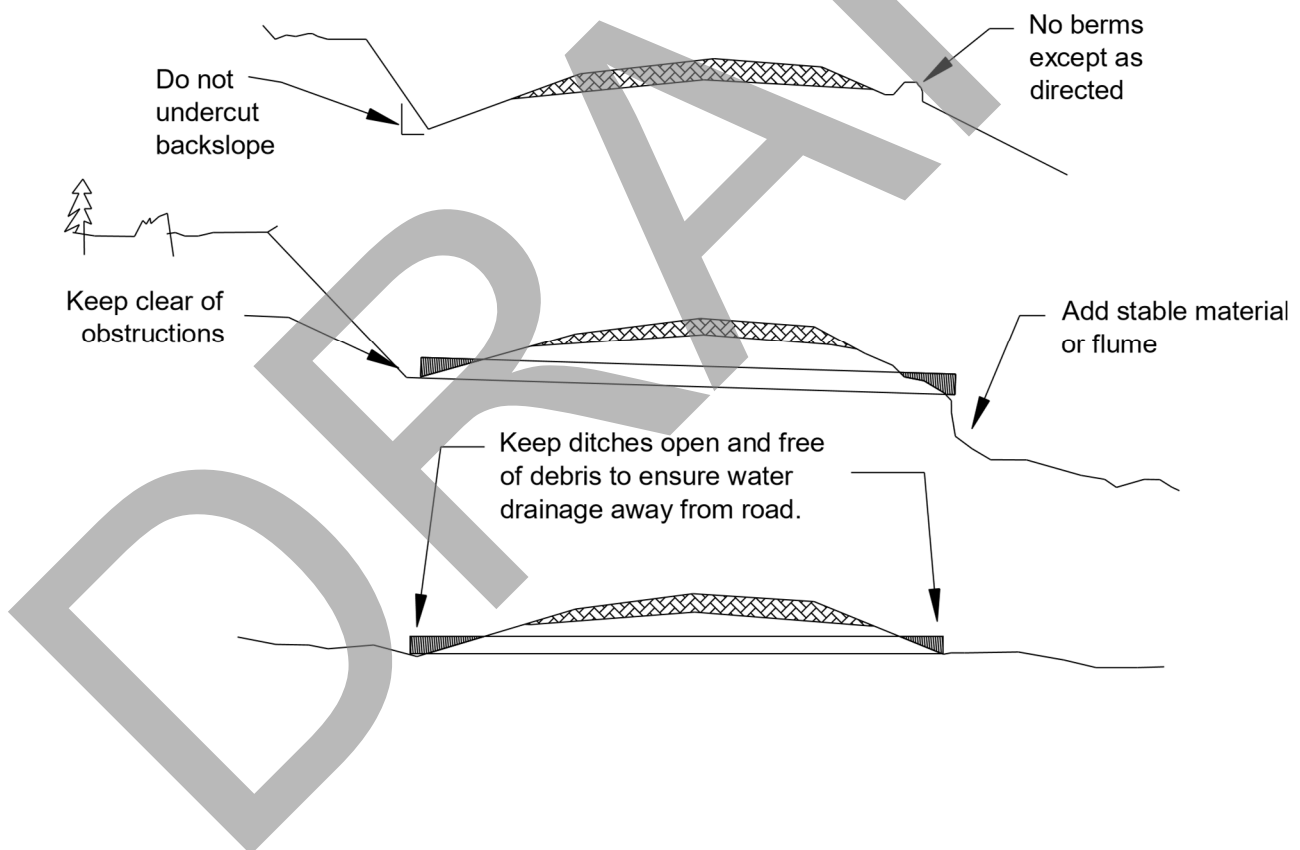
- Perform preventative maintenance work to safeguard against storm damage, such as blading to ensure correct runoff, ditch and culvert cleaning, and waterbar maintenance.

Termination of Use or End of Season

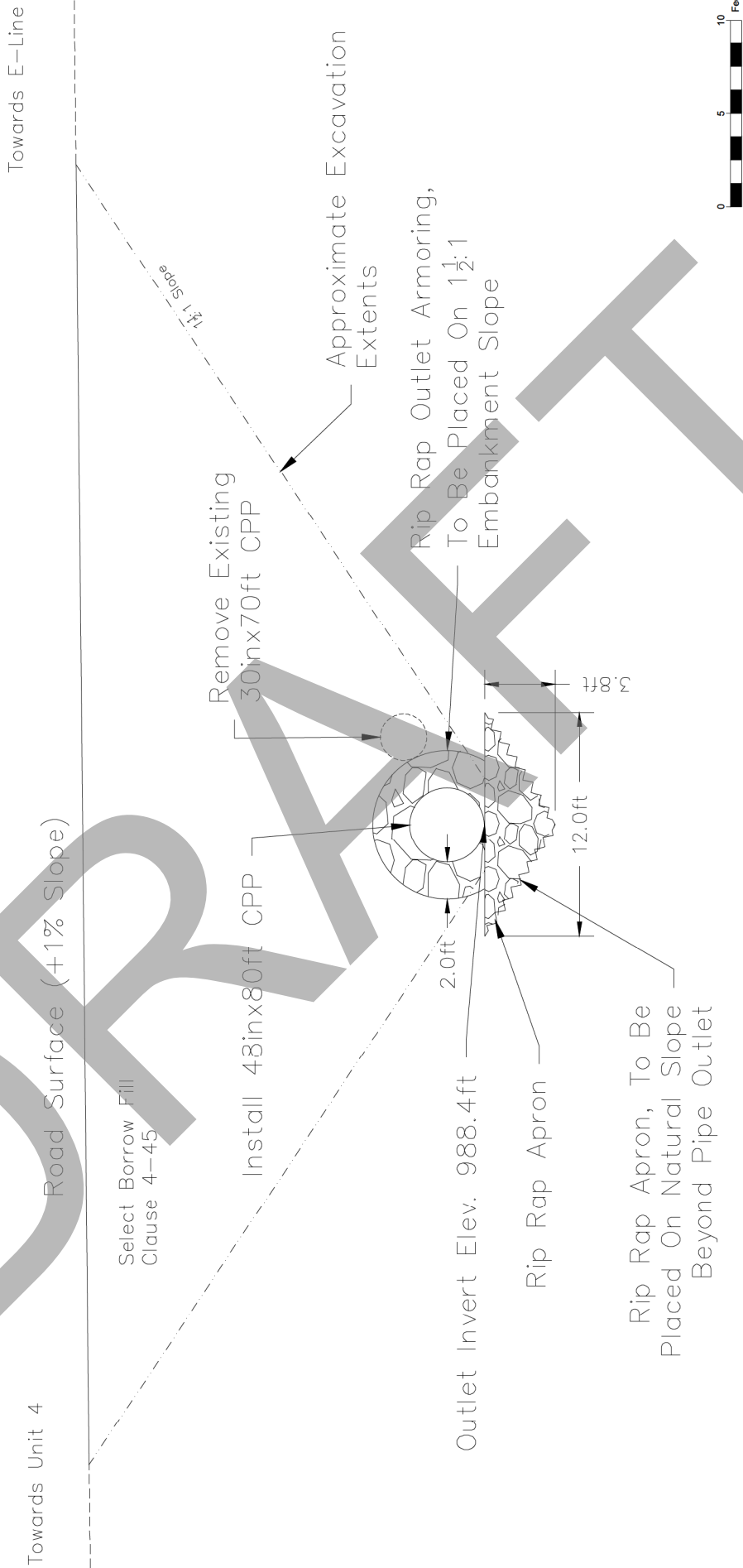
- At the conclusion of logging operations, ensure all conditions of these specifications have been met.

Debris

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



Outlet Elevation



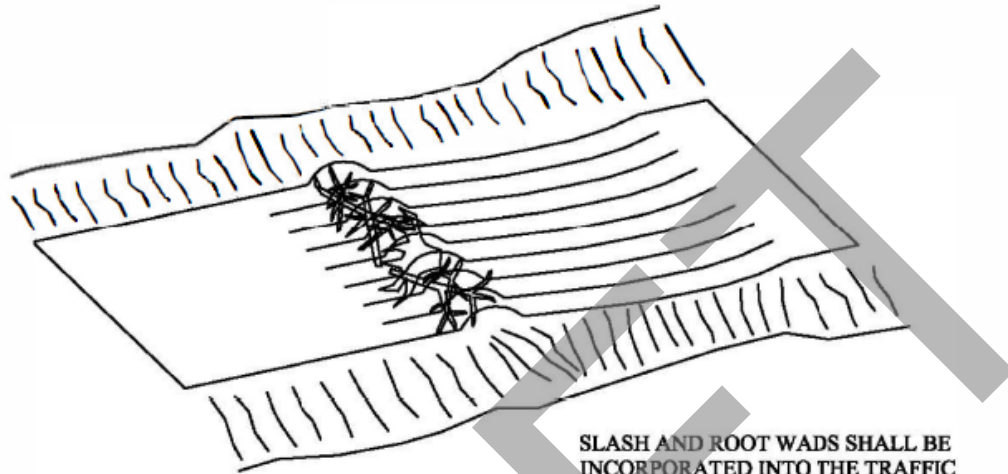
NO.	REVISION DESCRIPTION	DATE	BY

DESIGN BY: G. GERRITSEN	E-4000 0+60 Culvert Replacement Detail
DRAWN BY: G. GERRITSEN	
CHECKED BY: G. GERRITSEN	
DATE: October 17th 2022	Outlet Elevation



Juneau Timber Sale

BARRICADE DETAIL

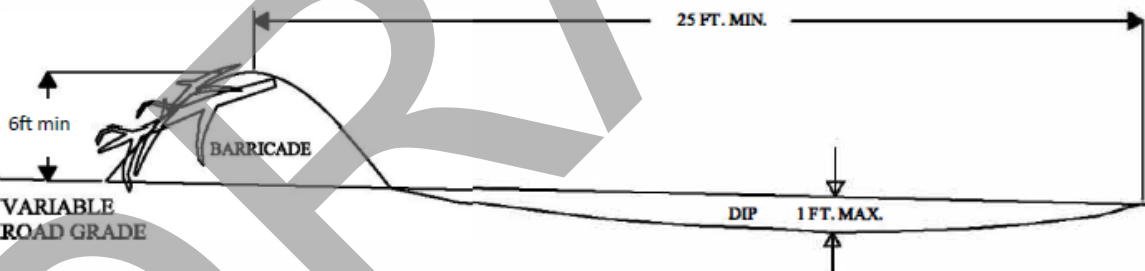


SLASH AND ROOT WADS SHALL BE INCORPORATED INTO THE TRAFFIC SIDE OF THE BARRICADE.

PLAN VIEW

TRAFFIC SIDE OF BARRICADE

CLOSED SIDE OF BARRICADE



VARIABLE ROAD GRADE

DIP 1 FT. MAX.

BOTTOM OF DIP SHALL BE OUTSLOPED SO AS TO DRAIN FREELY

PROFILE VIEW

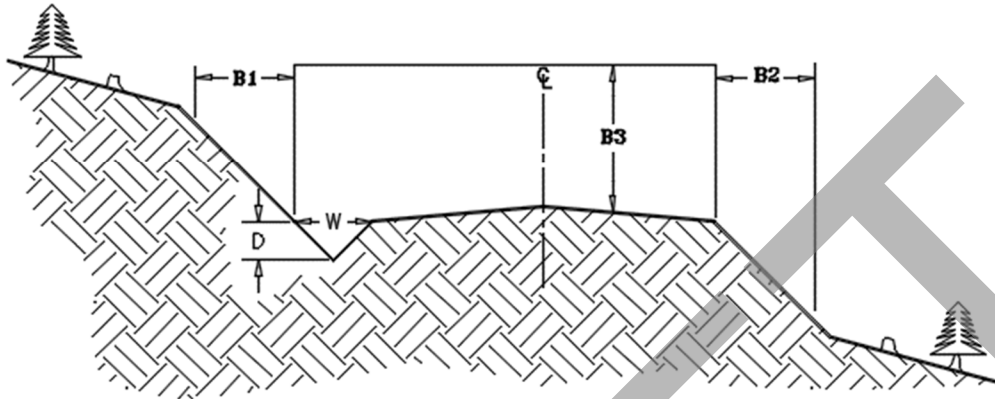
Barricade Detail



WASHINGTON STATE DEPARTMENT OF
NATURAL RESOURCES

SPS 820001

BRUSHING DETAIL (not to scale)



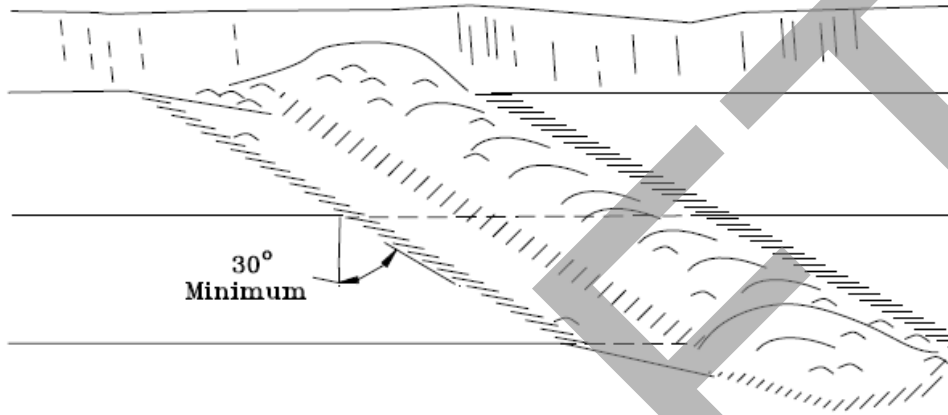
BRUSHING LIST

Road Number	Stations	Road Width (feet)	Ditch		Brushing Limits (feet)			Remarks <u>In addition to brushing...</u>
			Width (feet)	Depth (feet)	B1	B2	B3	
			W	D				
E-Line	551+10 to 558+00	variable	3	1	6	6	14	Remove brush an extra 16 feet on the inside of curves to provide extra visibility on switchbacks and curves
E-6740	0+00 to 8+15	variable	3	1	6	6	14	

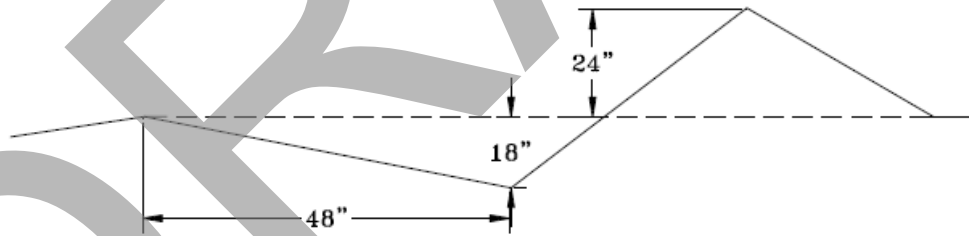
B1 extends horizontally the specified distance in feet from the back of the ditch. B2 extends horizontally the specified distance in feet from the outside edge of the running surface. Brush is defined as all non-merchantable vegetative material found within the specified limits. Brush must be cut to a height of 3 inches above the ground. 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, culverts, culvert location markers, or any other identification features damaged by brushing shall be replaced at the Purchasers expense.

Non-Drivable Water Bar Detail

Cross Ditch

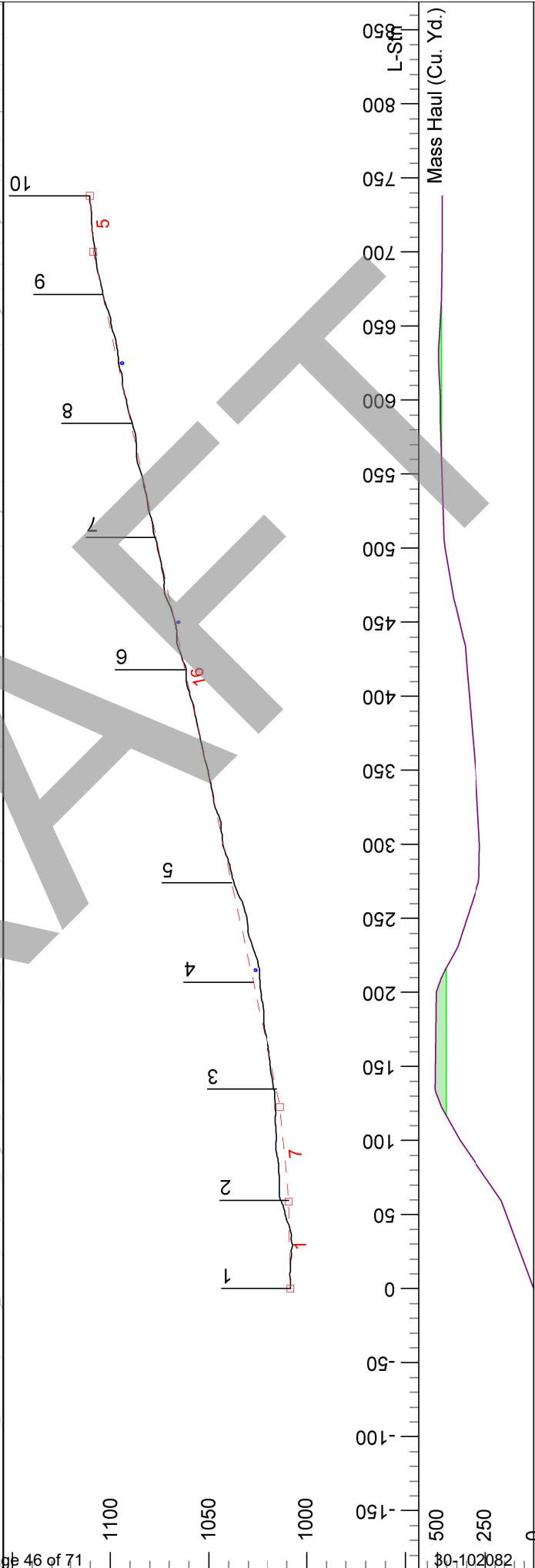
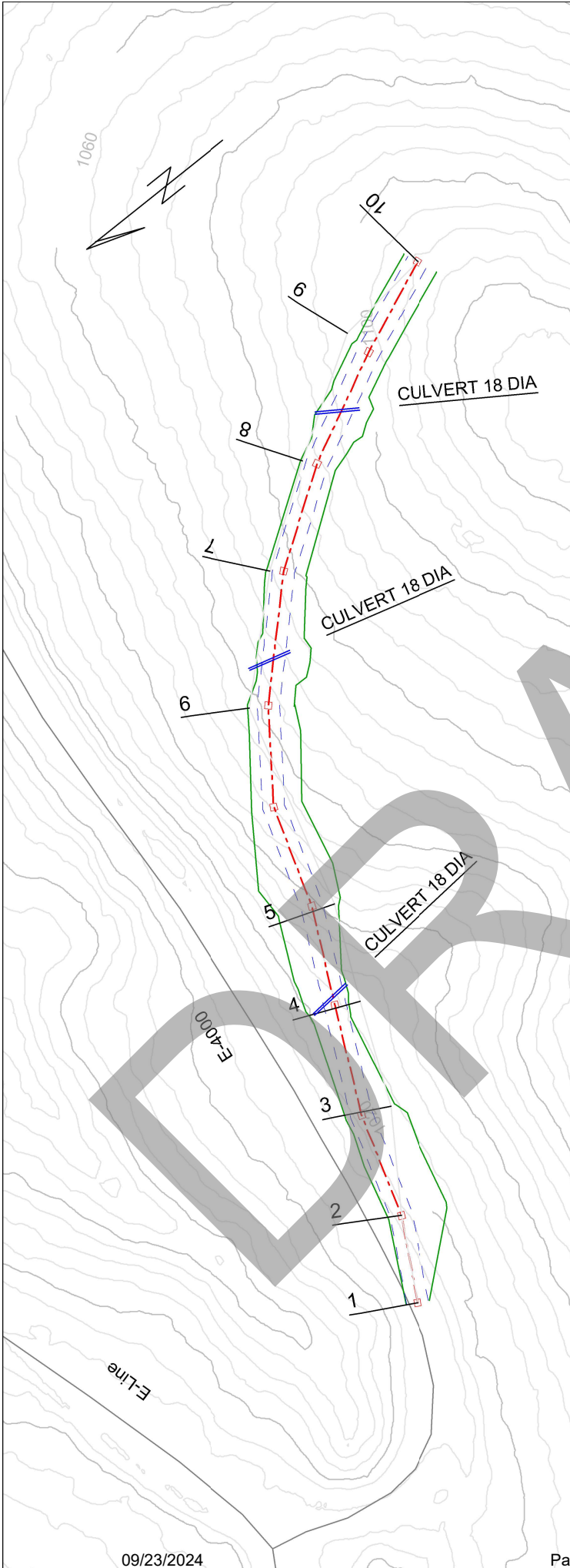


