



TIMBER NOTICE OF SALE

SALE NAME: ALLEY CAT

AGREEMENT NO: 30-104800

AUCTION: December 18, 2024 starting at 10:00 a.m., COUNTY: Clallam
Olympic Region Office, Forks, WA

SALE LOCATION: Sale located approximately 6 miles west of Port Angeles, WA

PRODUCTS SOLD AND SALE AREA: All timber, except trees marked with a band of blue paint, bounded out by leave tree area tags or any downed red cedar or timber that has been on the ground for five or more years (five years is defined by more than 1.5 inches of sap rot); timber sale boundary tags, and take trees marked with a band of red paint in Units 1, 2, 3, 8; timber sale boundary tags, special management area tags in Unit 4B; timber sale boundary tags in Unit 4A, timber sale boundary tags in Unit 5, 6, 7;

Take trees outside of sale boundary in Unit 8 are marked with double red rings to allow access into unit and proper road building.

All timber bounded by right of way boundary tags.

All forest products above located on part(s) of Sections 14, 15, 22, 23, 26 and 27 all in Township 30 North, Range 7 West, W.M., containing 98 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, MBF by Grade (1P, 2P, 3P, SM, 1S, 2S, 3S, 4S, UT). Rows include Douglas fir, Redcedar, Maple, Hemlock, Red alder, Grand fir, and Sale Total.

MINIMUM BID: \$0.00 BID METHOD: Sealed Bids

PERFORMANCE SECURITY: \$0.00 SALE TYPE: Lump Sum

EXPIRATION DATE: October 31, 2026 ALLOCATION: Export Restricted

BID DEPOSIT: \$0.00 or Bid Bond. Said deposit shall constitute an opening bid at the appraised price.

HARVEST METHOD: Ground 100%

Forest products sold under this contract shall be harvested and removed using cable, cable-tethered, and ground based equipment. Cable-tethered equipment is limited to sustained slopes of 75 percent and less. Non-tethered self-leveling tracked equipment is



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limited to sustained slopes of 65 percent and less. Other ground based equipment is limited to tracked equipment on sustained slopes that are 45 percent and less. Rubber tired skidders are restricted unless approved by the Contract Administrator. Authority to use other equipment or to operate outside the equipment specifications detailed above must be approved in writing by the State.

All trees 60 inches in Diameter at Breast Height (DBH) and greater shall not be felled unless for safety reasons, which must be approved by the Contract Administrator. If trees 60 inches in DBH or greater need to be felled for safety reasons, trees will be left where felled.

Felling and yarding will not be permitted from November 1 to April 30, on weekends, State recognized holidays, or from the hours of 8:00 pm to 6:00 am, unless authorized in writing by the Contract Administrator.

ROADS:

59.80 stations of required construction. 40.45 stations of required reconstruction. 7.30 stations of optional construction. 154.55 stations of required prehaul maintenance.

All road activities including timber haul and rock pit development will not be permitted from November 1 to April 30, on weekends, and State recognized holidays, or from the hours of 8:00 pm to 6:00 am, unless authorized in writing by the Contract Administrator.

Road work on the PA-I-2600, PA-I-2610, PA-I 2620 including timber felling, road work or operation of heavy equipment performed during the marbled murrelet nesting season (April 1 through September 23), is restricted to, two hours after sunrise to two hours before sunset. This does not apply to hauling timber, rock or equipment.

ACREAGE DETERMINATION

CRUISE METHOD: Sale area was 100% GPS. Sale units were cruised using a variable plot sample.

FEES:

Within 14 days of sale, purchaser must provide the DNR with a cashier's check made payable to Rayonier Operating Company, LLC in the amount of \$3632.05, for a Road Use Permit.