Cross Section at Centerline

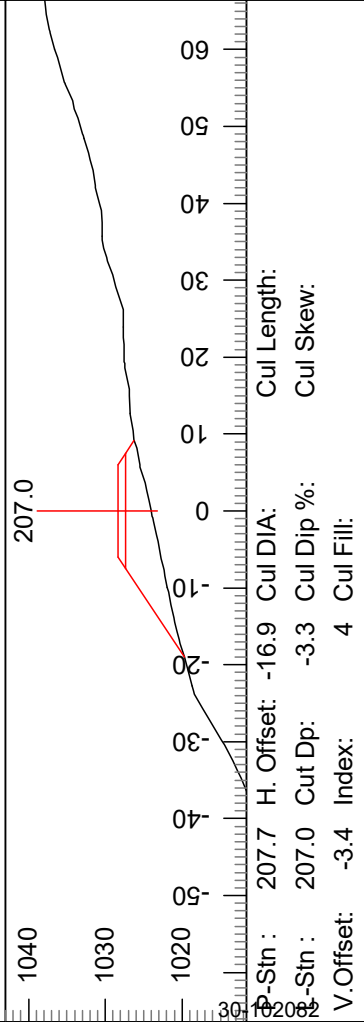
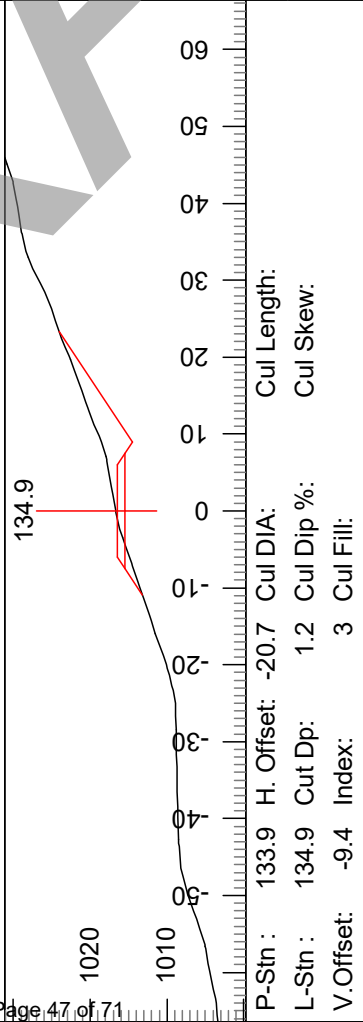
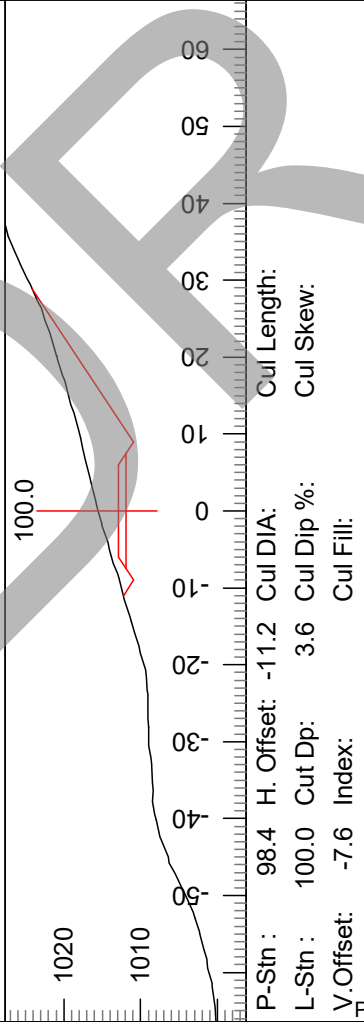
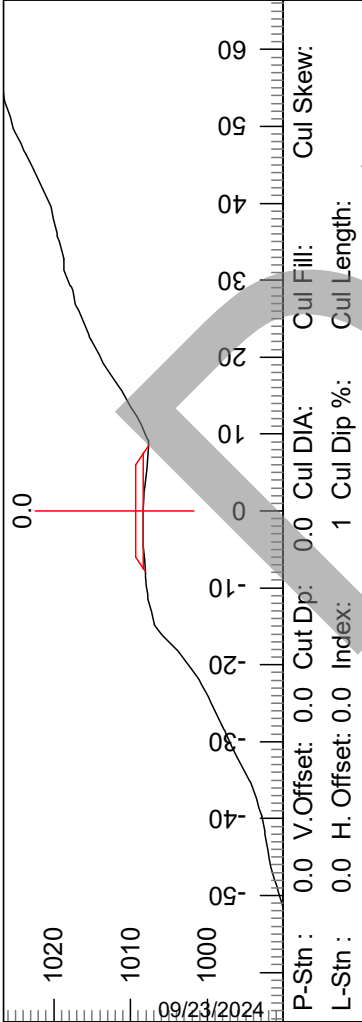
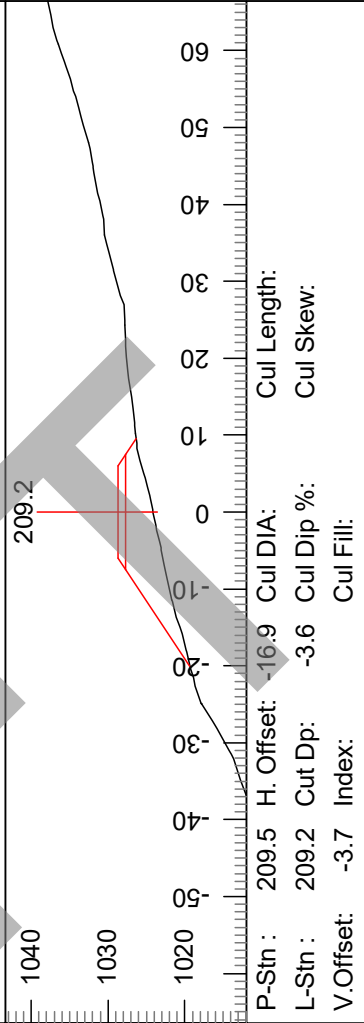
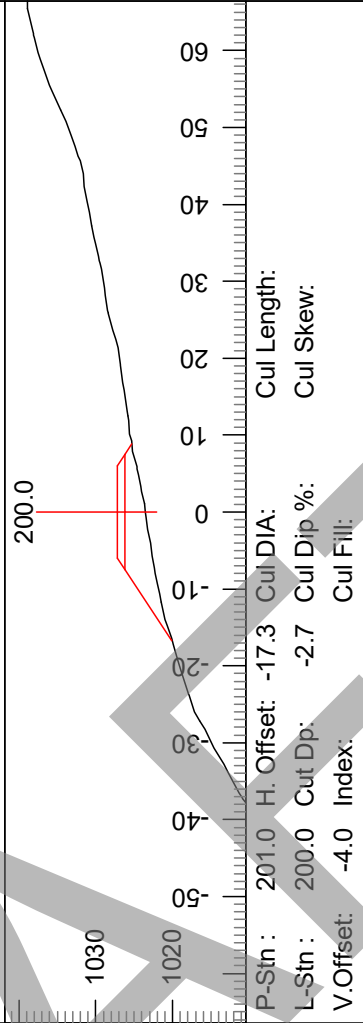
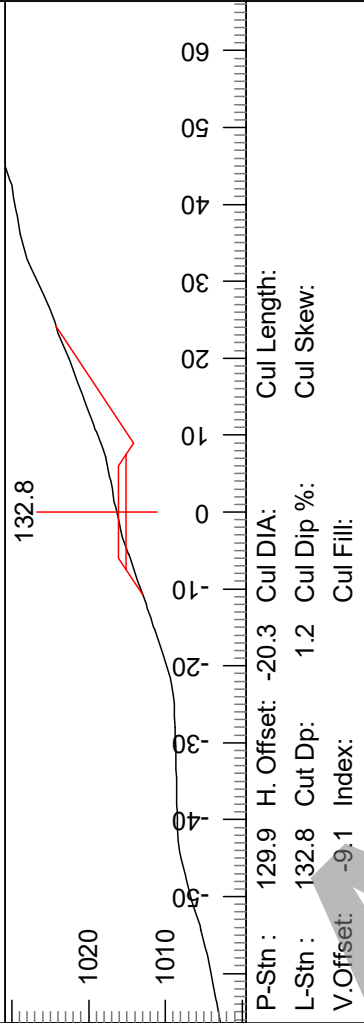
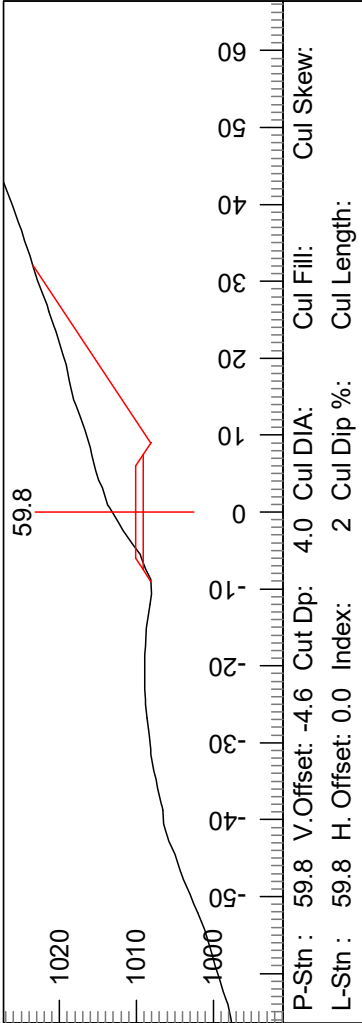


Date:
Scale : None
App#
Drawn by: M.A.D.

Water Bar Detail	
	WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES
<small>SPR 10/08</small>	



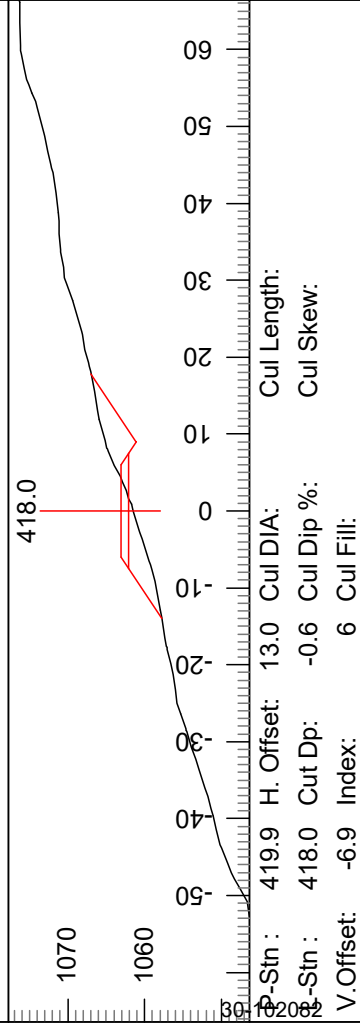
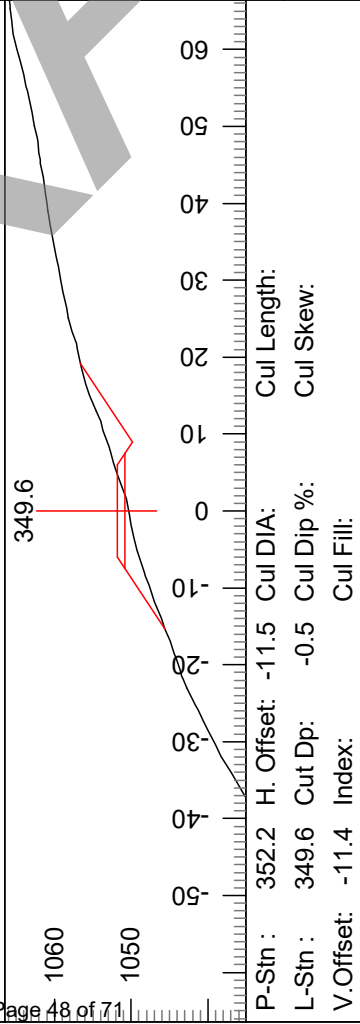
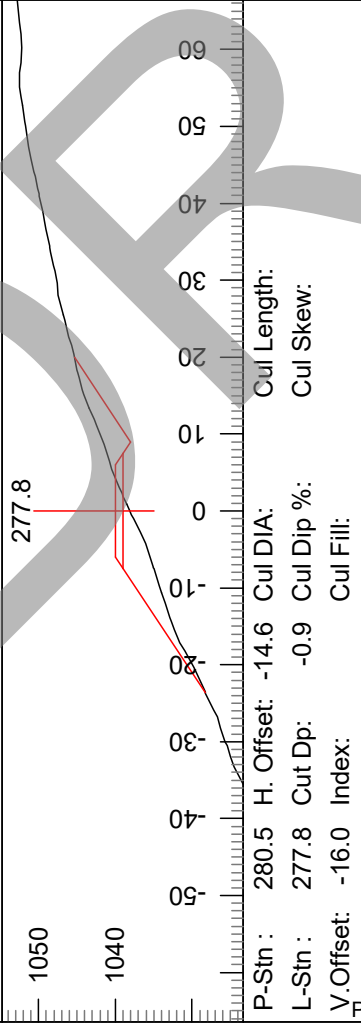
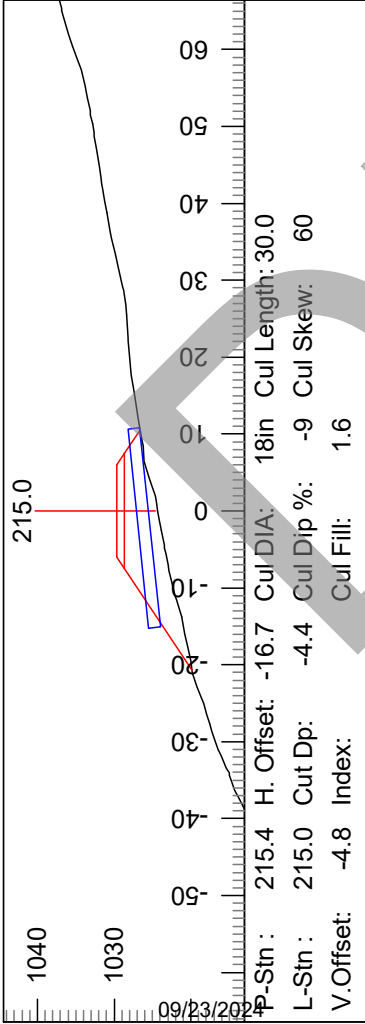
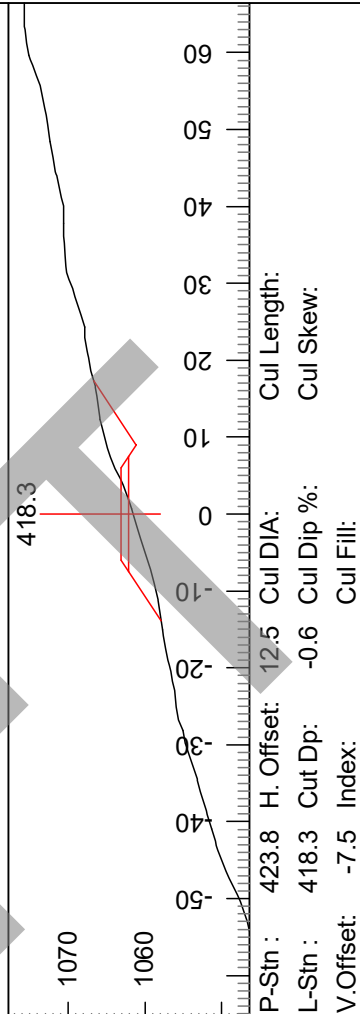
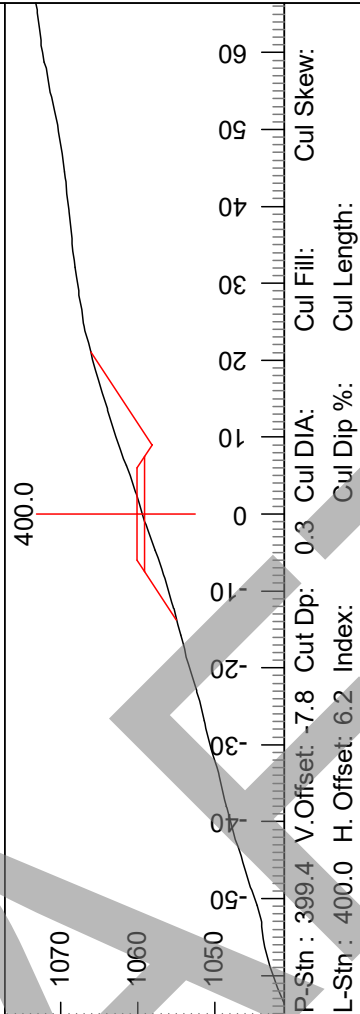
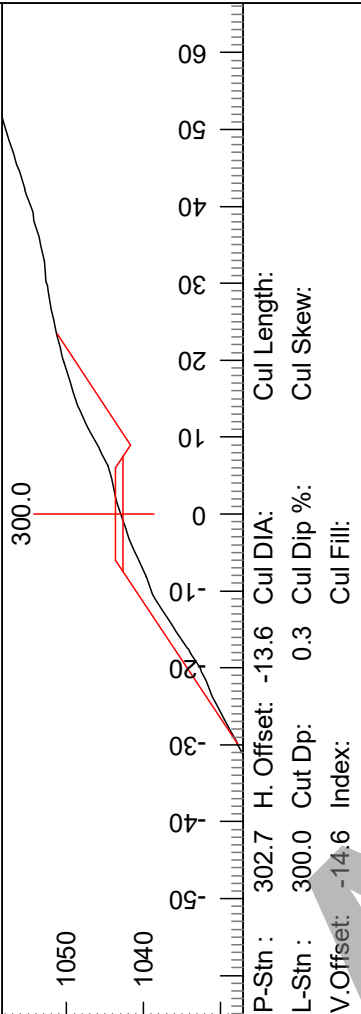
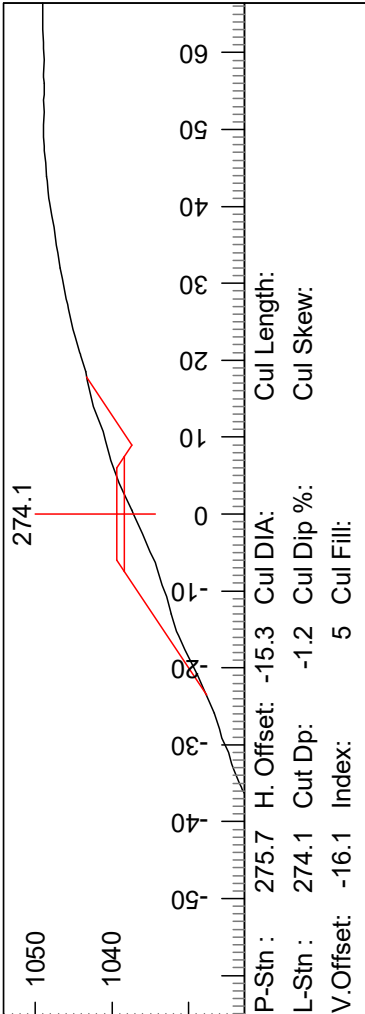
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	<p>10/10/22</p>
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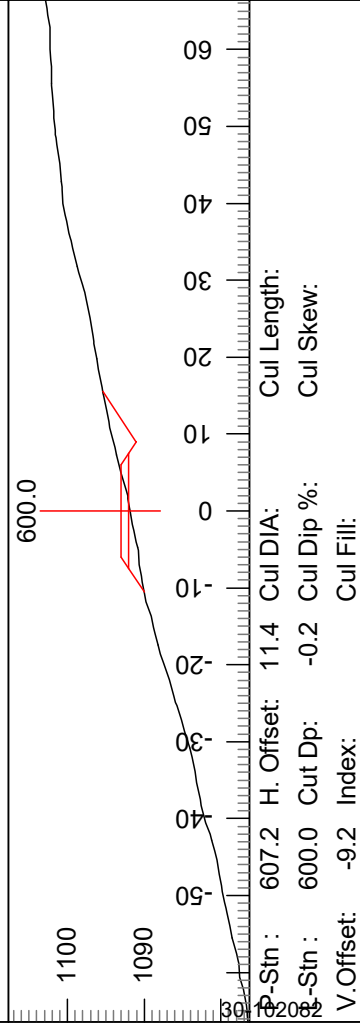
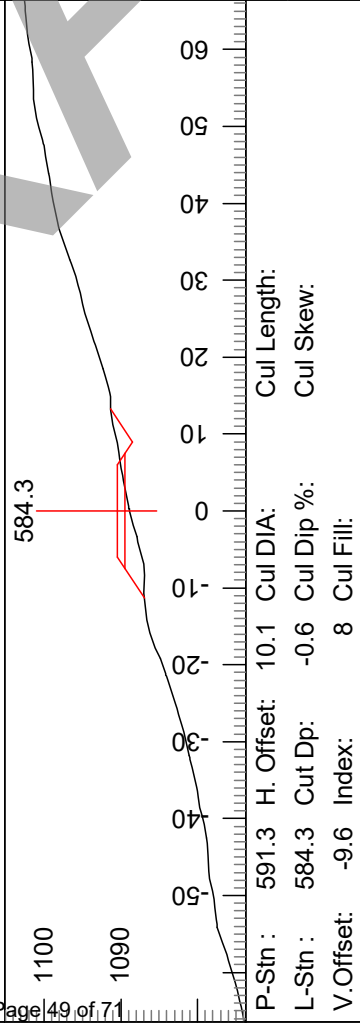
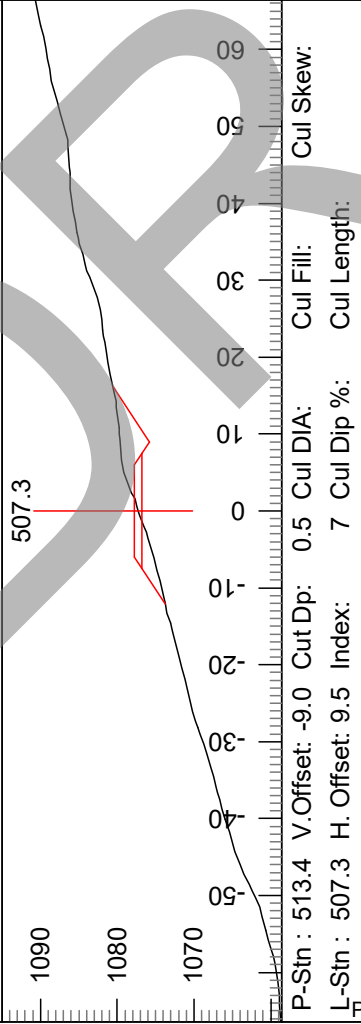
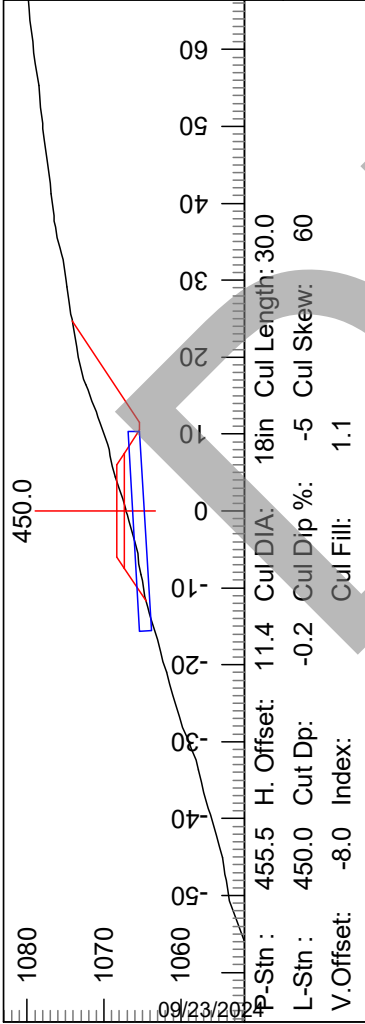
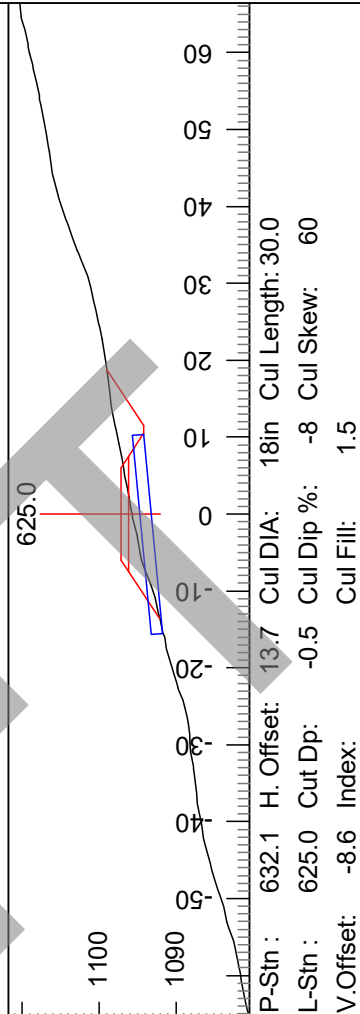
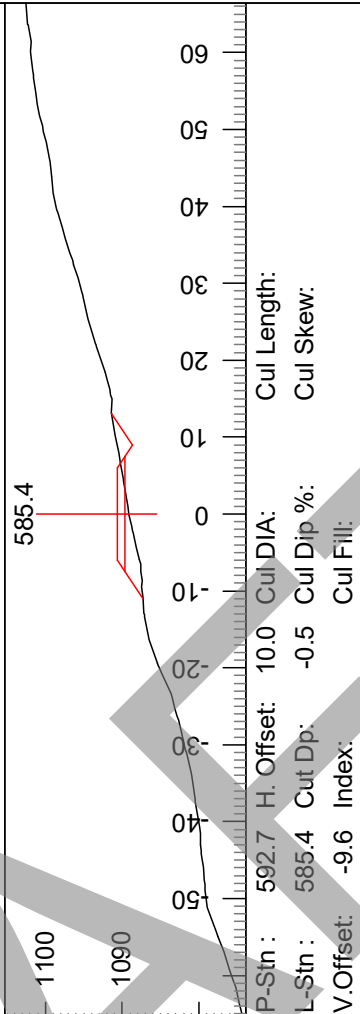
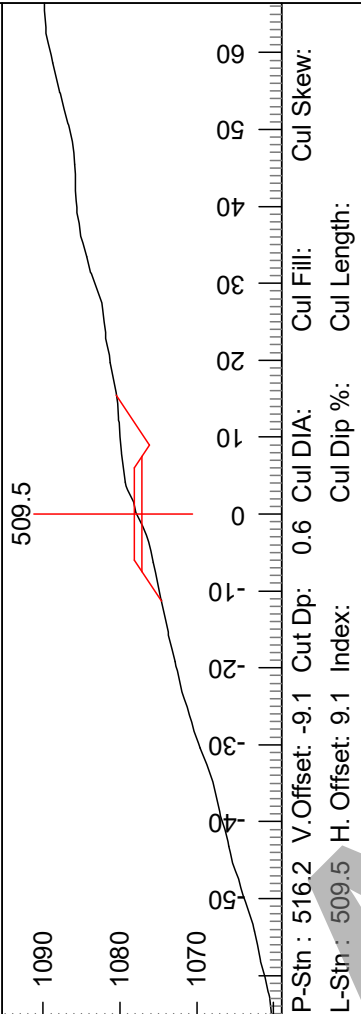
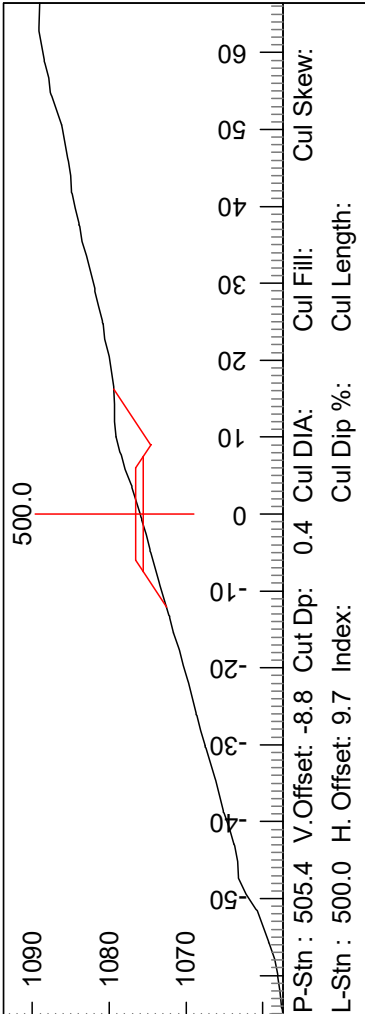


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Juneau Timber Sale E-4002 Contract#: 30-102082	10/10/22
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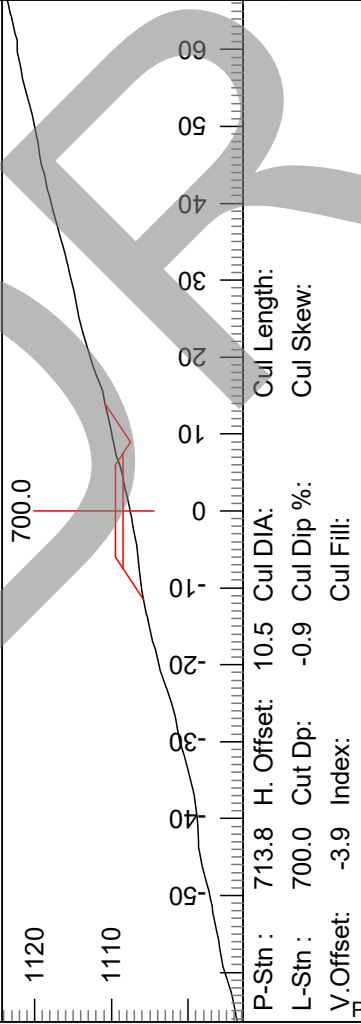
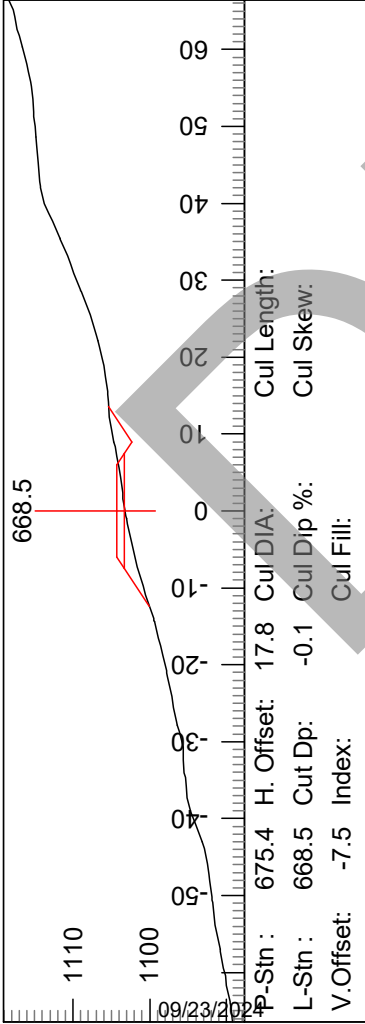
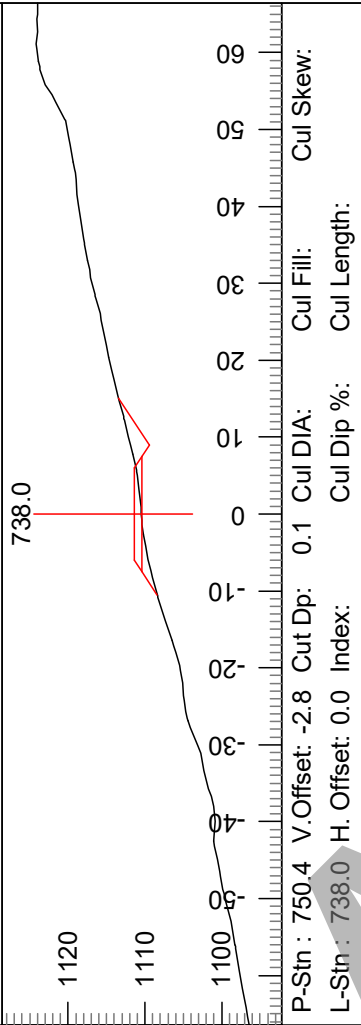
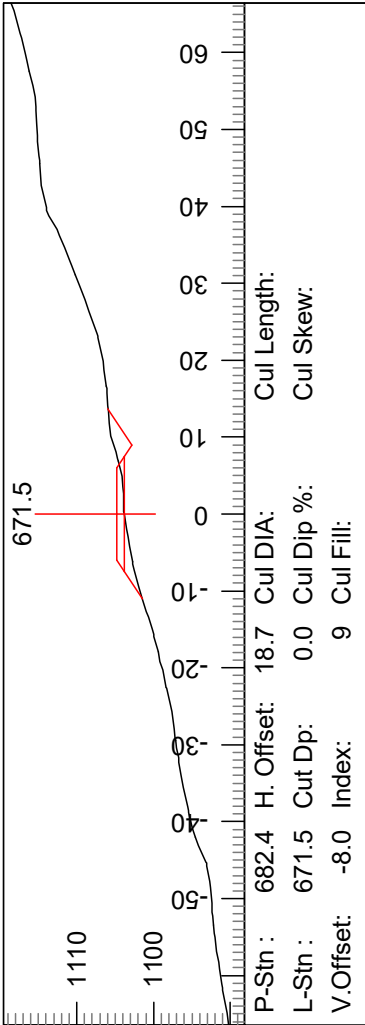


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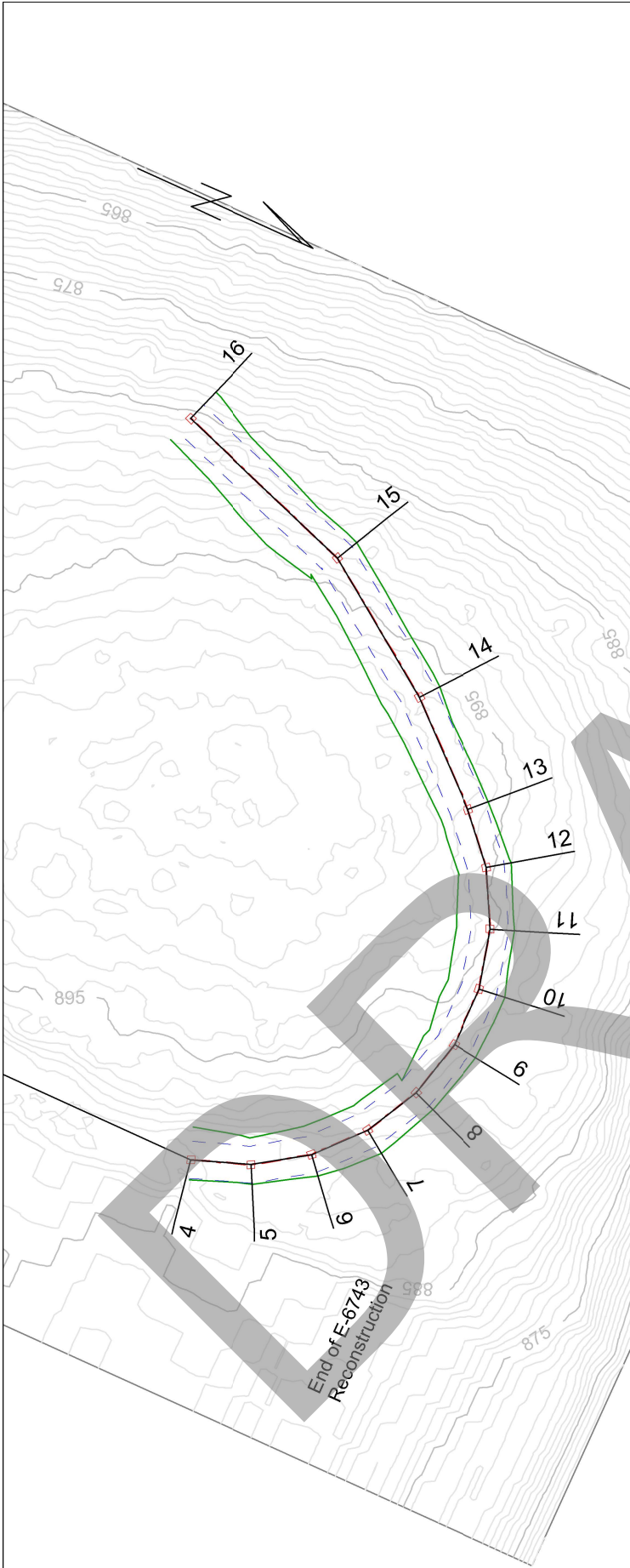
30-102082

 Washington State Department of Natural Resources South Puget Sound Region	Section Scale 1:300	Engineer: G. Gerritsen 10/10/22	Page 4 of 5
	Juneau Timber Sale E-4002 Contract#: 30-102082		