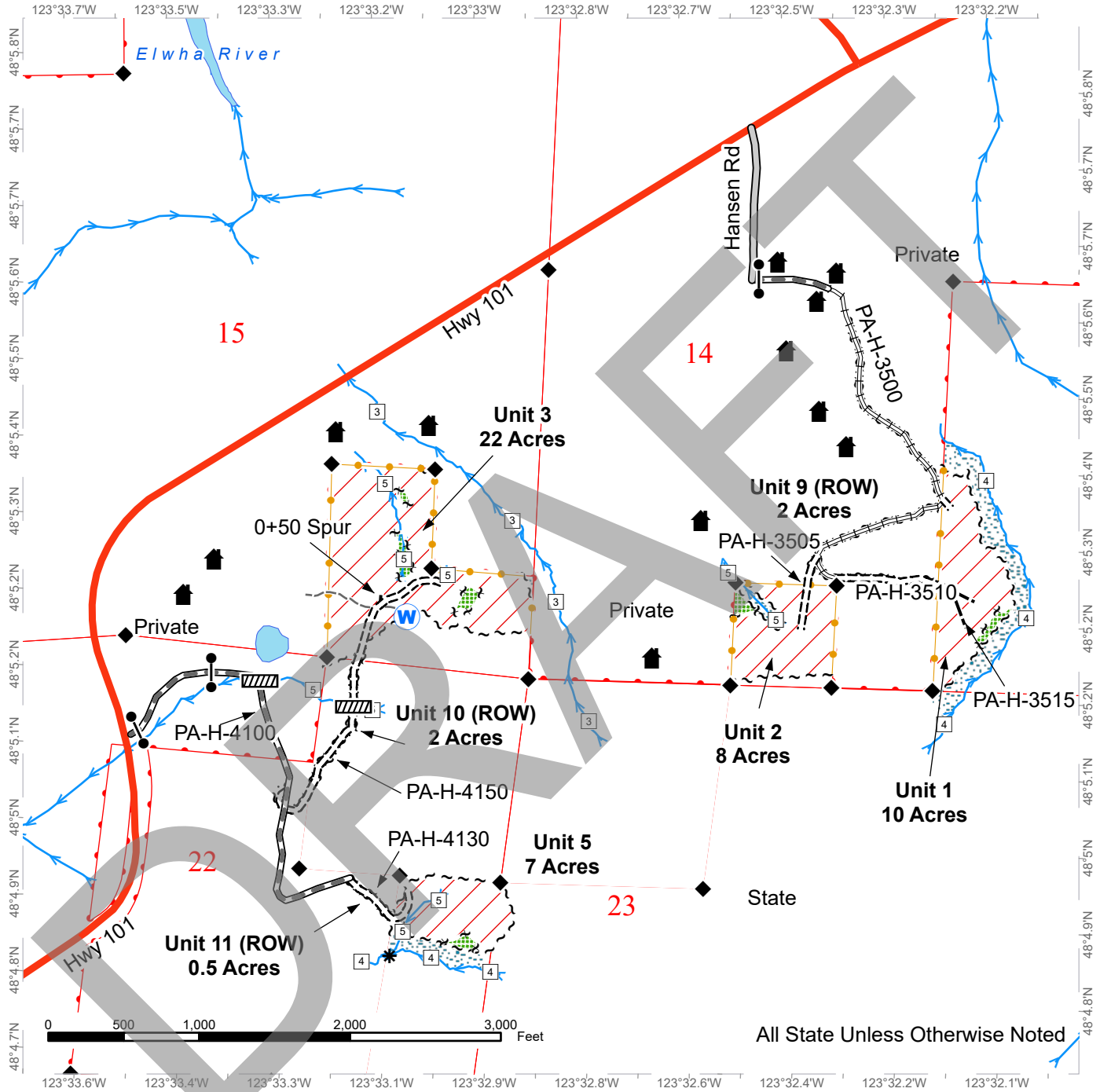
\$49,028.00 is due on day of sale. \$9.00 per MBF is due upon removal. These are in addition to the bid price.

SPECIAL REMARKS: There are locked gates on the PA-H-4100 and PA-H-4200. Contact Olympic Region Dispatch Center at 360-374-2800 to obtain a AA1 Key. There is a combination lock on the PA-H-600; please contact the Contract Administrator to obtain combination.

TIMBER SALE MAP

SALE NAME: ALLEY CAT
AGREEMENT #: 104800
TOWNSHIP(S): T30R7W
TRUST(S): State Forest Transfer (1)