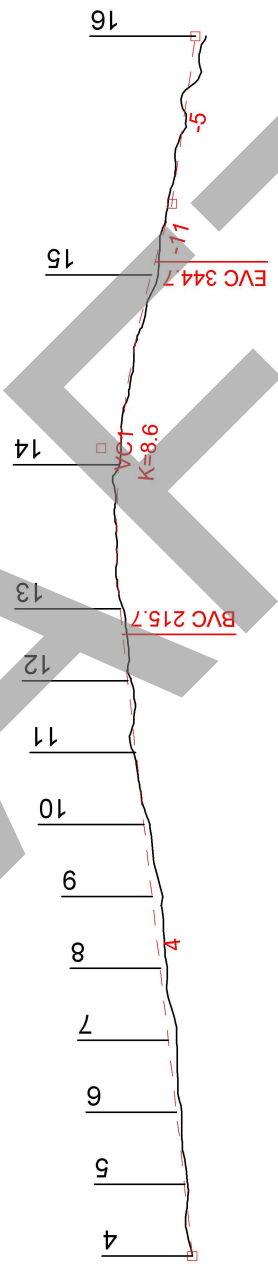


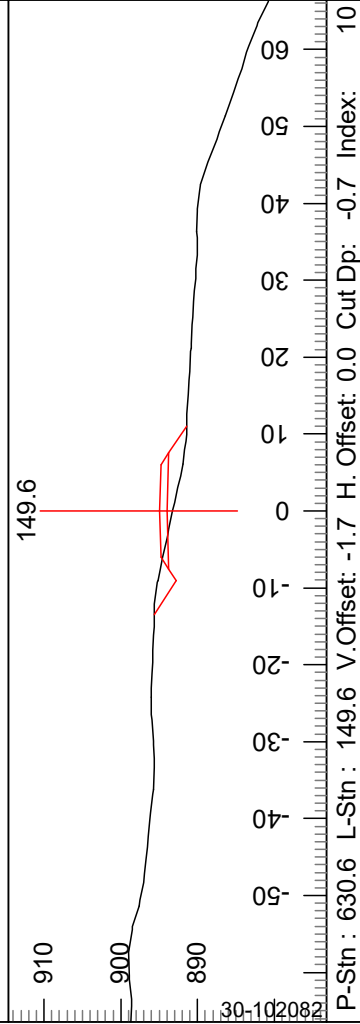
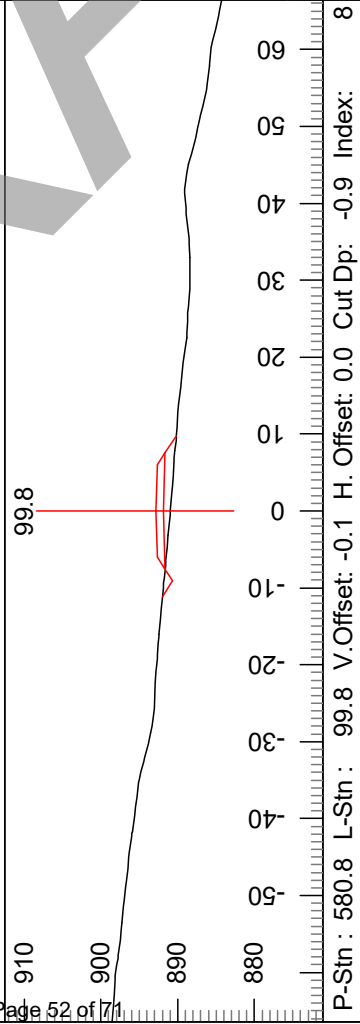
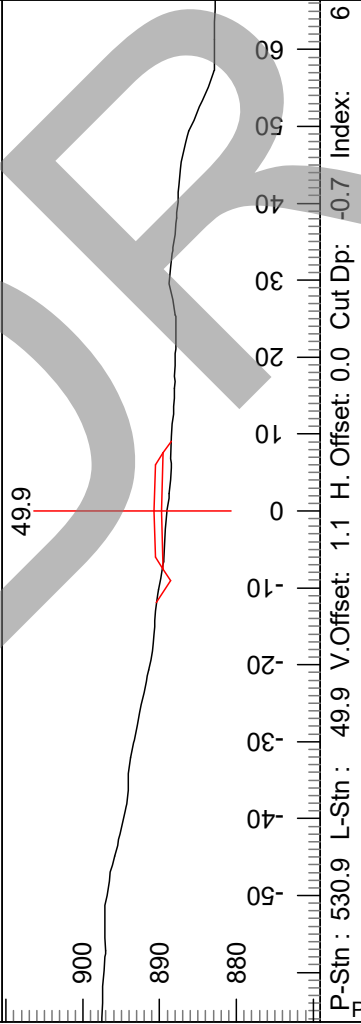
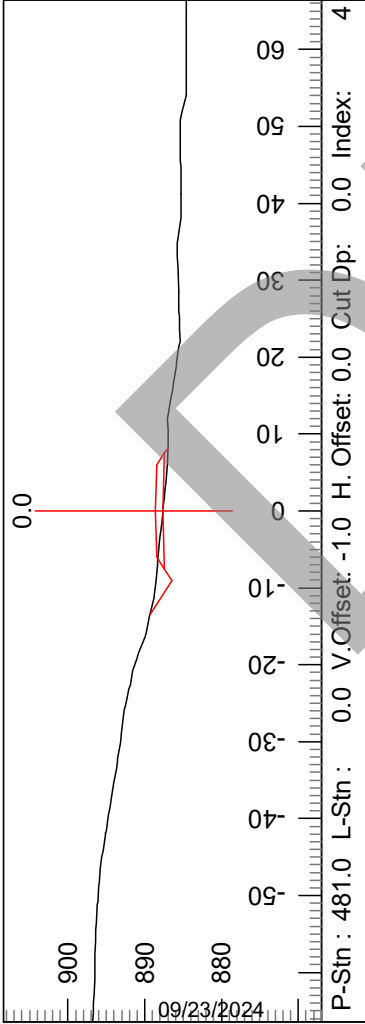
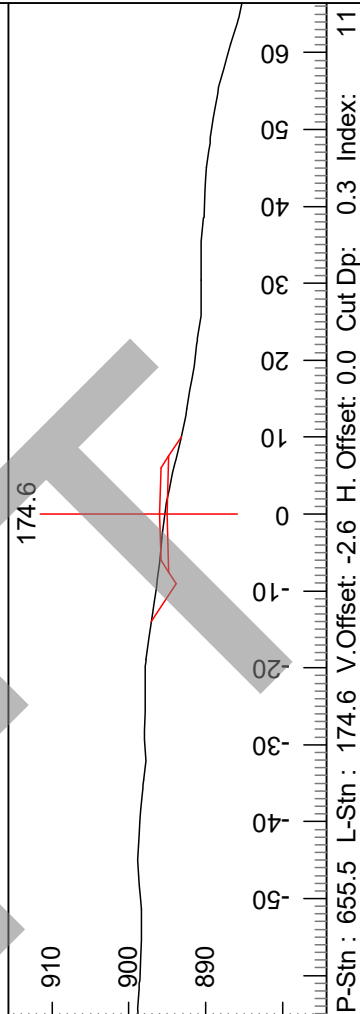
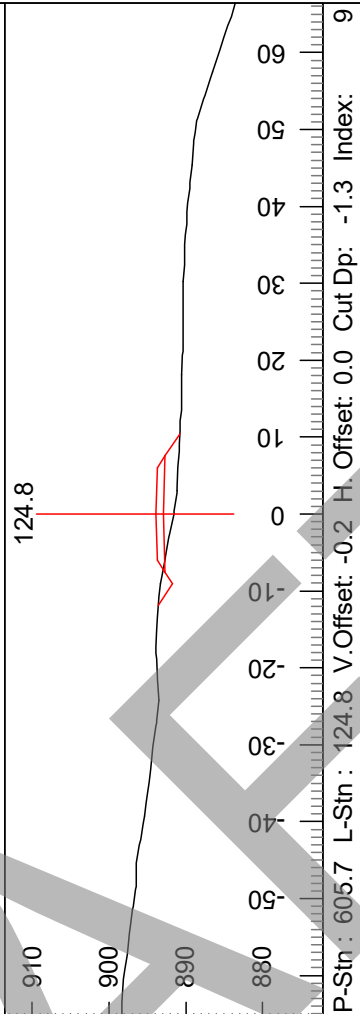
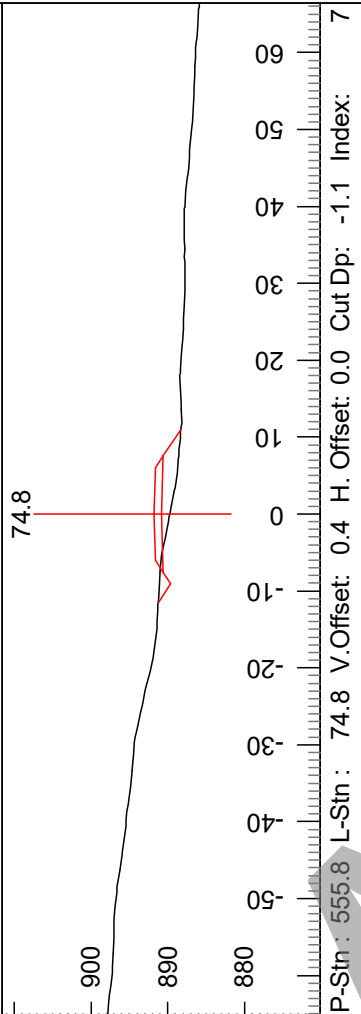
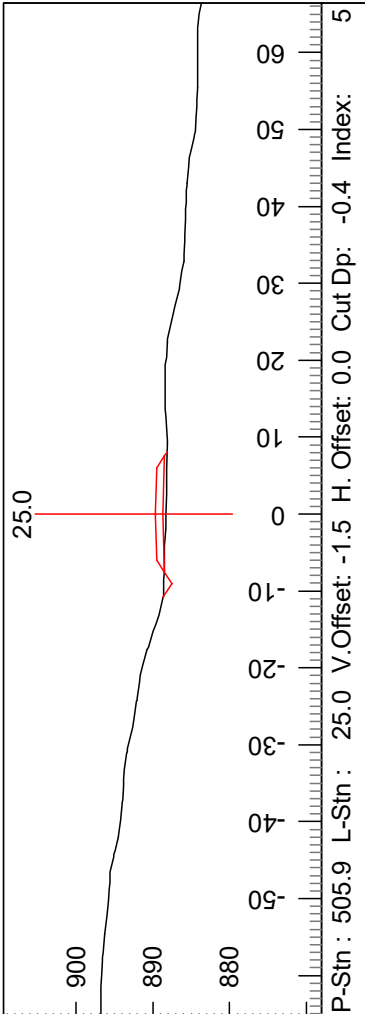
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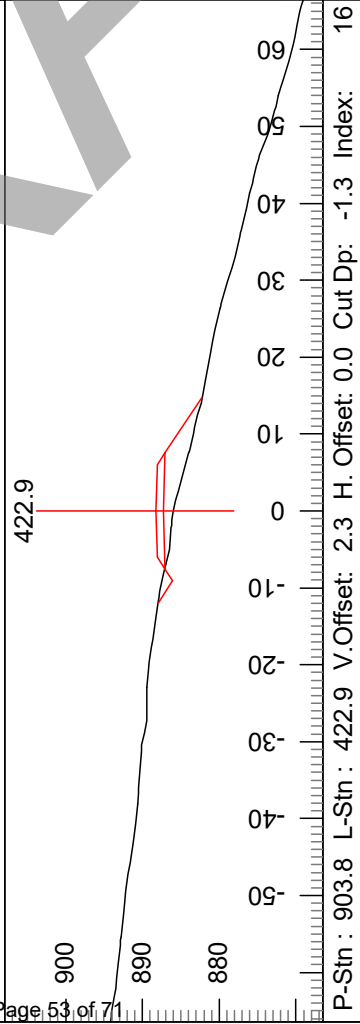
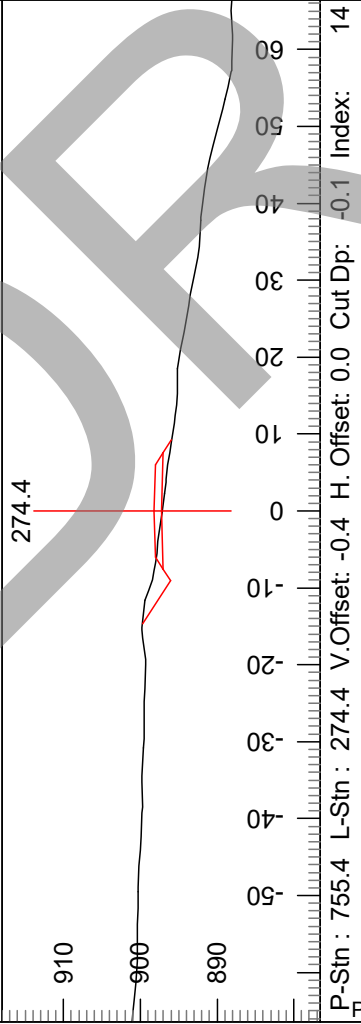
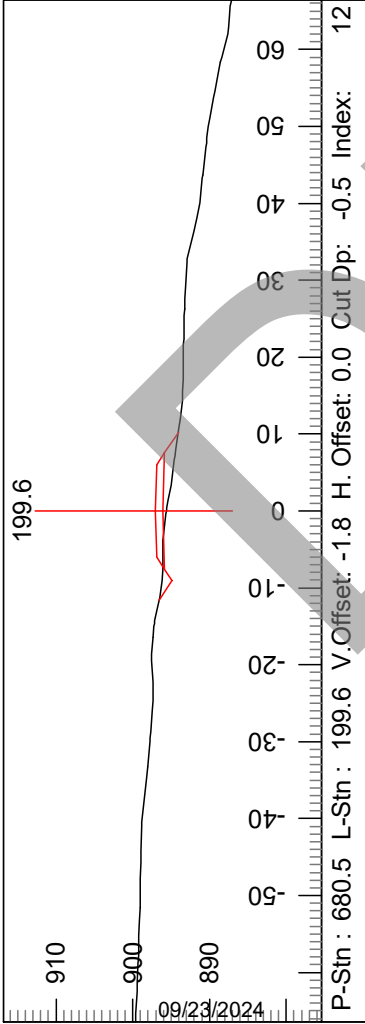
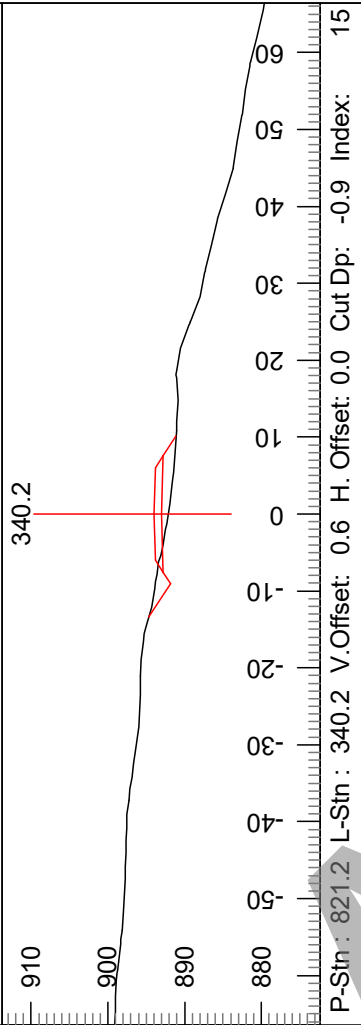
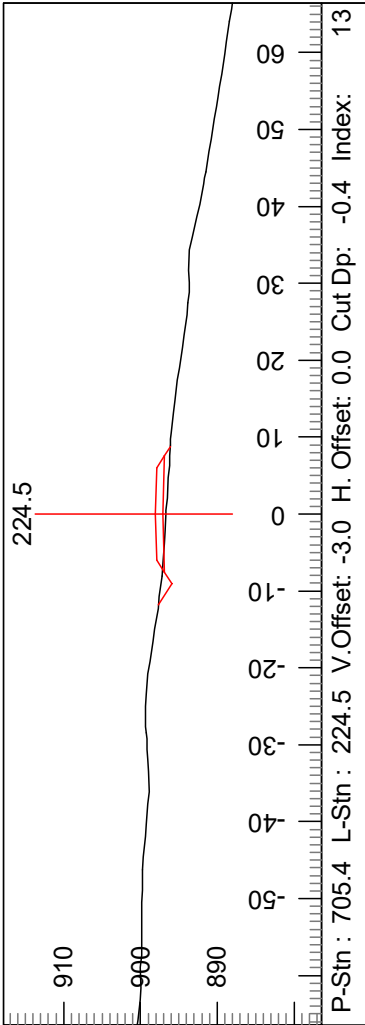
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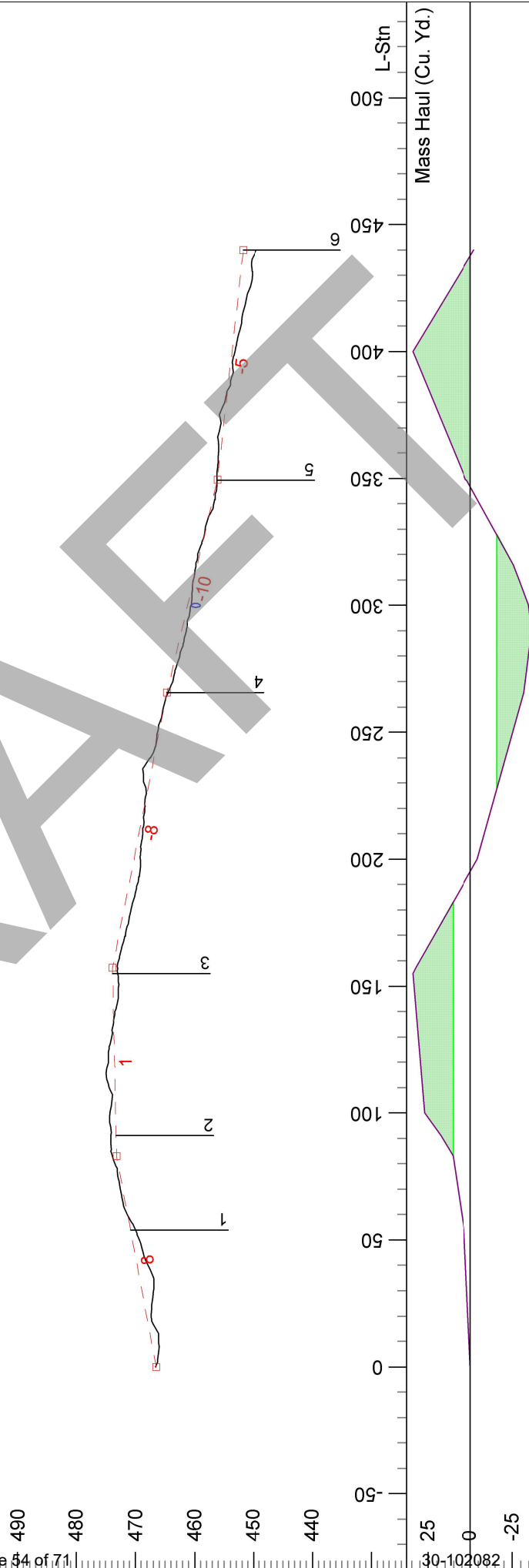
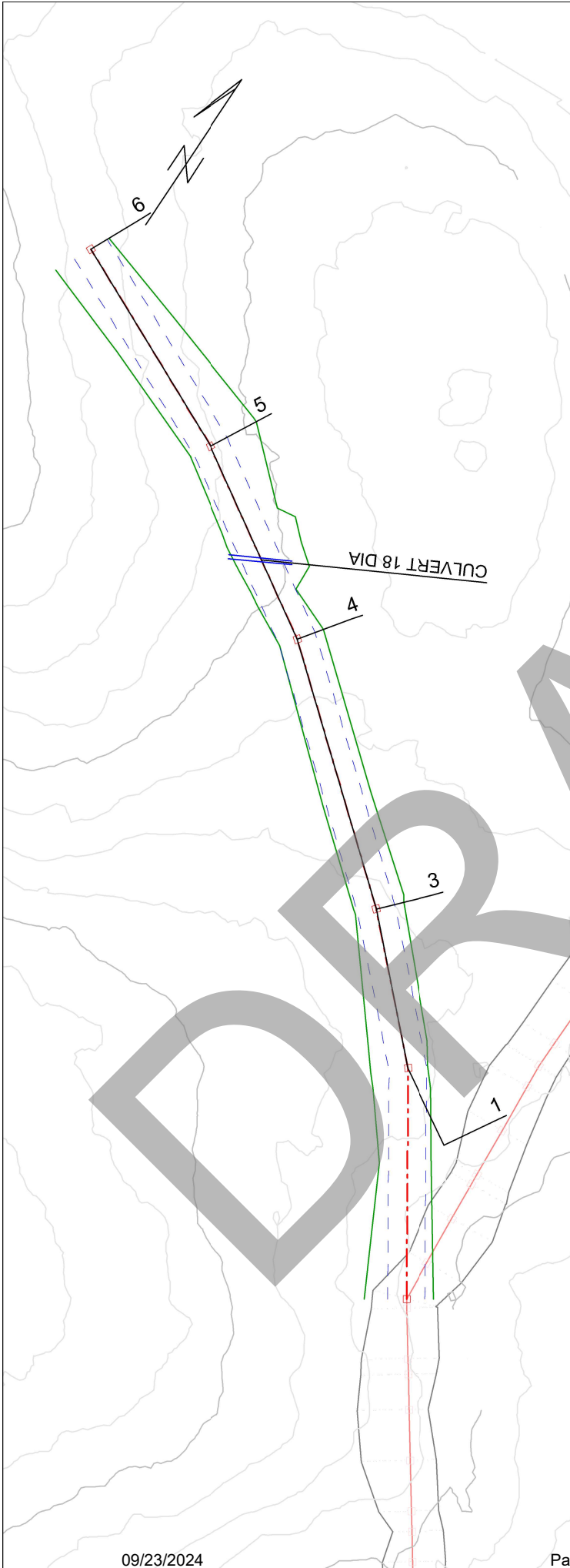
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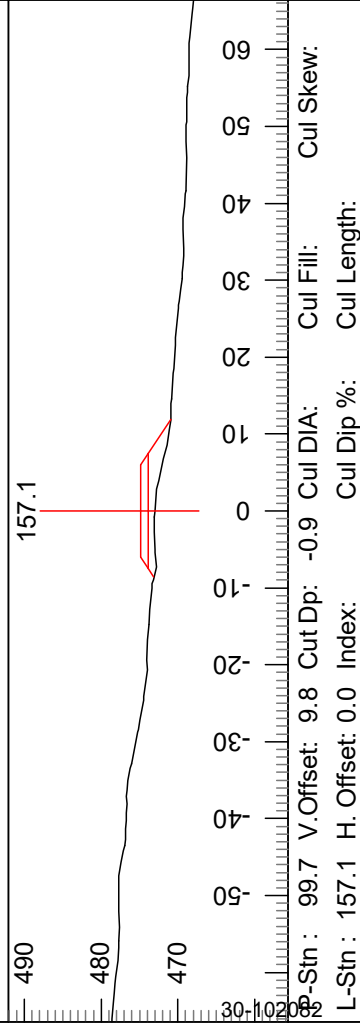
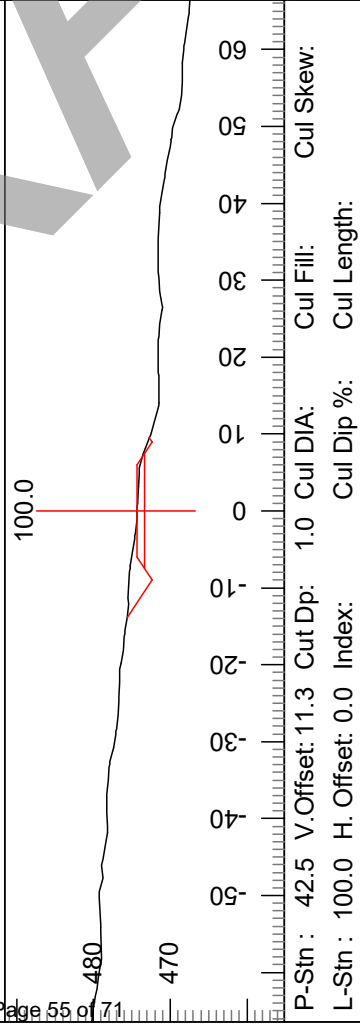
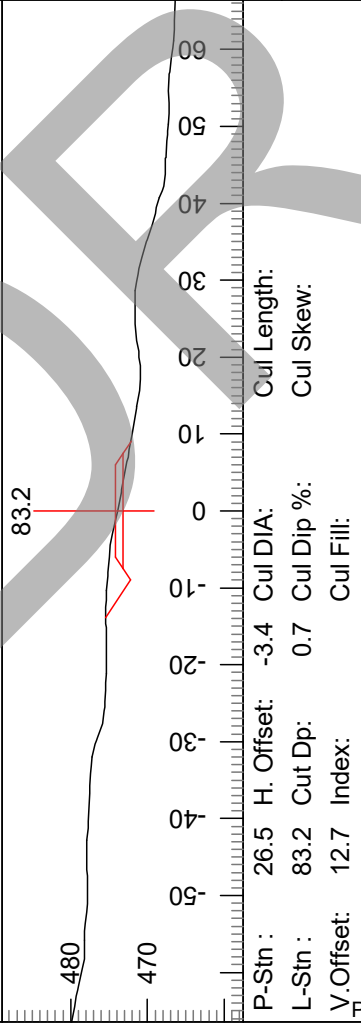
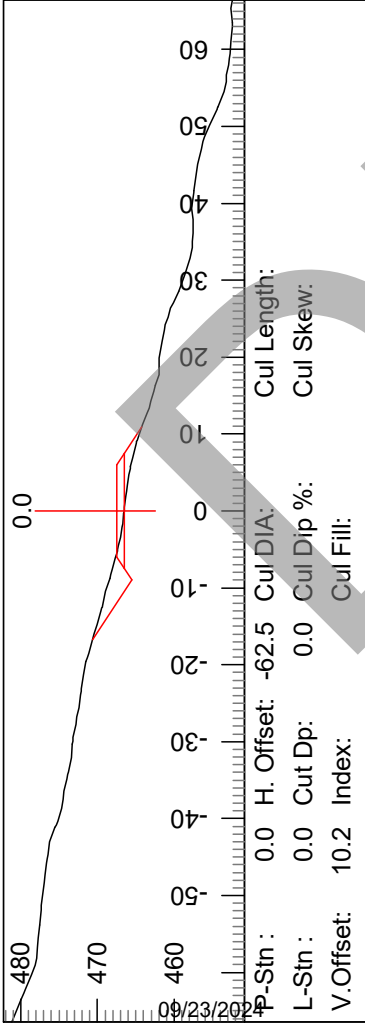
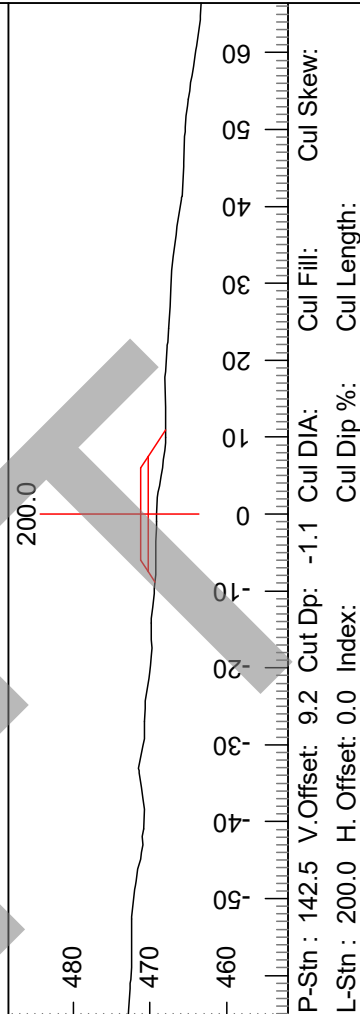
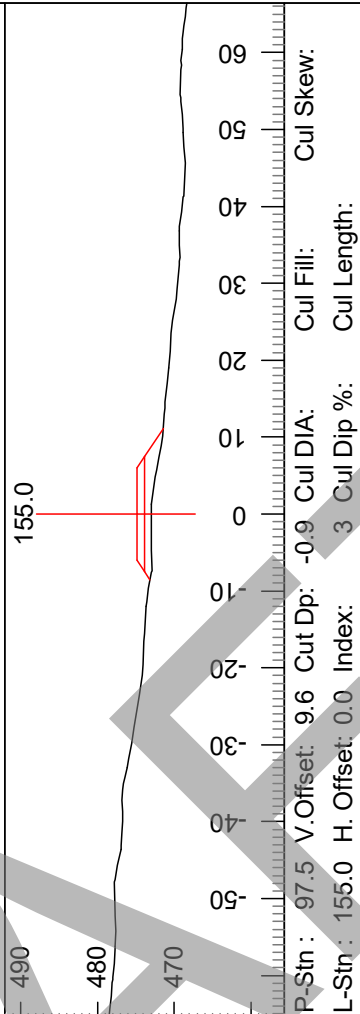
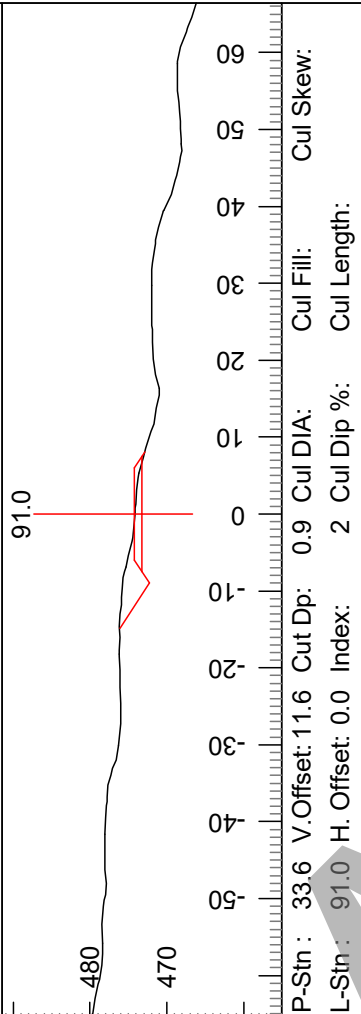
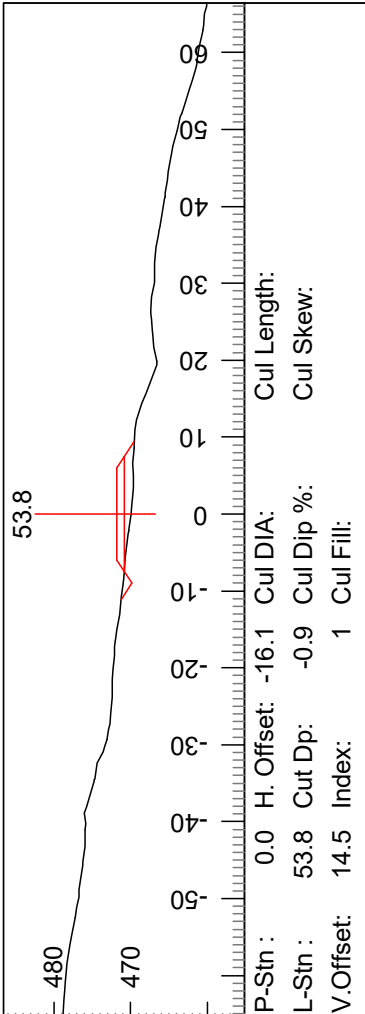


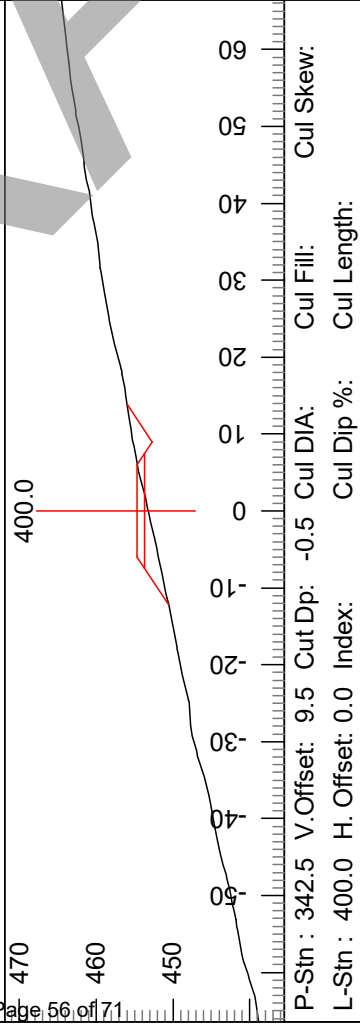
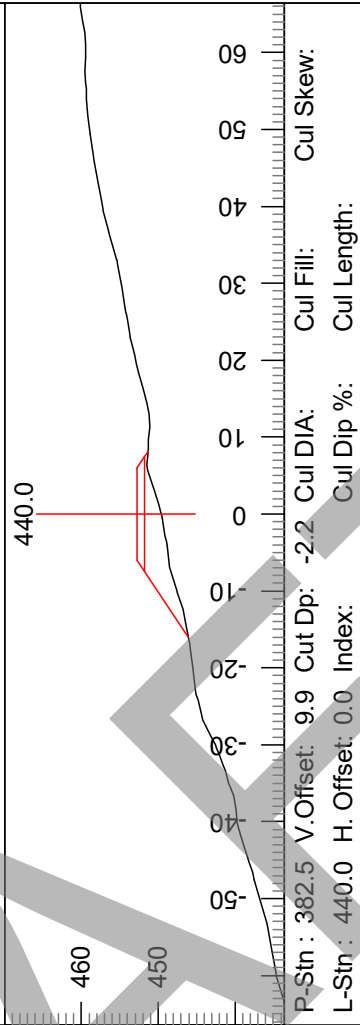
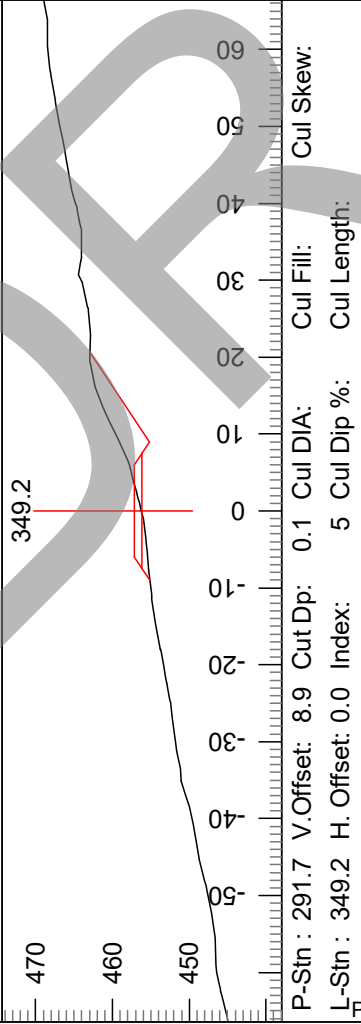
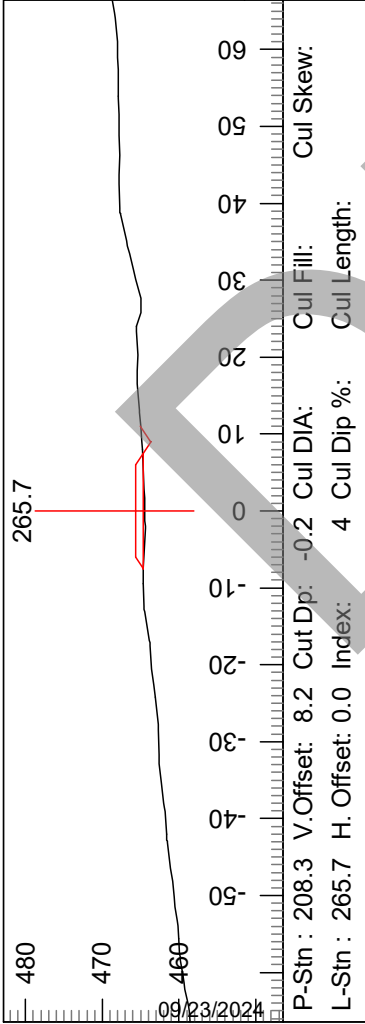
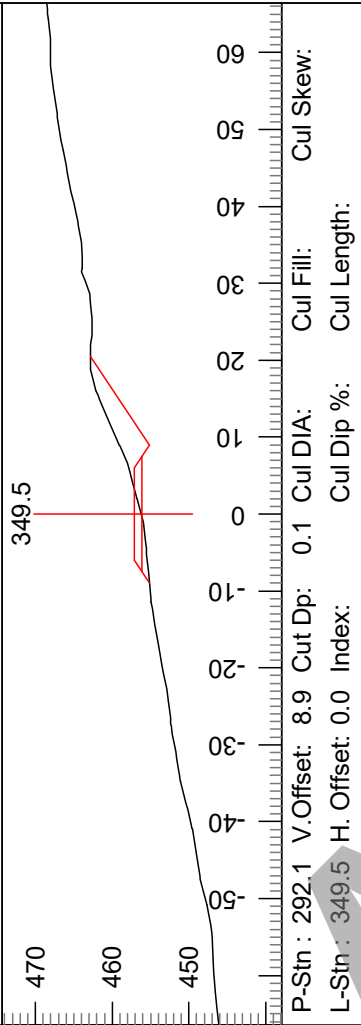
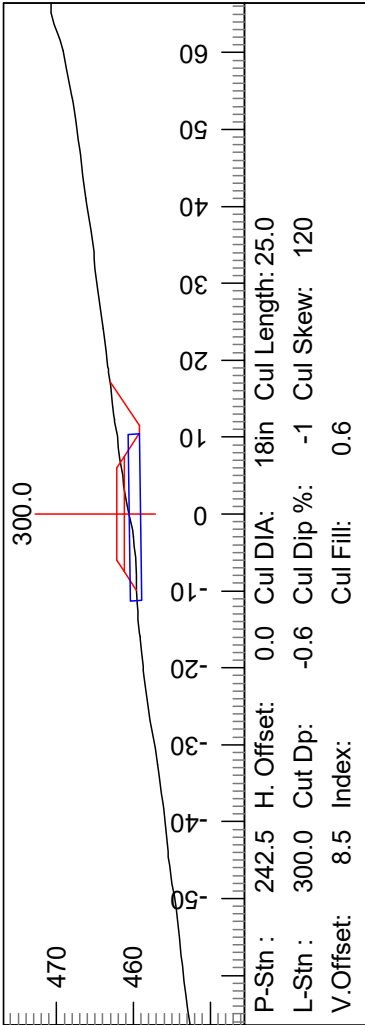


<p>Juneau Timber Sale E-6743-EXT Contract#: 30-102082</p>	<p>Washington State Department of Natural Resources South Puget Sound Region</p> 	<p>Section Scale 1:300</p>	<p>Engineer: G. Gerritsen 10/17/22 Page 3 of 3</p>
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Juneau Timber Sale E-9050-1 Contract#: 30-102082	 Washington State Department of Natural Resources South Puget Sound Region	Plan Scale 1:700 Profile Vert Scale 1:300 Profile Horz Scale 1:700	Engineer: G. Gerritsen 10/10/22	Page 1 of 3
		Mass Haul (Cu. Yd.)		