REGION: Olympic Region
COUNTY(S): Clallam
ELEVATION RGE: 480-1280



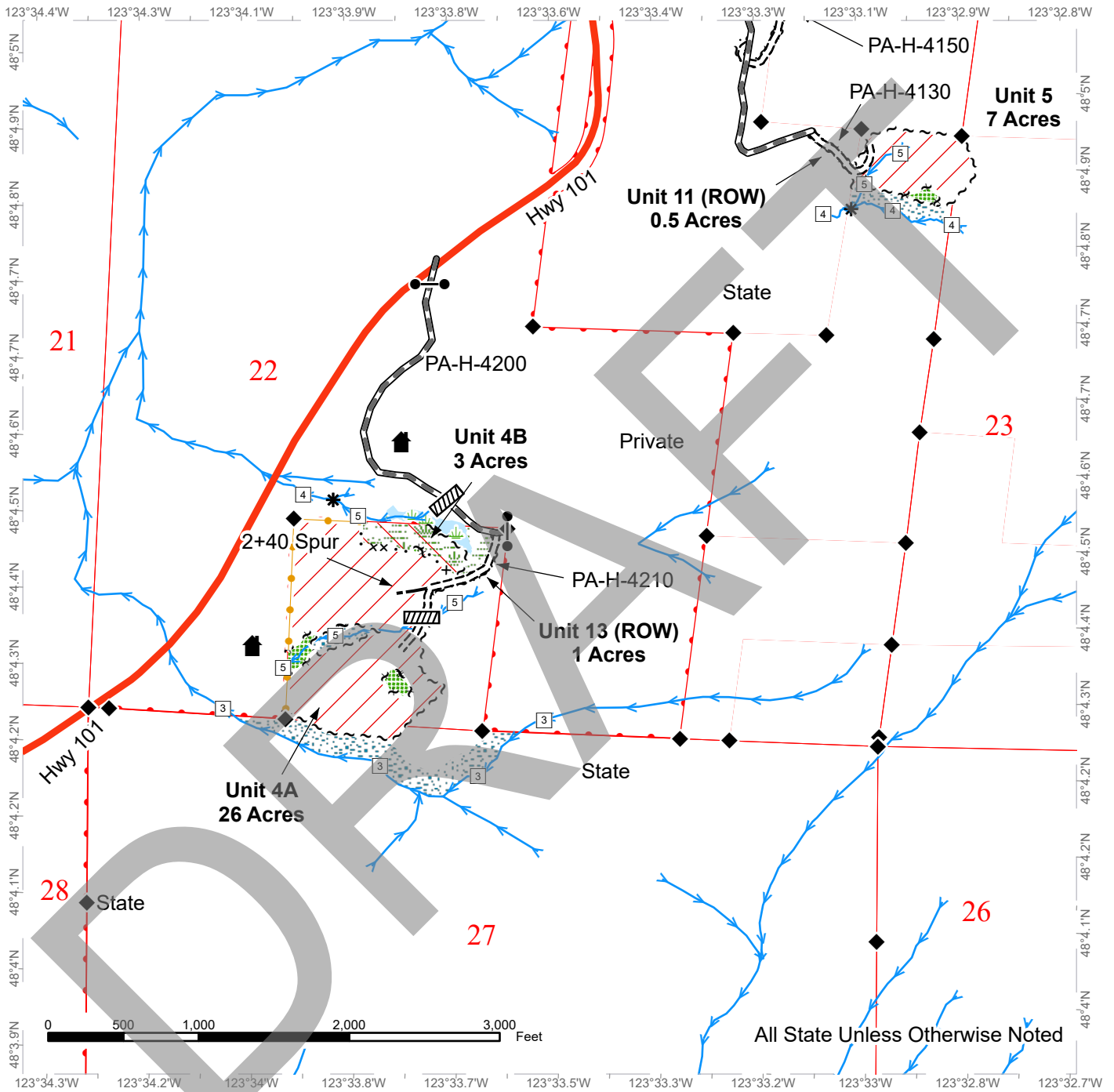
All State Unless Otherwise Noted



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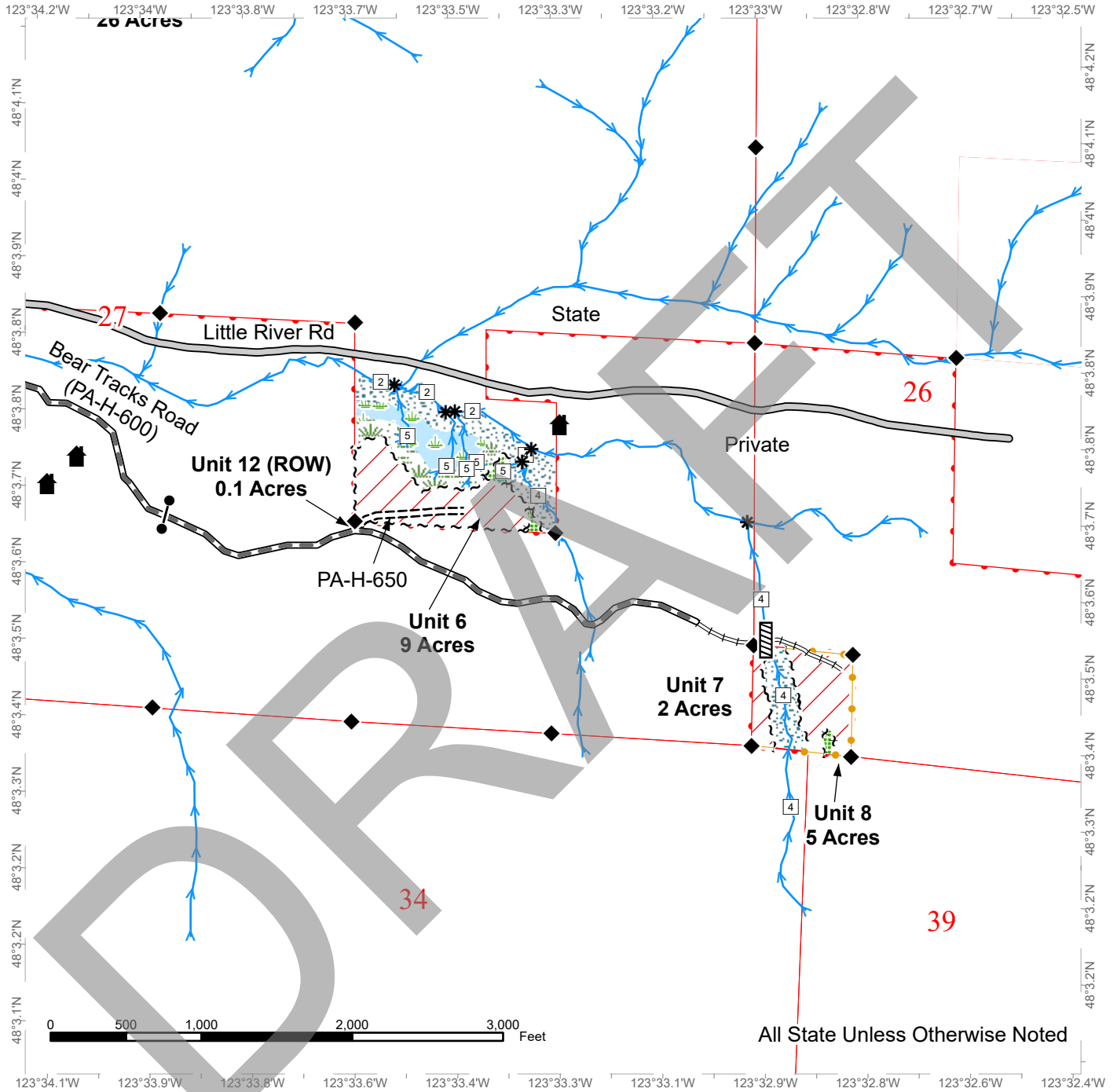
Variable Retention Harvest	Sale Boundary Tags	Highway	Stream Type
Variable Density Thinning	Special Mgmt Area	County Road	Stream Type Break
Leave Tree Area	Leave Tree Tags	Required Pre-Haul Maintenance	Culvert
Wetlands - Non-forested	Right of Way Tags	Required Construction	Gate
Wetland Mgt Zone	Take / Removal Trees	Required Reconstruction	Structure
Riparian Mgt Zone	Streams	Optional Pre-Haul Maintenance	Survey Monument
		Optional Construction	
		Optional Reconstruction	
		Old Grades/Trails	