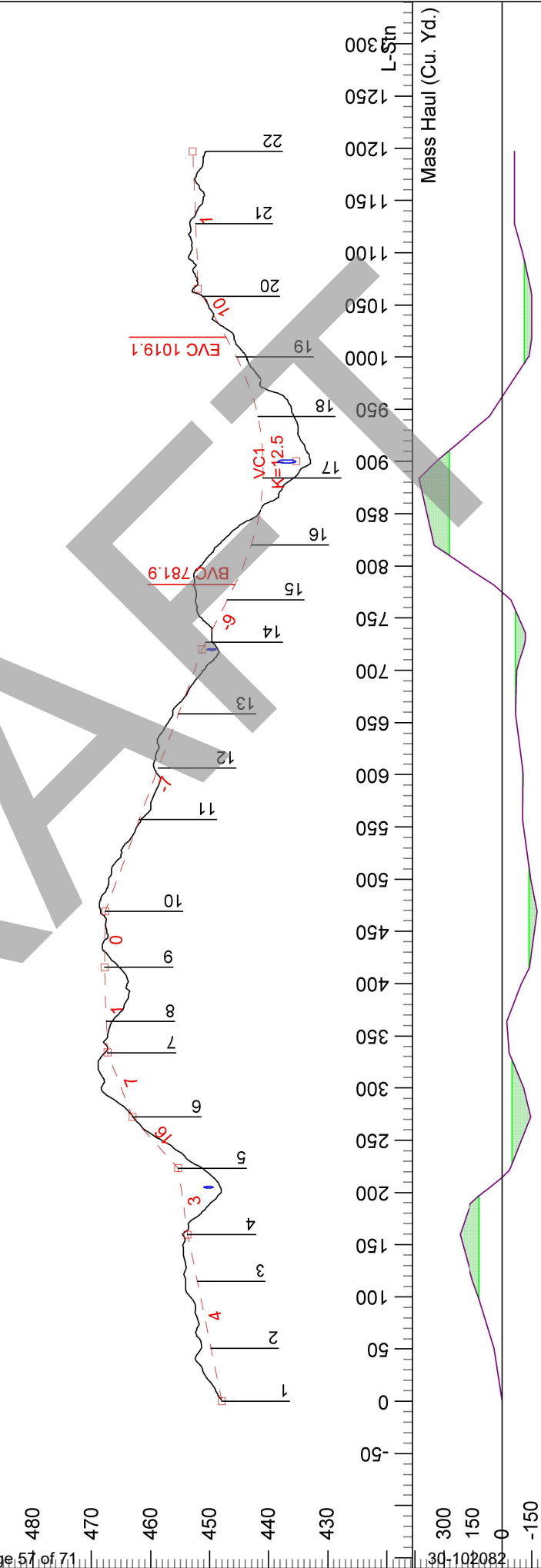
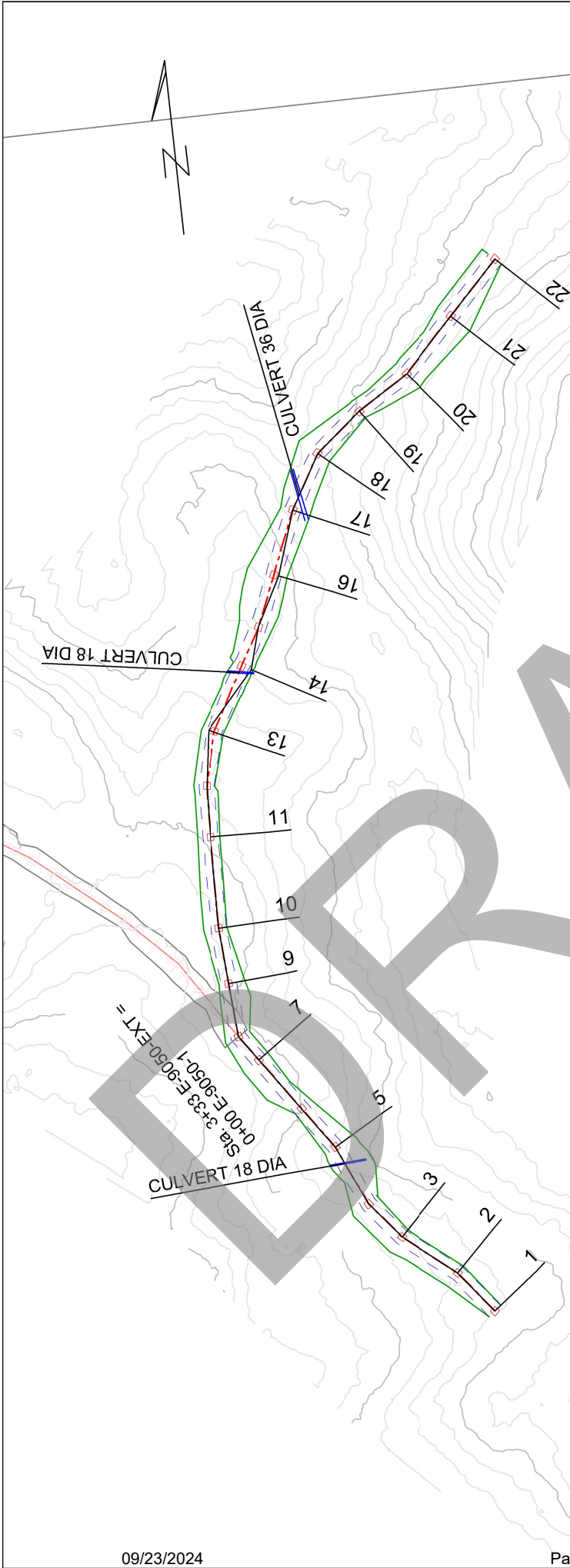


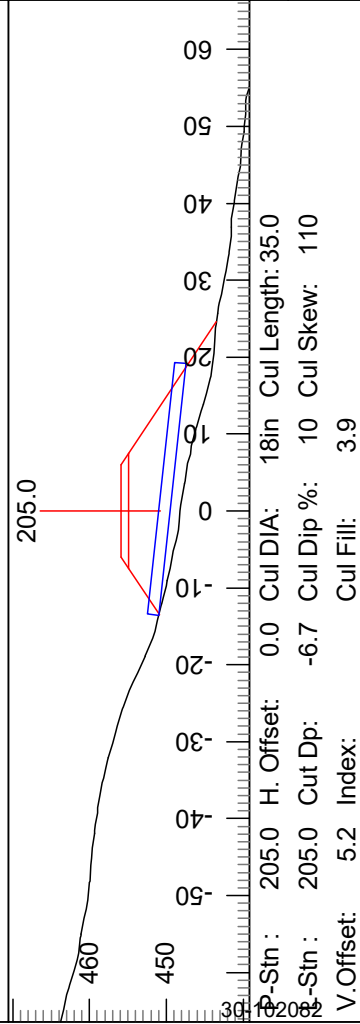
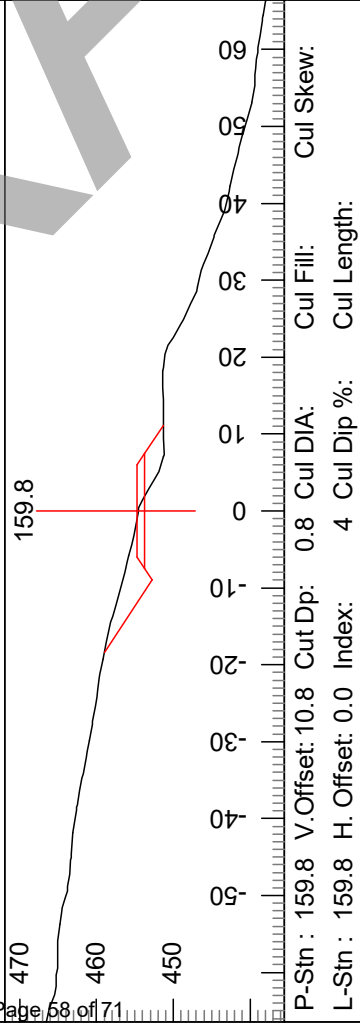
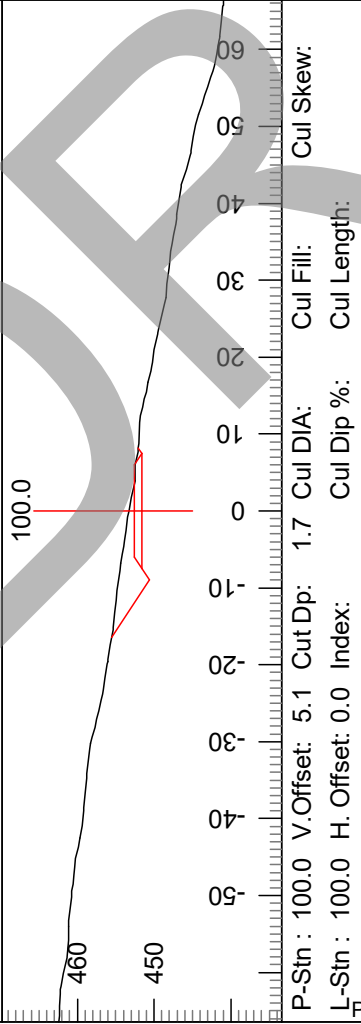
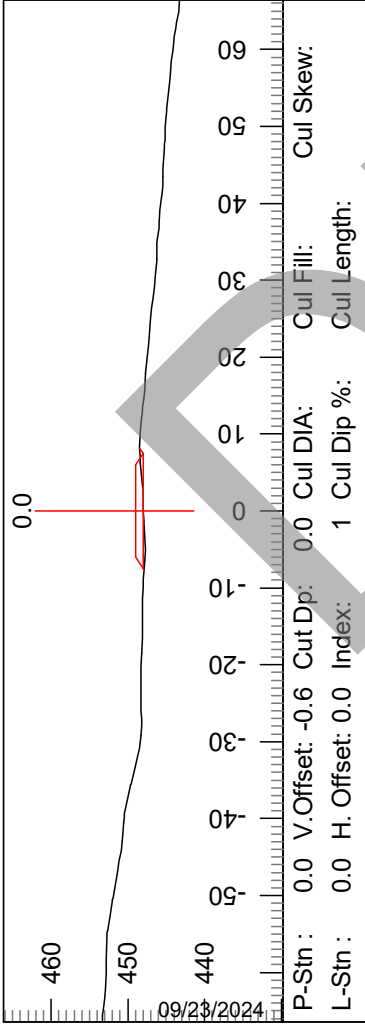
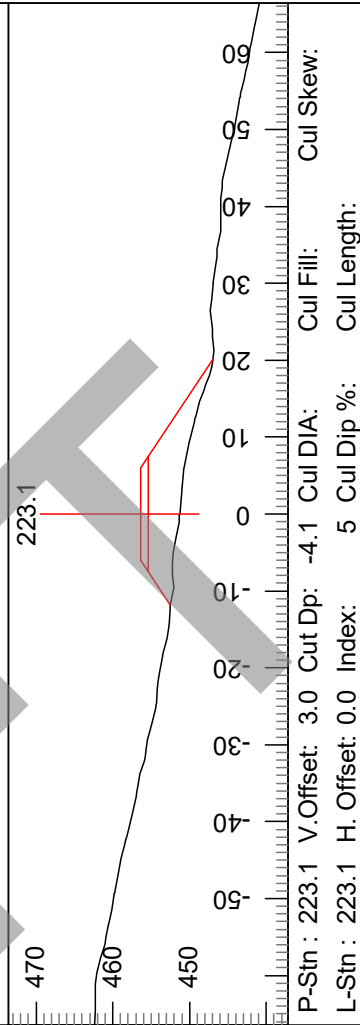
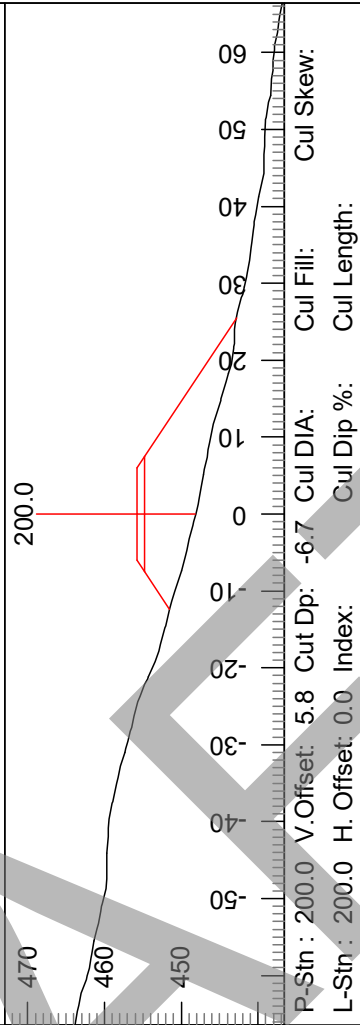
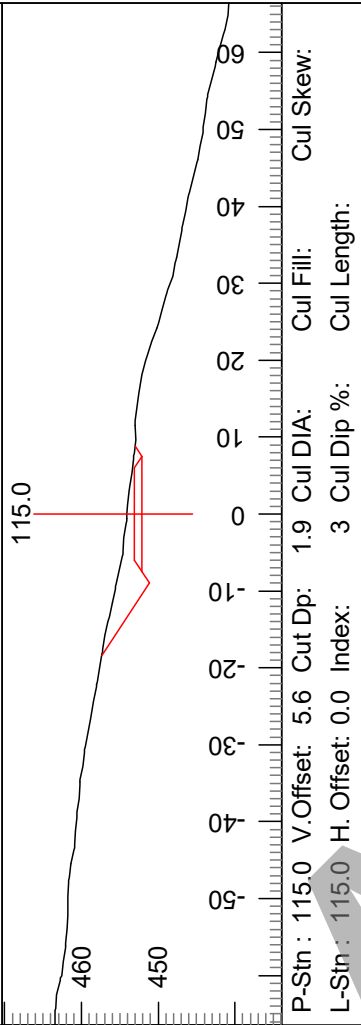
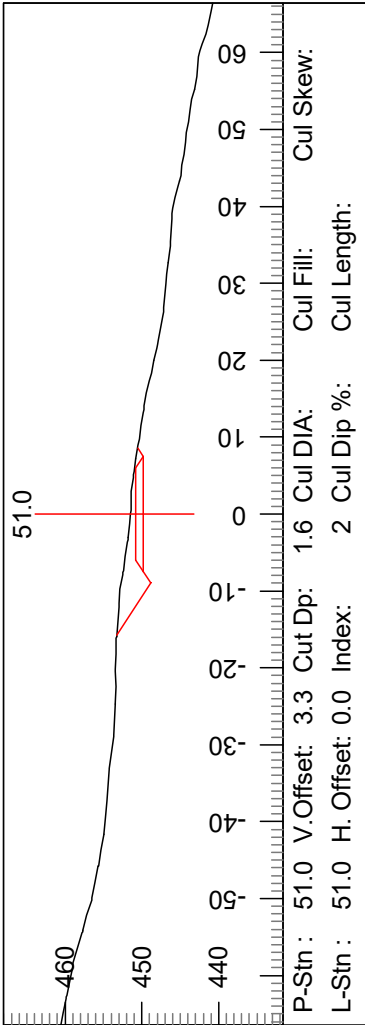


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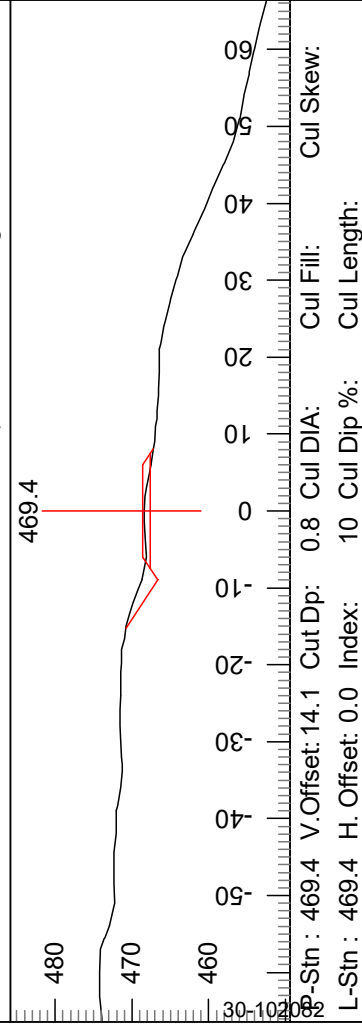
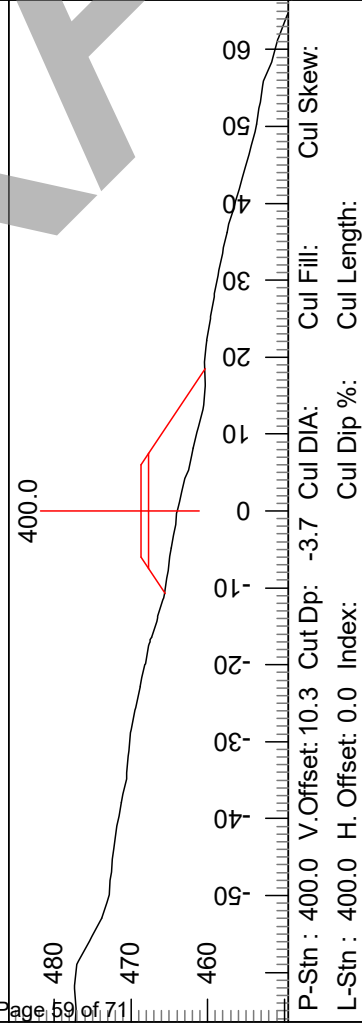
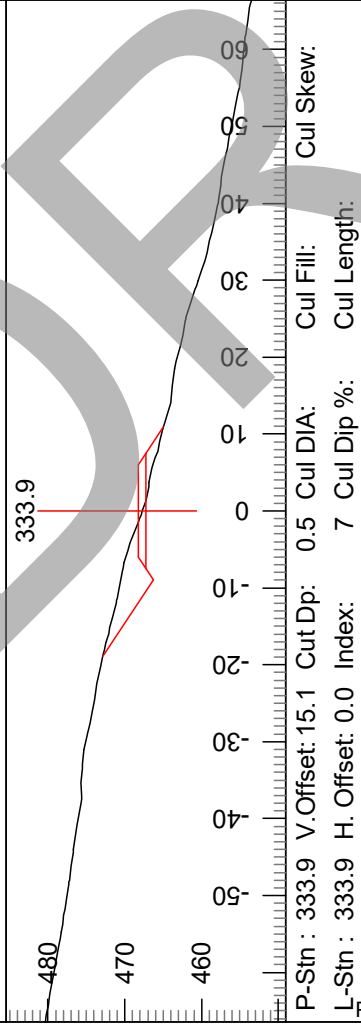
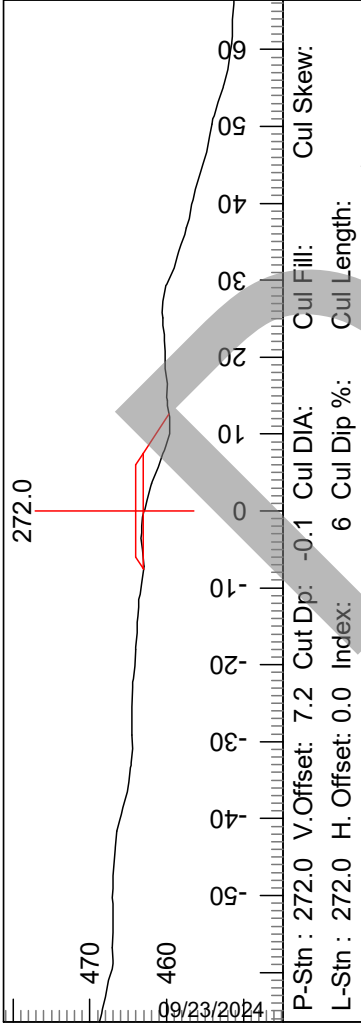
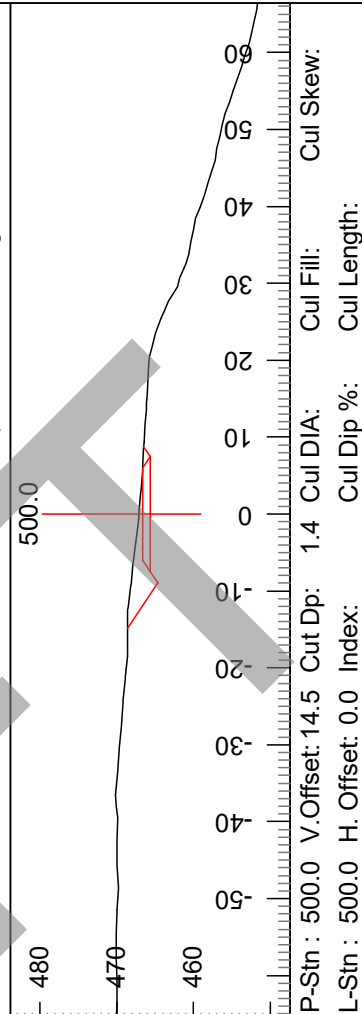
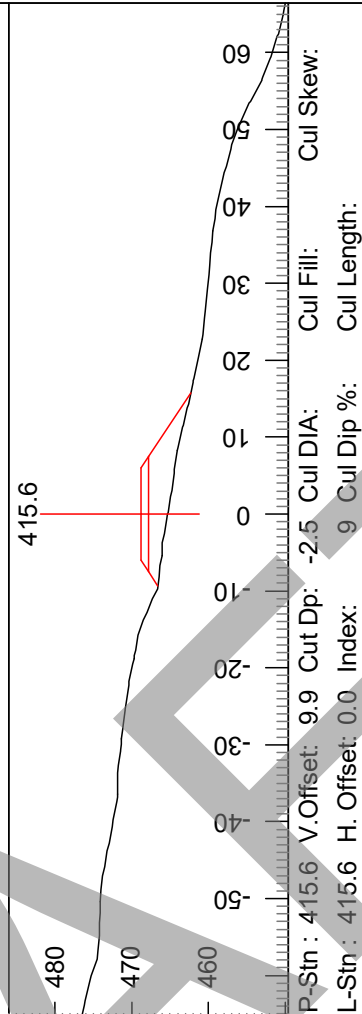
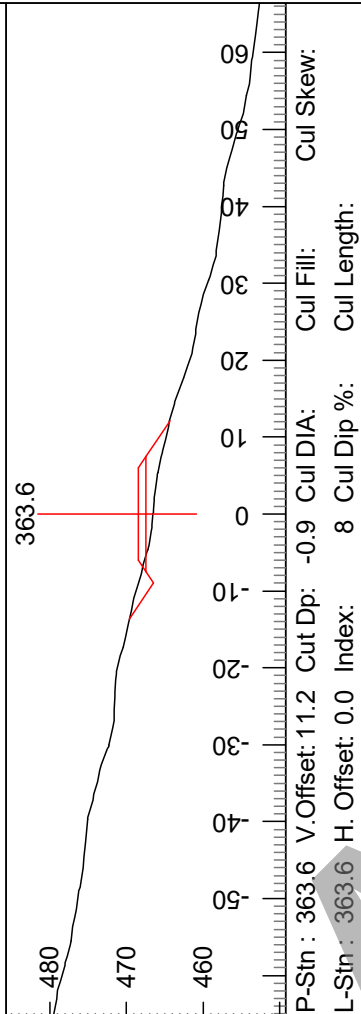
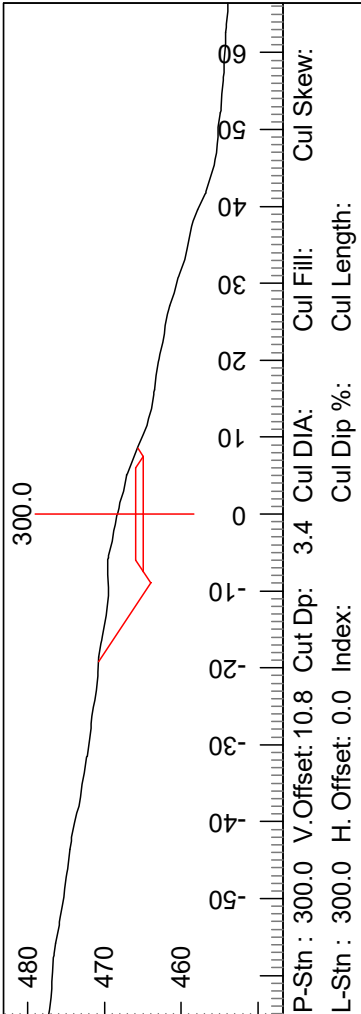




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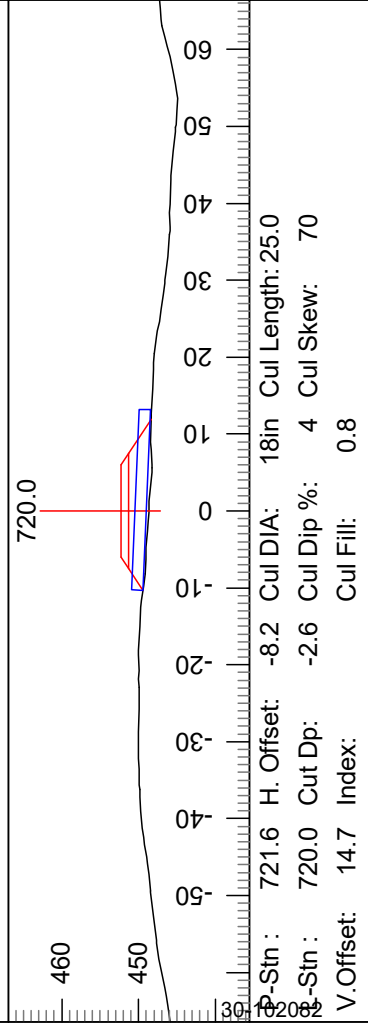
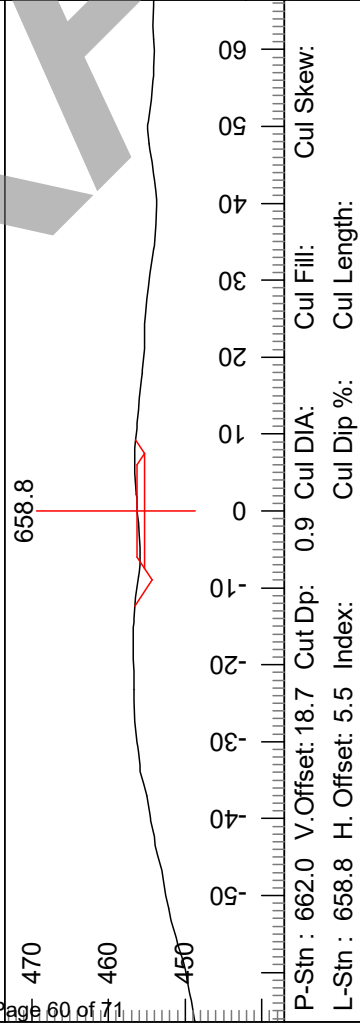
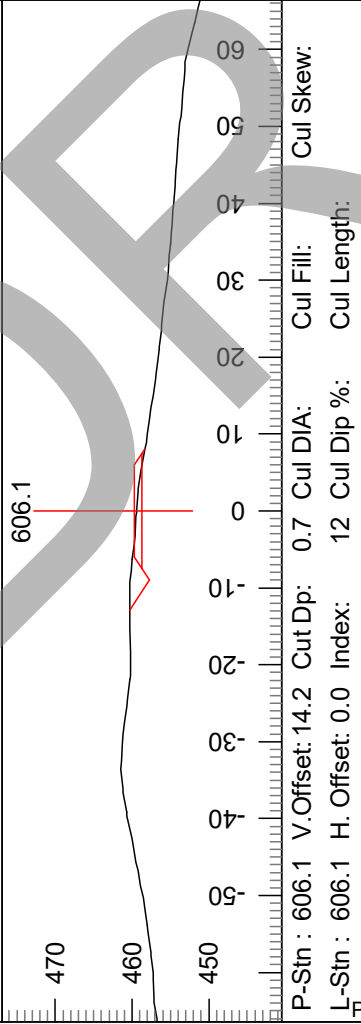
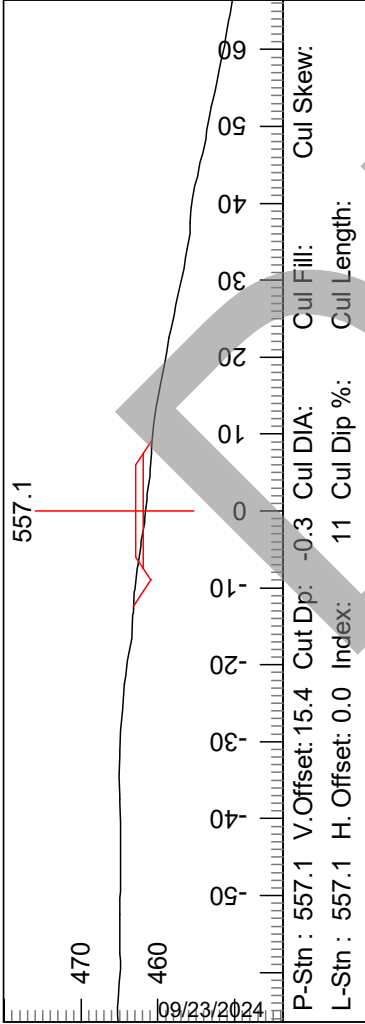
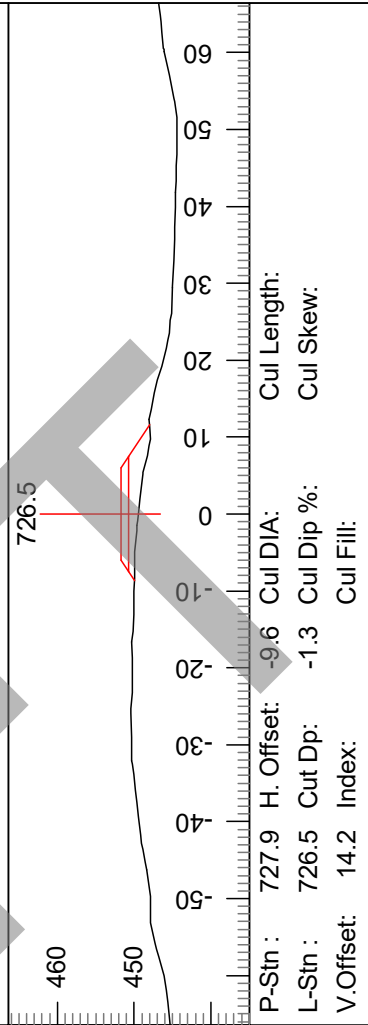
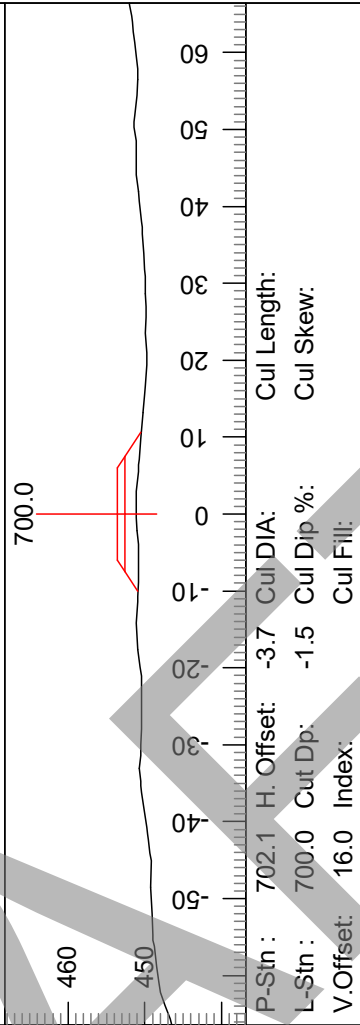
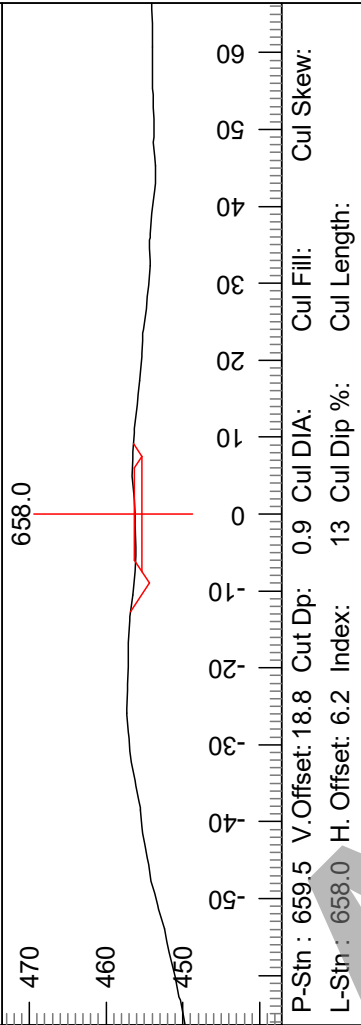
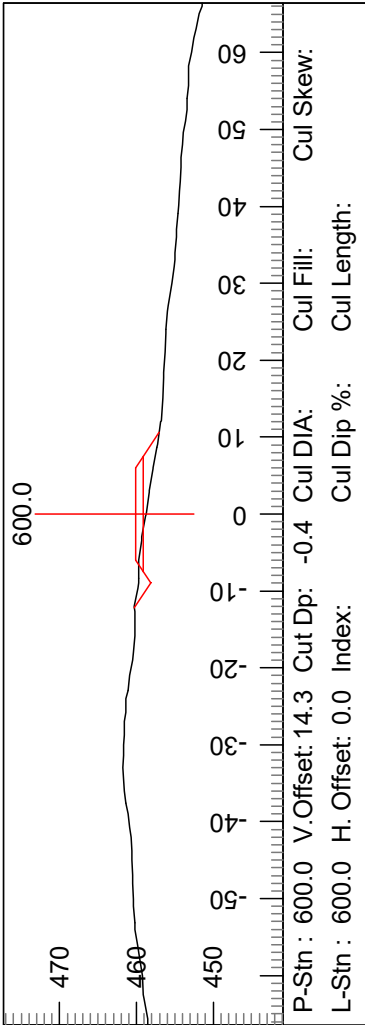
 Washington State Department of Natural Resources South Puget Sound Region	Section Scale 1:300	Engineer: G. Gerritsen 10/17/22	Page 2 of 6
	Juneau Timber Sale E-9050-EXT Contract#: 30-102082		

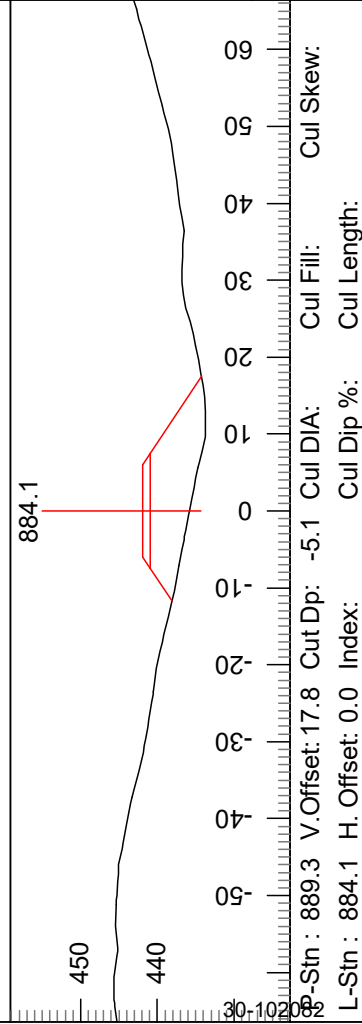
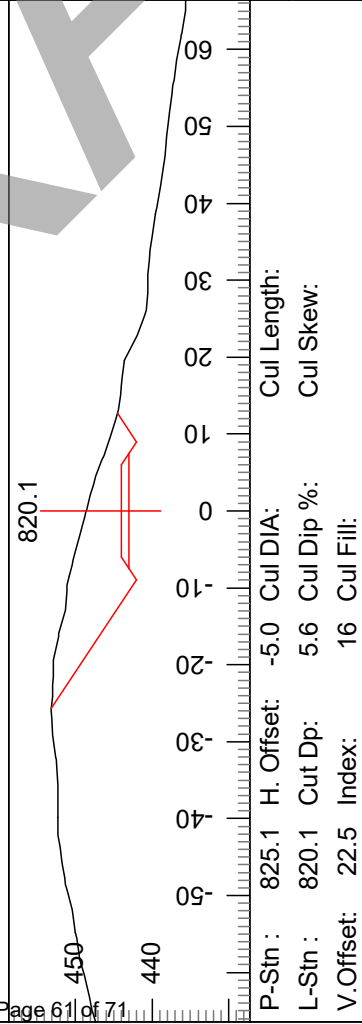
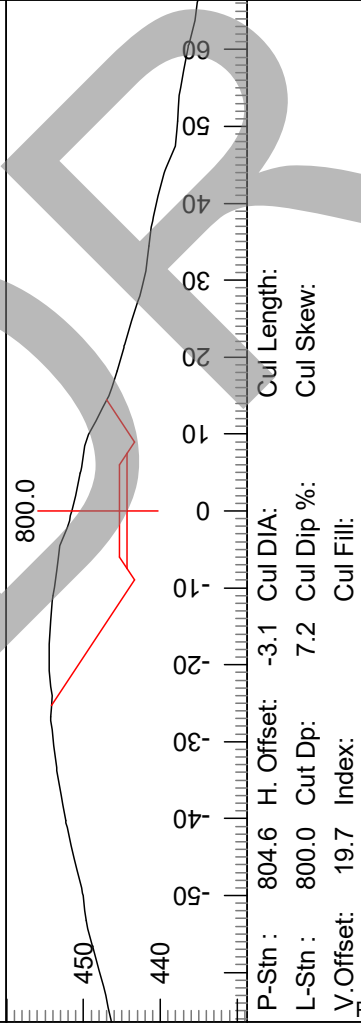
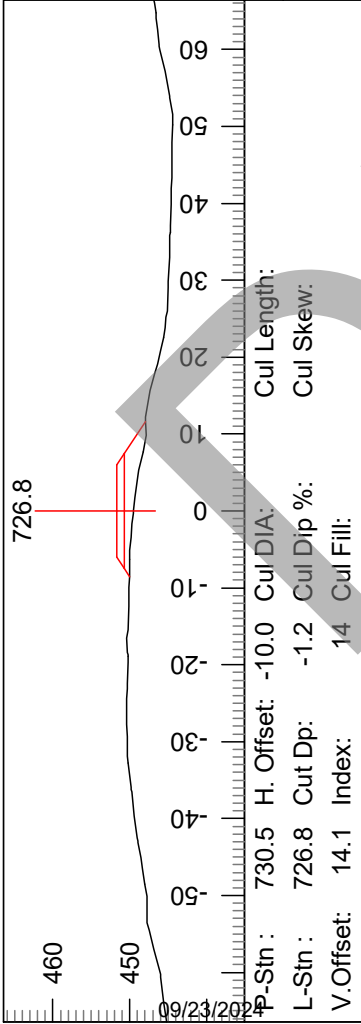
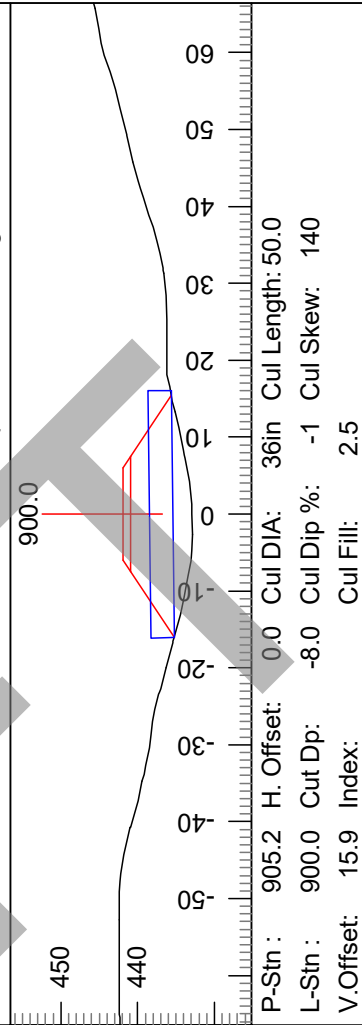
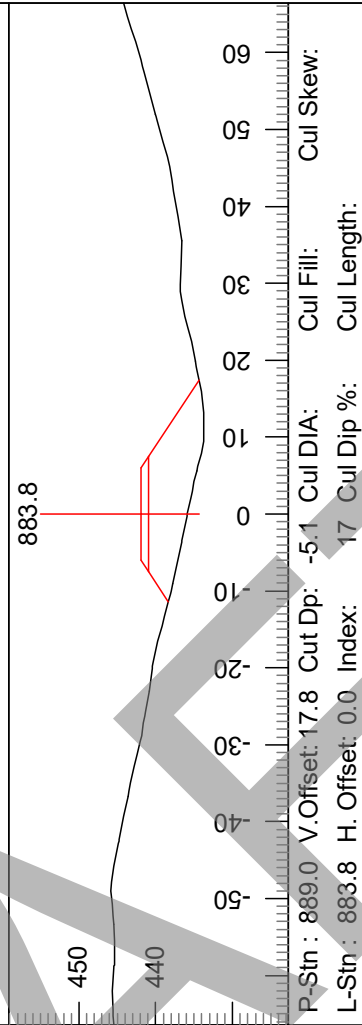
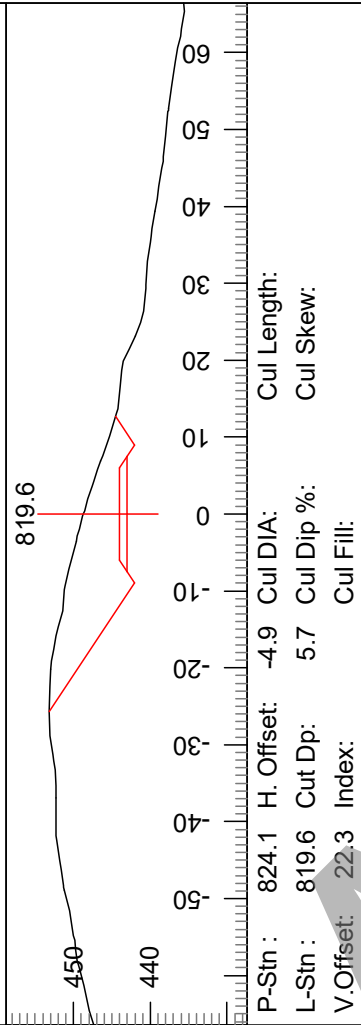
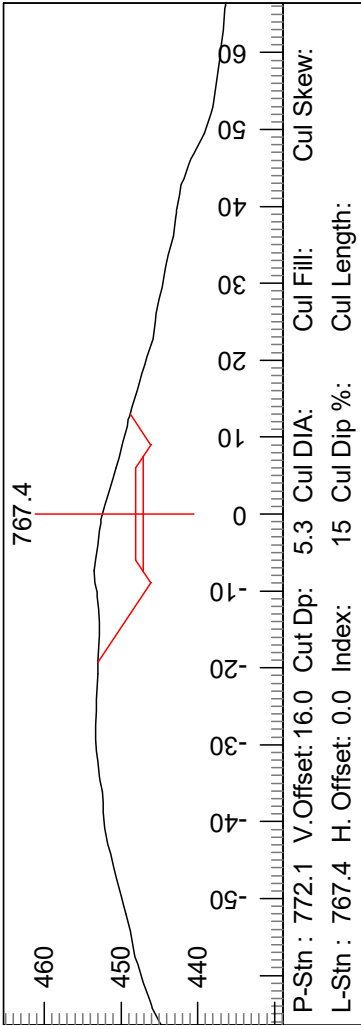


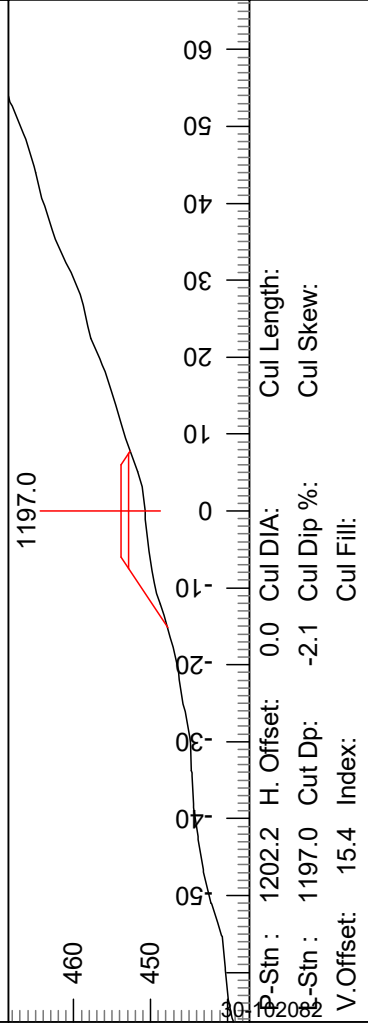
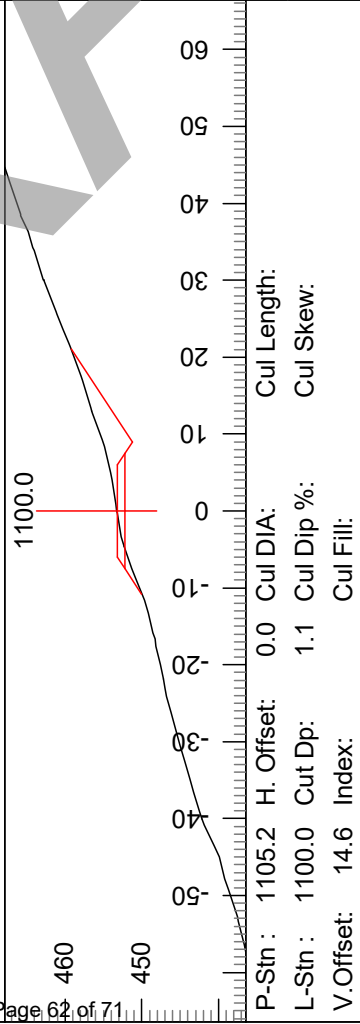
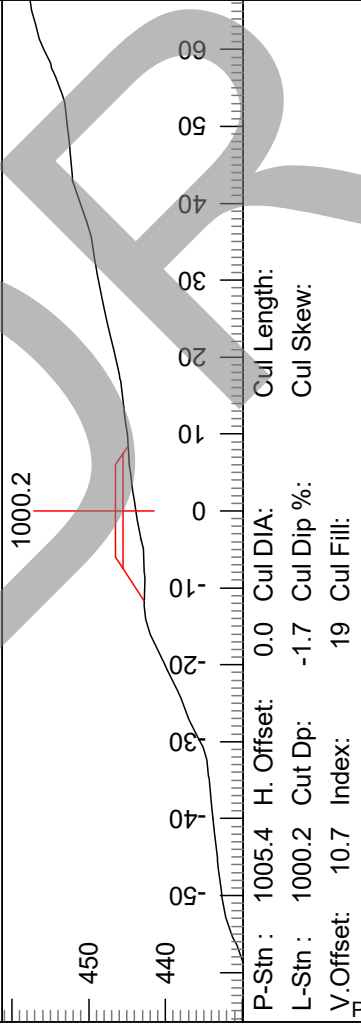
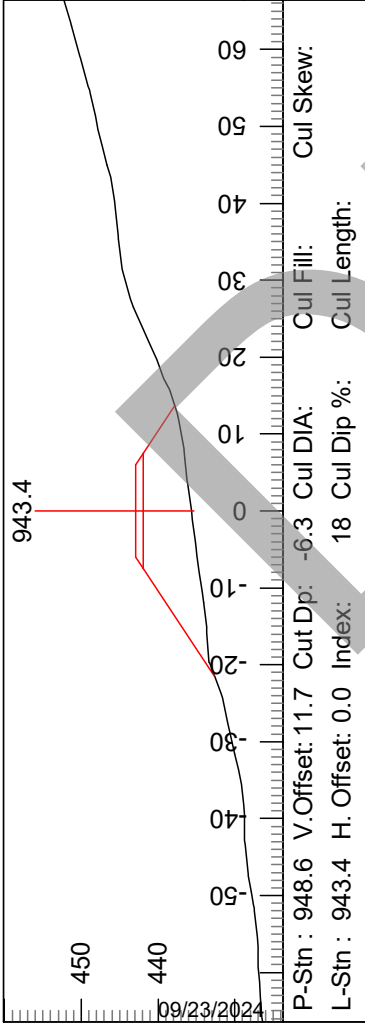
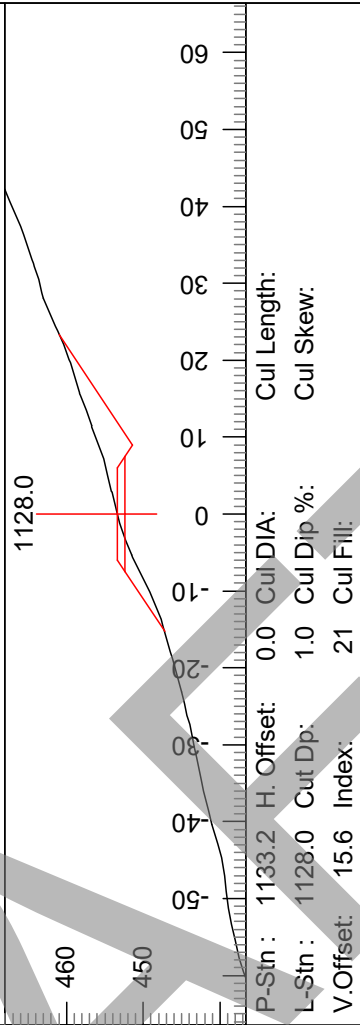
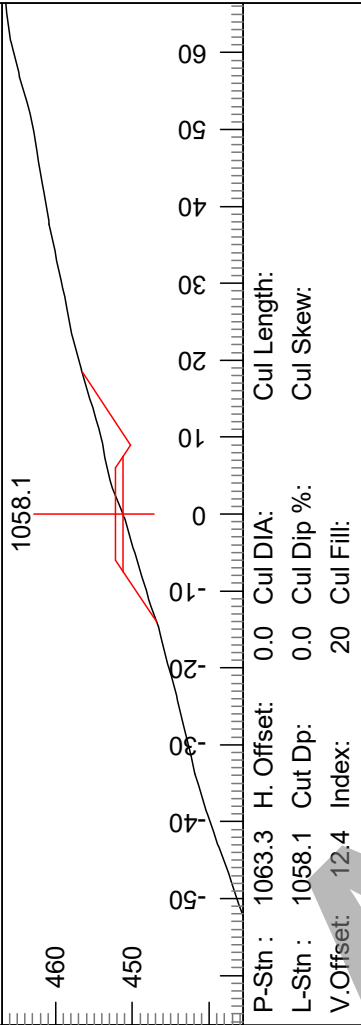
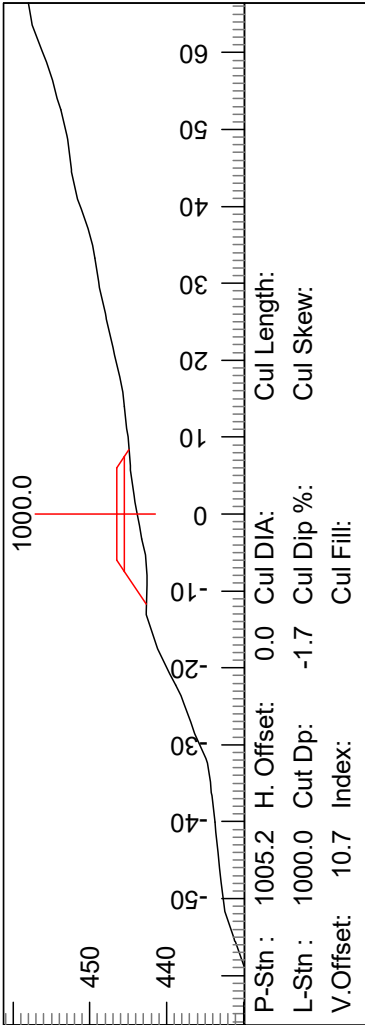
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		Engineer: G. Gerritsen	
Washington State Department of Natural Resources South Puget Sound Region		Section Scale 1:300	10/17/22
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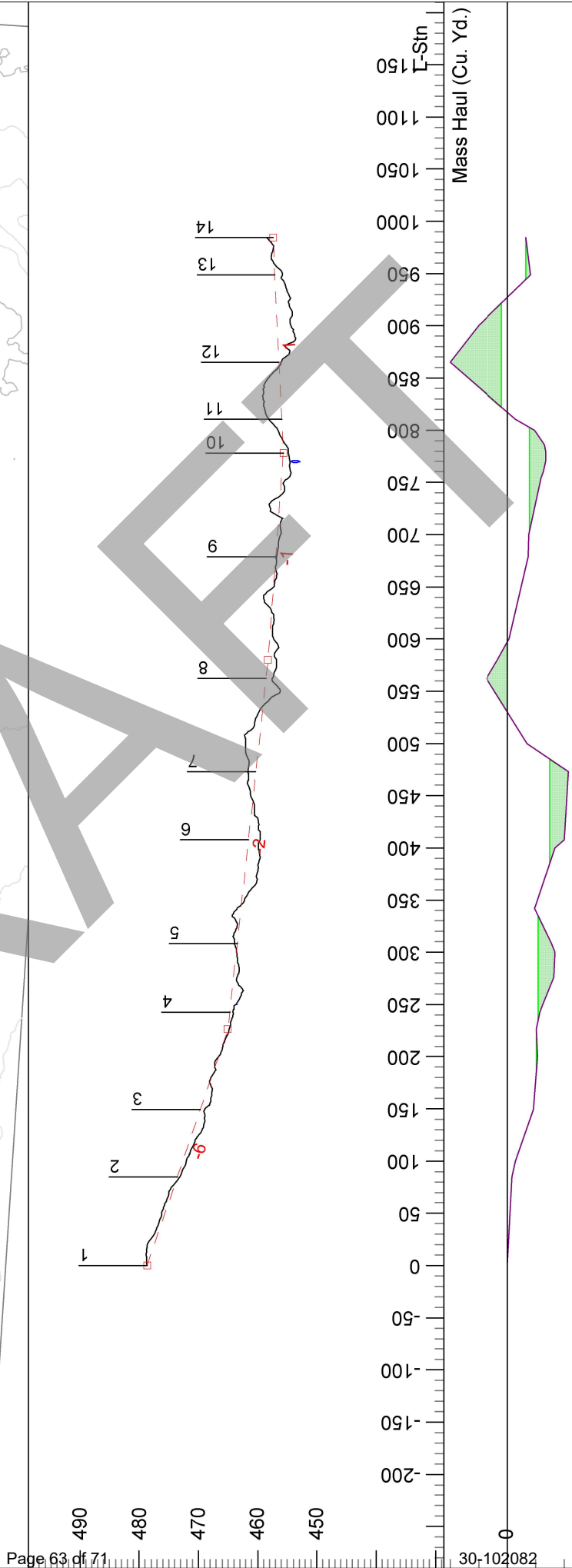
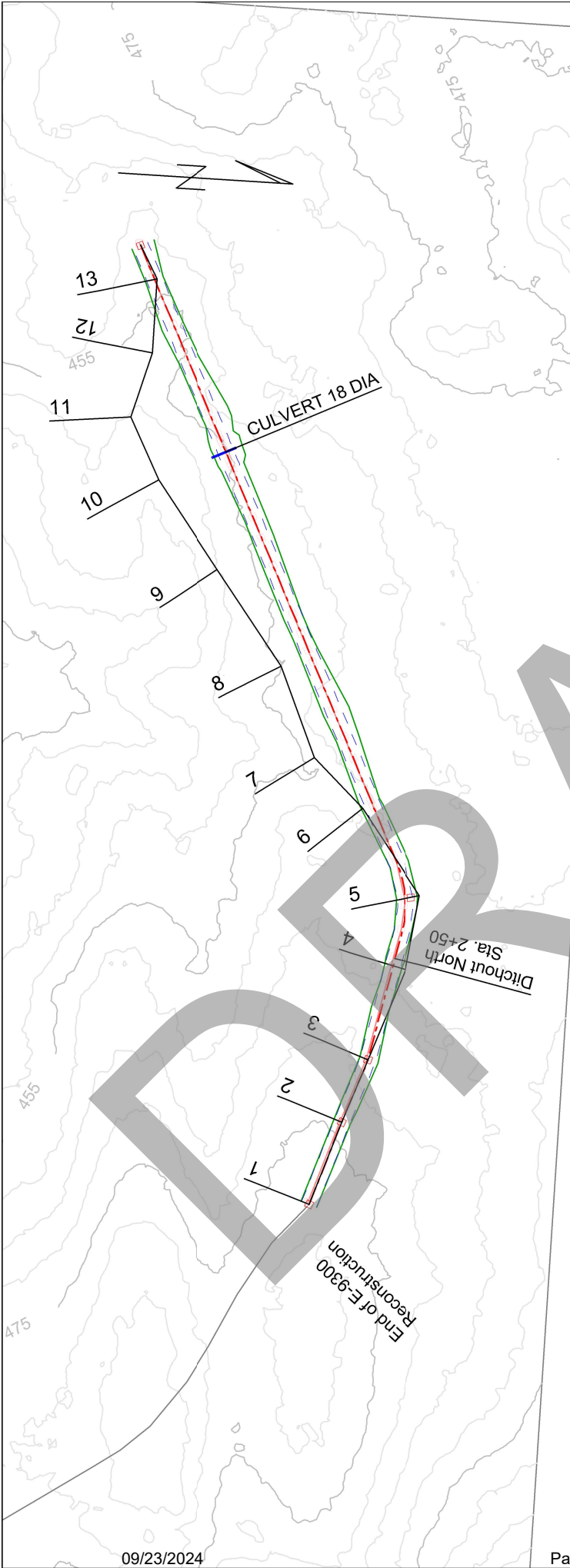


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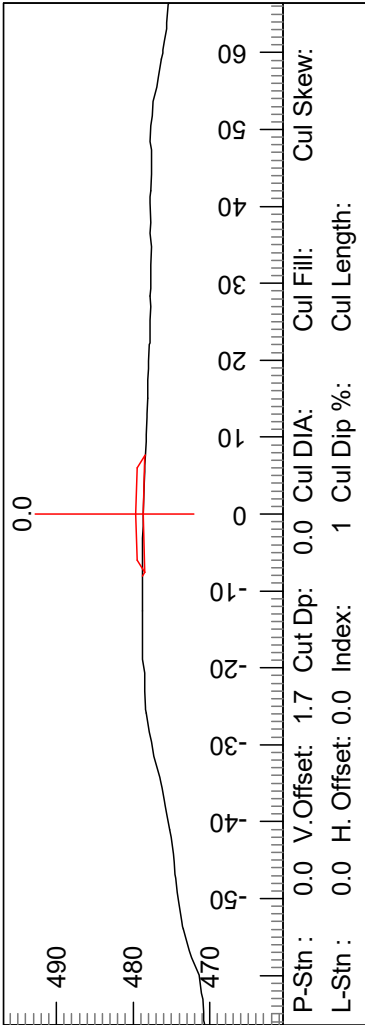
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 Washington State Department of Natural Resources South Puget Sound Region	Engineer: G. Gerritsen
	Section Scale 1:300 10/17/22 Page 6 of 6

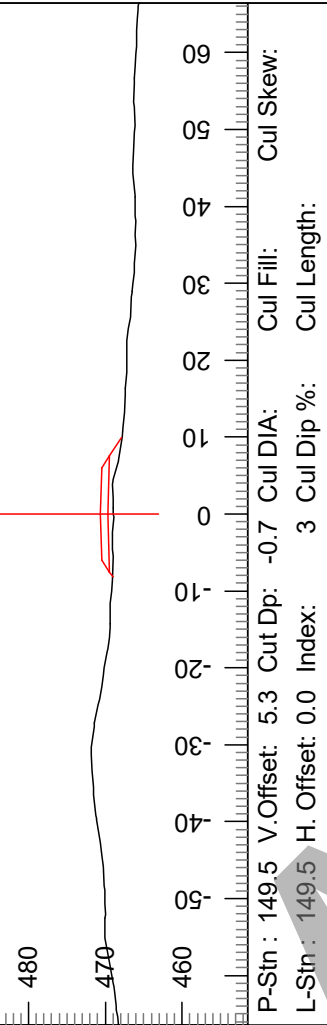
Juneau Timber Sale
 E-9050-EXT
 Contract#: 30-102082



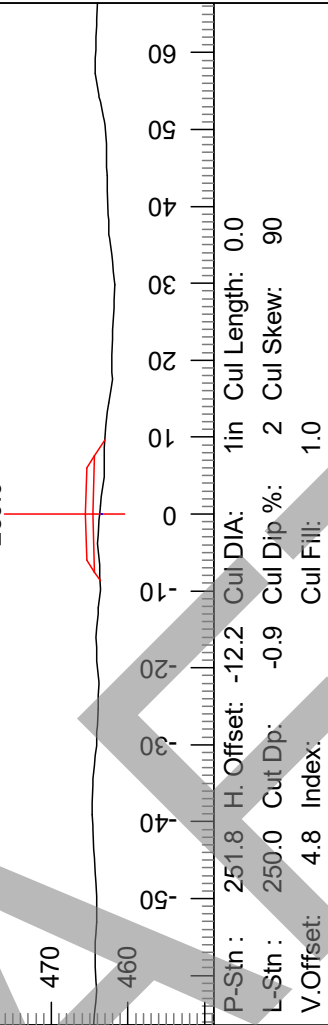
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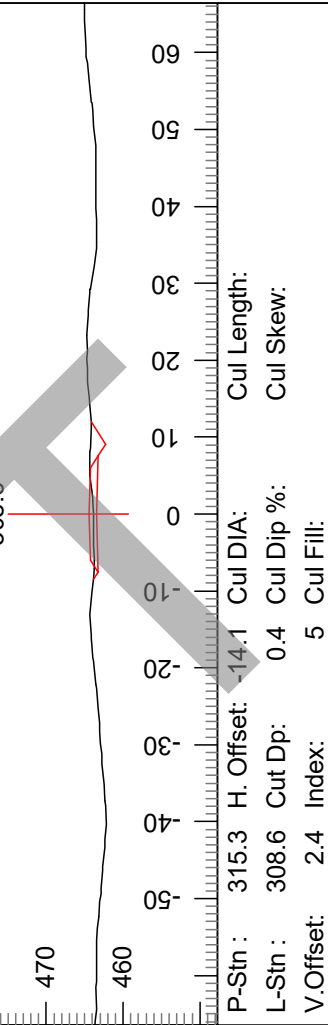
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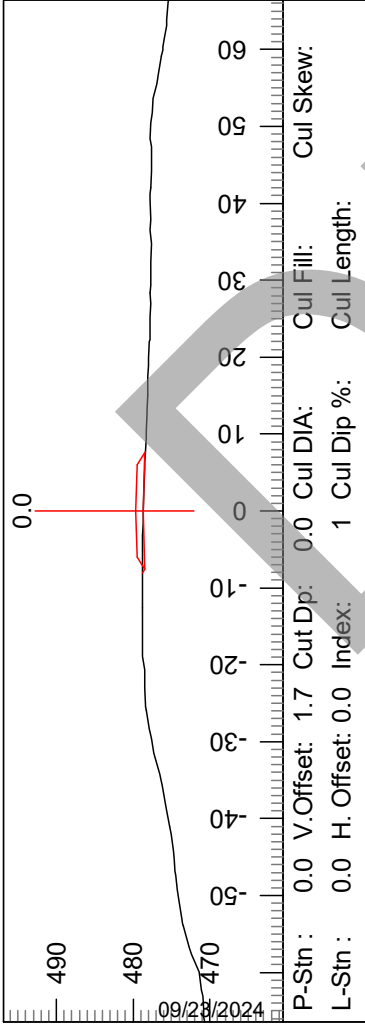
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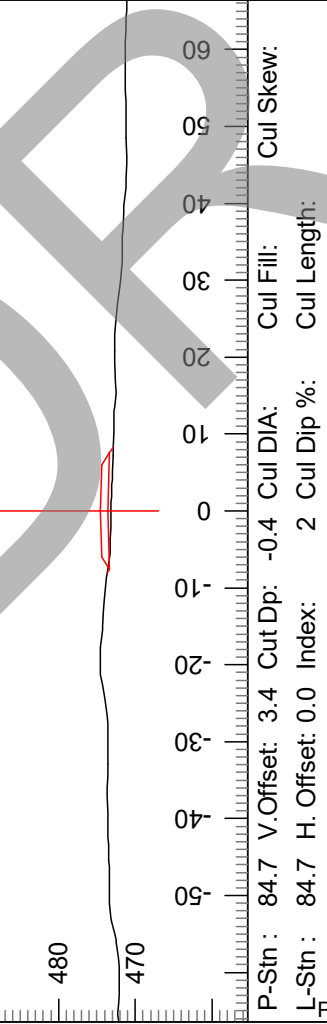
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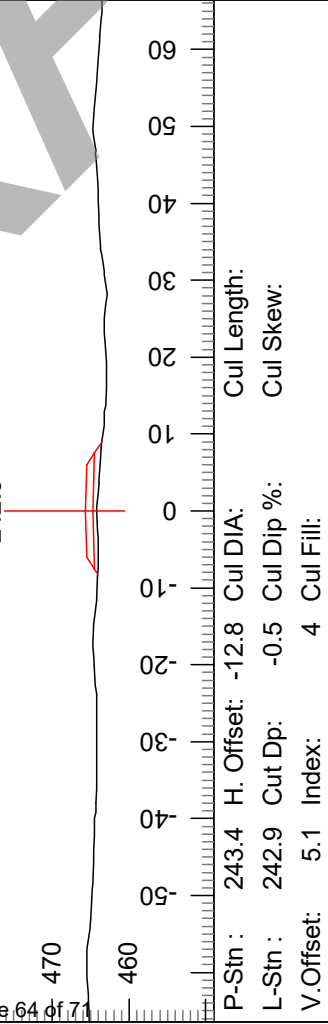
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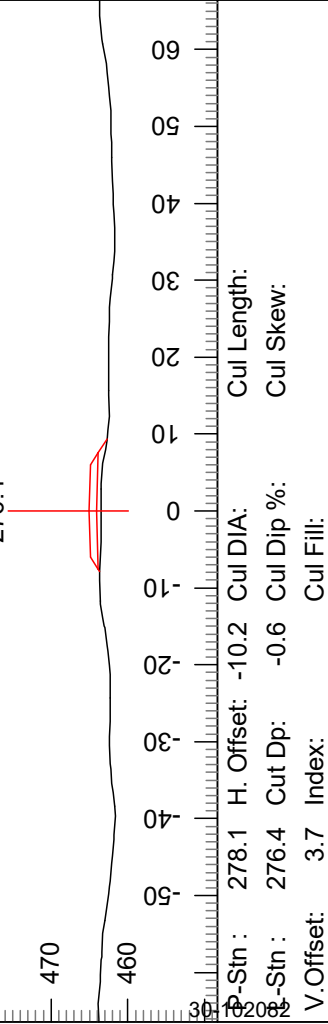
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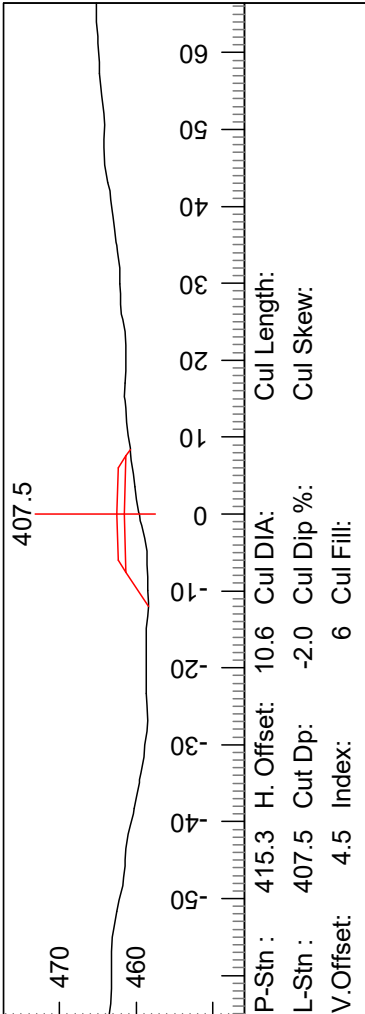


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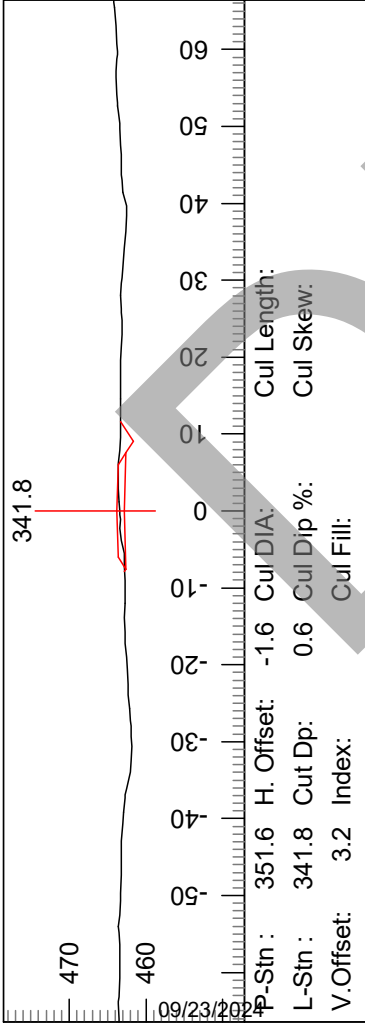
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 Washington State Department of Natural Resources South Puget Sound Region	Engineer: G. Gerritsen
	Section Scale 1:300
Juneau Timber Sale E-9300-EXT Contract#: 30-102082	10/17/22
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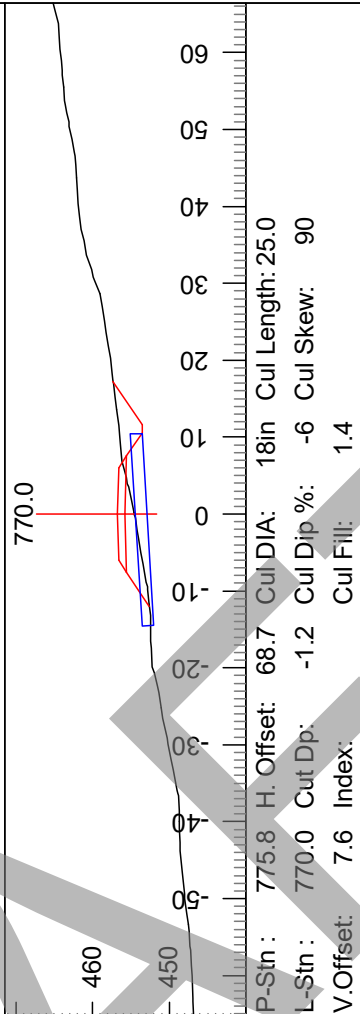
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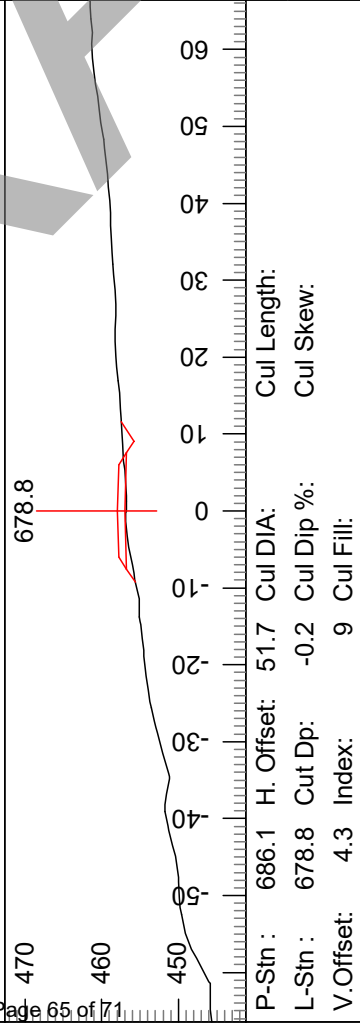
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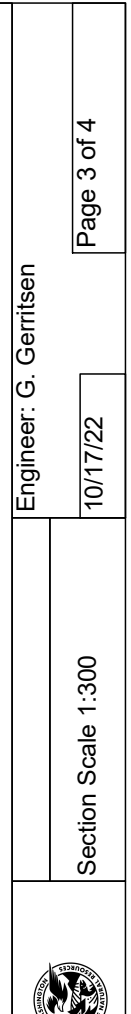
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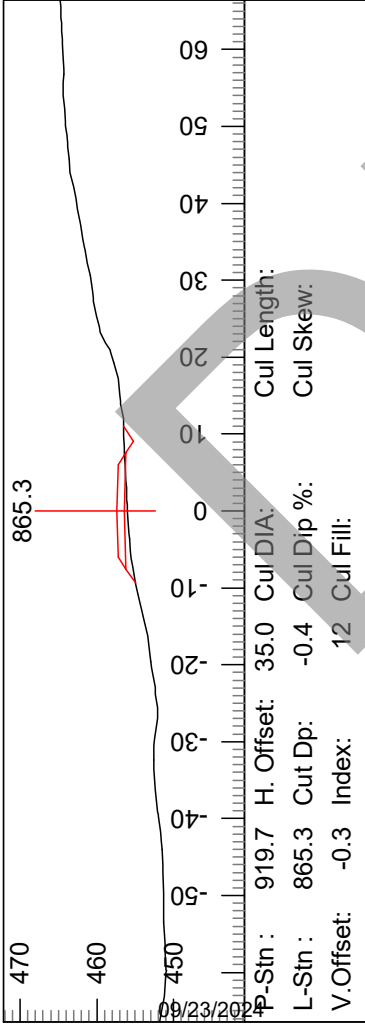
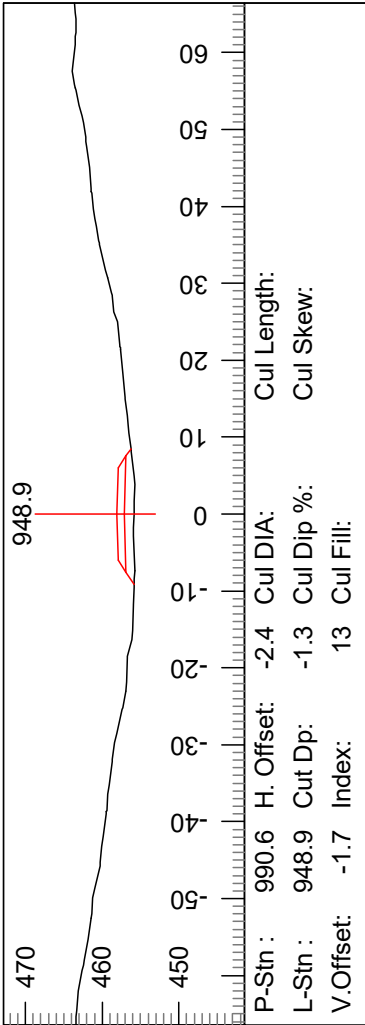
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450

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Juneau Timber Sale E-9300-EXT Contract#: 30-102082	 Washington State Department of Natural Resources South Puget Sound Region	Engineer: G. Gerritsen 10/17/22 Section Scale 1:300 Page 4 of 4
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SCOTT PAPER QUARRY DEVELOPMENT PLAN

SE ¼ NW ¼ Section 8, Township 16 North, Range 03 West, W.M.

(Pg. 1 of 3)

General:

1. Purchaser shall submit an informational drilling and shooting plan to the Contract Administrator 7 calendar days prior to any drilling.
2. Purchaser shall notify the Contract Administrator a minimum of 7 calendar days before blasting operations. Access roads and recreational trails in the area shall be blocked prior to blasting operations.
3. Oversize material left in quarry at the conclusion of operation shall be placed in "Area D". Oversize material generated shall not exceed 500 cubic yards. Any excess oversize material generated shall be reduced in size to a 4-inch jaw run rock (clause 6-37). Oversize material is defined as rock fragments larger than 2 feet in any dimension.
4. All vegetation including stumps shall be cleared a minimum of 35 feet beyond the top of all working faces. Surface shall be scalped of all overburden within 20 feet of working face at all times. Overburden cut slopes shall be sloped no steeper than 1:1.
5. Endhaul overburden to waste area at station 86+60 on the E-8600 road. Additional locations may be used if approved in writing by the Contract Administrator. Root wads and organic debris larger than one cubic foot in volume shall be separated from overburden material and piled in the vegetative waste area as shown on the Scott Paper Quarry Development Plan.
6. Maximum face height shall be 30 feet.
7. The minimum width of benches shall be 20ft.
8. Quarry walls shall be maintained in a condition to minimize the possibility of the walls sliding or failing.
9. Quarry floor shall have continuity of slope and be left in a smooth and neat condition, providing positive drainage. No ponding will be allowed.
10. 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.
11. At the end of operation, benches shall have safety berms constructed or access blocked to highway vehicles. Berms shall be at least mid-axle height of the largest self-propelled mobile equipment which usually travels adjacent to benches. Upon completion of operations in the quarry, the area will be left in a condition that will not endanger public safety, damage property, or be hazardous to animal or human life.
12. 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. Reclamation will not be required following use.
13. At the completion of rock source operations, Purchaser shall request written approval from the Contract Administrator for final rock source condition and compliance with the terms of this plan.
14. Quantity and quality of quarry material is not guaranteed by the State.
15. See "Scott Paper Quarry Plan Pg. 3 of 3" drawing for additional information.

SCOTT PAPER QUARRY DEVELOPMENT PLAN

SE ¼ NW ¼ Section 8, Township 16 North, Range 03 West, W.M.

(Pg. 2 of 3)

Specific Rock Source Work Requirements:

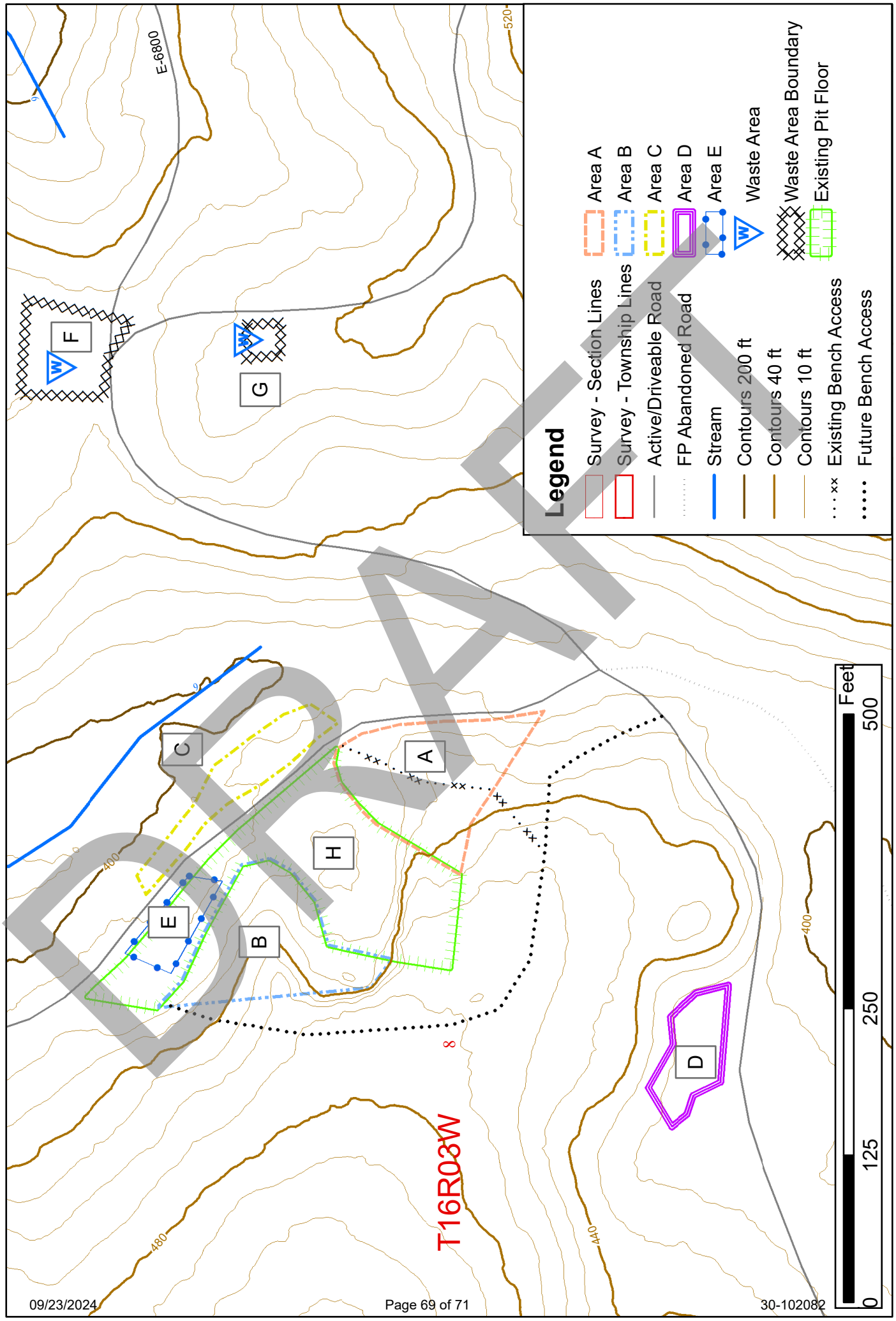
Points are shown on the Scott Paper Quarry Development Plan Pg. 3 of 3.

Point	Requirements
A	Work area to be developed.
B	Secondary work area to be developed, after area A is exhausted.
C	Oversize rock stockpile, available to be crushed until the elevation of the stockpile is equal to the elevation of the adjacent road.
D	Secondary rock stockpile, available to be crushed after area C is exhausted.
E	Existing 1.5-inch minus stockpile
F	Designated overburden storage area.
G	Designated vegetative waste storage area (30ft x 30ft).
H	Existing pit floor.

*Updated 10/17/2022 by G. Gerritsen

Scott Paper Quarry Development Plan Pg. 3 of 3

SE 1/4 NW 1/4 Section 8, Township 16 North, Range 03 West, W.M.



Legend

- Survey - Section Lines
- Survey - Township Lines
- Active/Driveable Road
- FP Abandoned Road
- Stream
- Contours 200 ft
- Contours 40 ft
- Contours 10 ft
- Existing Bench Access
- Future Bench Access
- Area A
- Area B
- Area C
- Area D
- Area E
- Waste Area
- Waste Area Boundary
- Existing Pit Floor

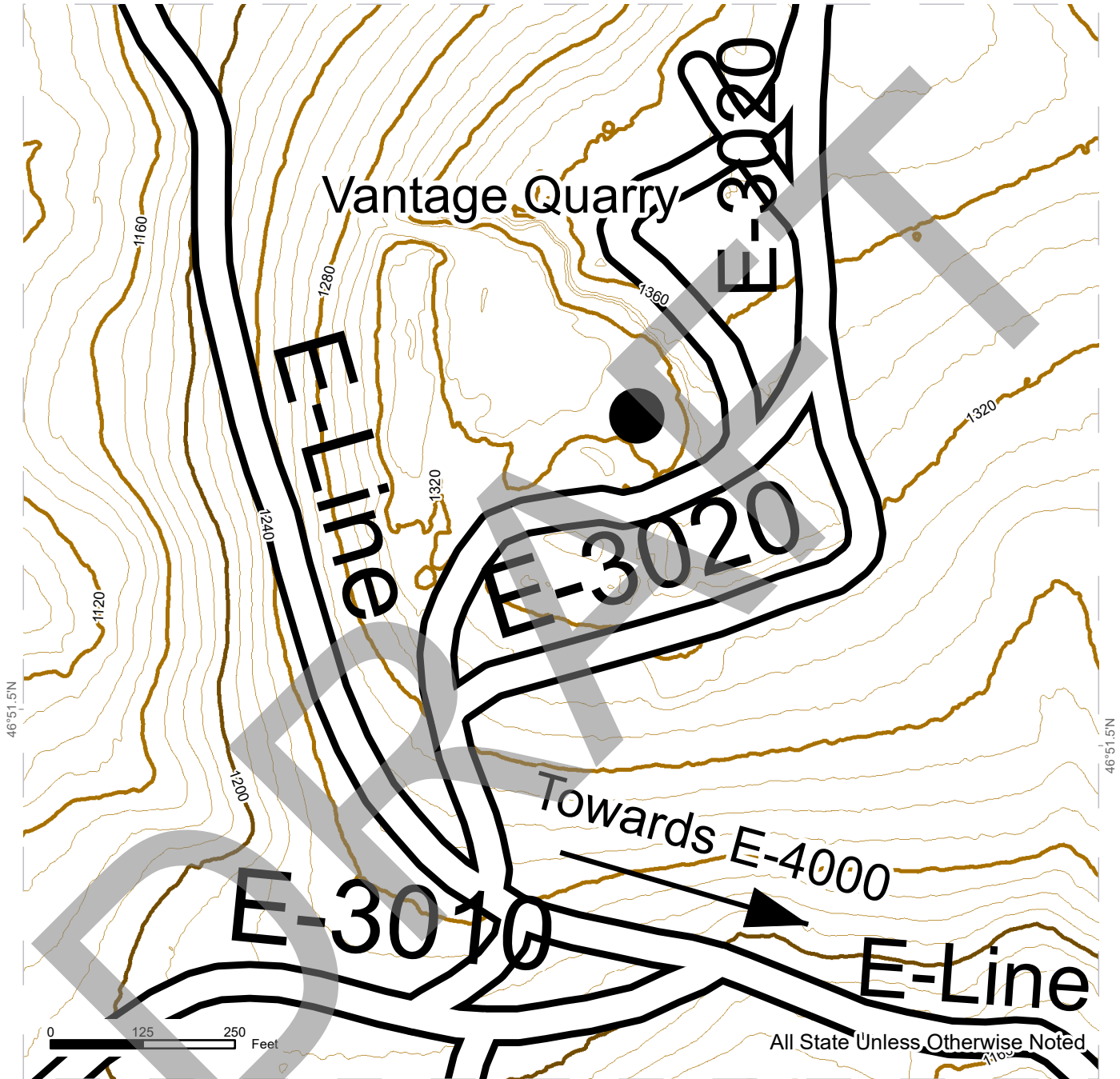


Note: Pit face contours are out of date, reference Existing Pit Floor boundary for current topography.

VANTAGE QUARRY STOCKPILE LOCATION MAP

SALE NAME: JUNEAU
AGREEMENT #: 30-102082
TOWNSHIP(S): T16R3W, T16R4W, T17R3W
TRUST(S): Forest Board Repayment (42), State Forest Purchase (2)

REGION: South Puget Sound Region
COUNTY(S): Thurston
ELEVATION RGE: 400-1040



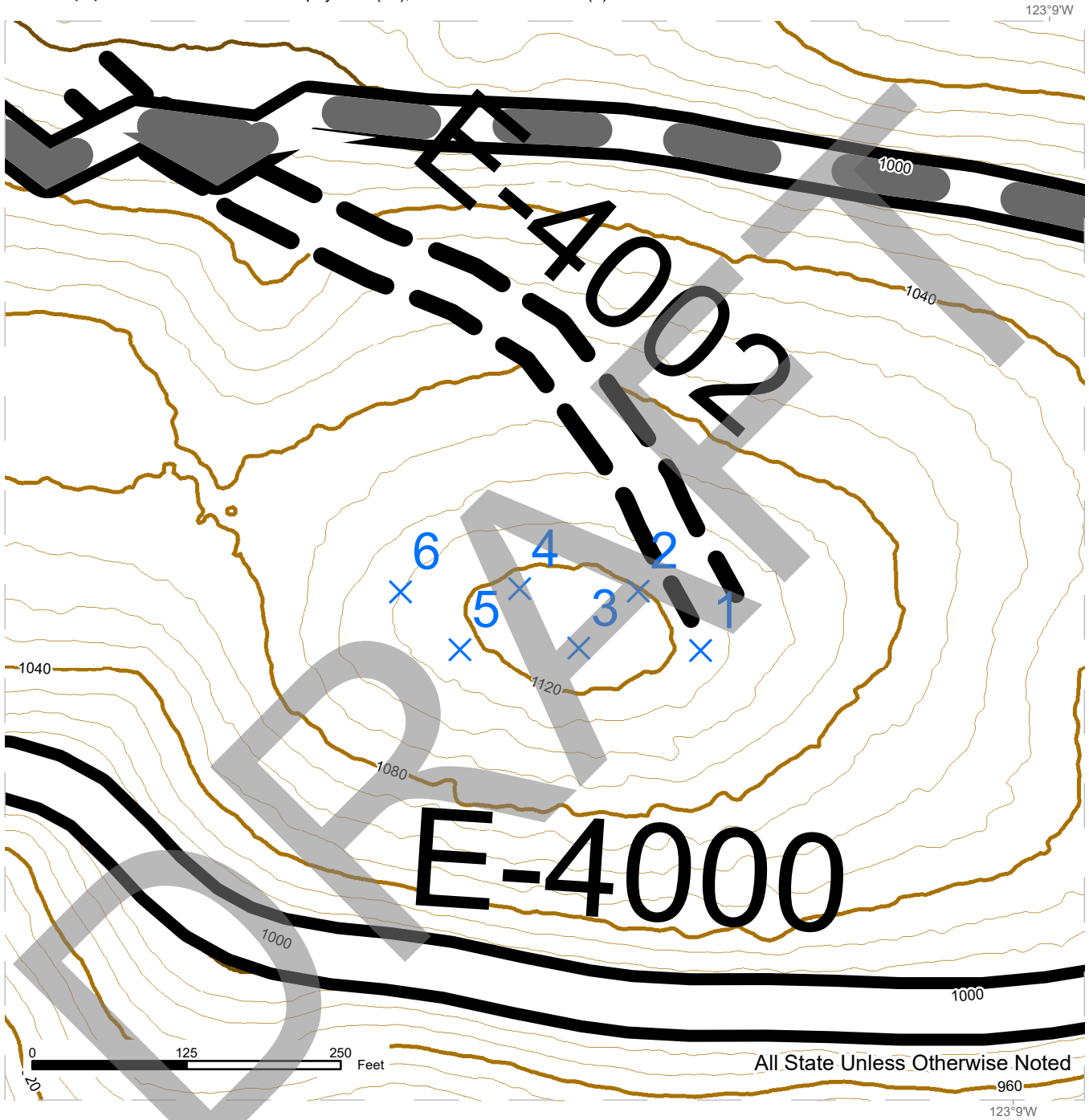
-  Existing Roads
-  Contours 10 ft
-  Contours 40 ft
-  Contours 200 ft
-  Surfacing Stockpile Location



ROCK EXPLORATION PLAN MAP

SALE NAME: JUNEAU
AGREEMENT #: 30-102082
TOWNSHIP(S): T16R3W, T16R4W, T17R3W
TRUST(S): Forest Board Repayment (42), State Forest Purchase (2)

REGION: South Puget Sound Region
COUNTY(S): Thurston
ELEVATION RGE: 400-1040



**SUMMARY - ROAD DEVELOPMENT COSTS
(FOR INTERNAL DNR USE ONLY)**

UNIT: **Littlerock**

SALE/PROJECT NAME: **Juneau**

CONTRACT NUMBER: **30-102082**

LEGAL DESCRIPTION: 0

ROAD NUMBER:	E-4002, E-6743-EXT, E-6743A, E-9050-EXT, E-9050-1, E-9300-EXT	E-4001, E-6743, E-9050, E-9300	E-Line, E-4000, E-6740, E-6743, E-9000, E-9100, E-9050
TYPE:	CONSTRUCTION	RECONSTRUCTION	PRE-HAUL MAINT
NUMBER OF STATIONS:	42.90	46.50	362.10
AVG. SIDESLOPE:	24	26	N/A
CLEARING AND GRUBBING:	\$8,017	\$2,942	None
EXCAVATION AND FILL:	\$20,035	\$3,865	
MISC. MAINTENANCE:			\$13,427
ROCK TOTALS (Cu. Yds.):			
Ballast:	5559	\$64,759	\$38,903
Surface:	1465	\$1,925	\$1,203
Riprap:	92	\$613	\$383
CULVERTS AND FLUMES:	\$8,664	\$16,519	\$29,966
STRUCTURES:	\$0	\$0	\$0
GENERAL EXPENSES:	\$8,745	\$2,099	\$6,428
MOBILIZATION:	\$2,800	\$2,800	\$2,800
TOTAL COSTS:	\$115,558	\$68,716	\$80,647
COST PER STATION:	\$2,694	\$1,478	\$223
ROAD DEACTIVATION AND ABANDONMENT COSTS:		\$11,048	

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

TOTAL (All Roads) =	\$275,969
SALE VOLUME MBF =	7,215
TOTAL COST PER MBF =	\$38.25