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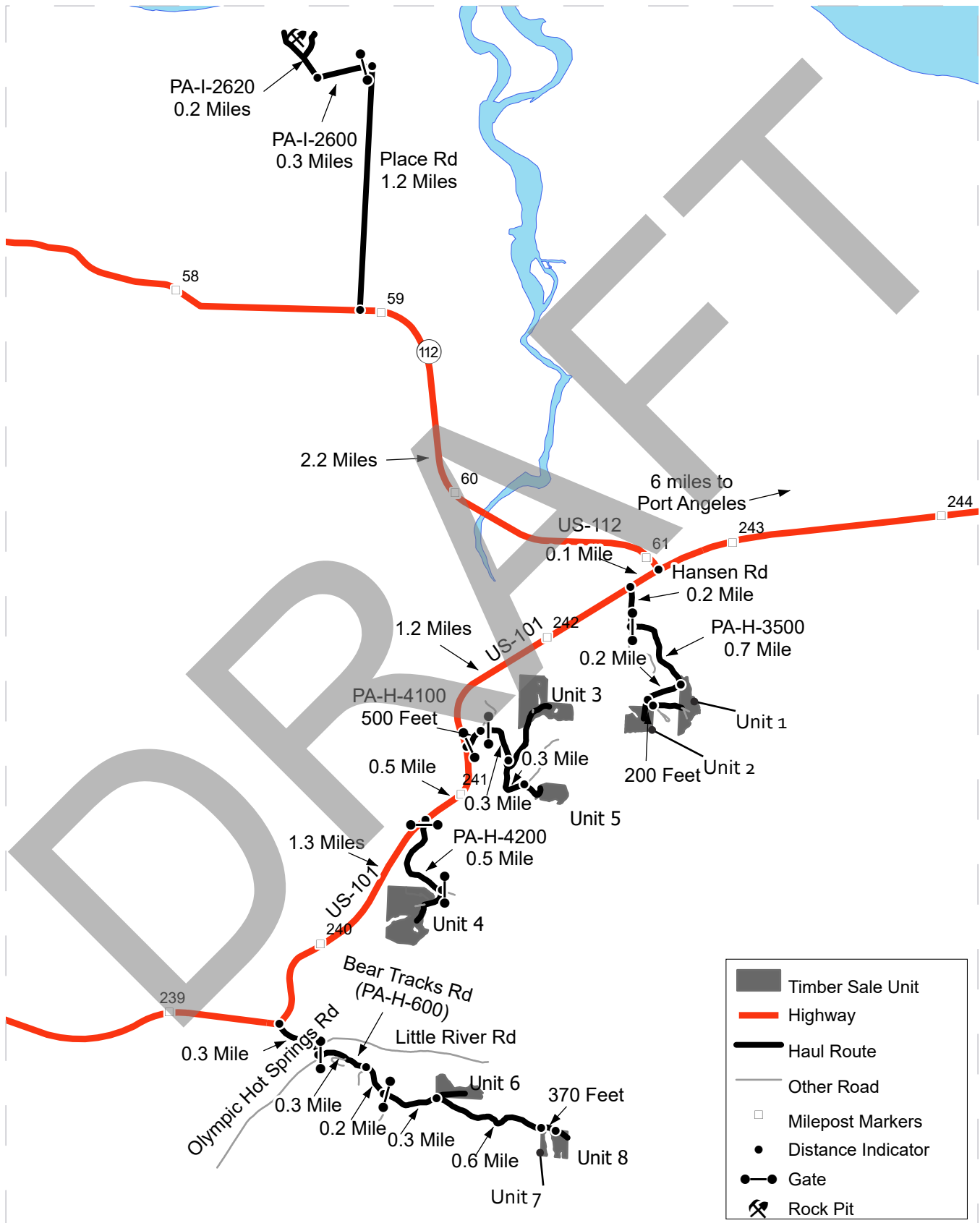
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DRIVING MAP

SALE NAME: ALLEY CAT
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Alley Cat Driving Directions

*Please contact the contract administrator for information to access all areas behind gates.

Units 1 and 2: Head west from Port Angeles on US-101 for 5.8 miles. 0.1 mile past the turn off for US-112 turn left on Hansen road and continue 0.2 mile up the hill and turn left onto the PA-H-3500, through the gate and continue through the property and up the hill past the property for 0.65 mile. Here at the curve in the dirt road, you will be immediately adjacent to the north end of unit 1. Continue 0.18 mile to where you will see the road flagging for the O+80 Spur head uphill into unit 2. 200 feet past the turn into unit 2 there is flagging marking the PA-H-3510 leading into the south end of unit 1. Return to US-101 to get the remainder of the units.

Units 3 and 5: After you return to US-101, turn left heading west. Go 1.2 miles and turn left onto the PA-H-4100 and go through the gate. Go approximately 500 feet past the gate to where the driveway splits, take the right side and continue through a second gate and go approximately 0.25 mile to where the flagging cuts to the left on the PA-H-4150 for access to unit 3. Continue past here another 0.25 mile to where the flagging for the PA-H-4130 into unit 5 heads right, up the hill for access into unit 5. Return to US-101 to get to the remainder of the units.

Unit 4: After you return to US-101, turn left heading west. Go 0.45 miles and turn left onto the PA-H-4200, continue through the gate and go another 0.47 mile to a second gate and large pull off on the right. From this pull off there is flagging marking the PA-H-4210 road into unit 4 to the southwest. Return to US-101 to get to the remainder of the units.

Units 6, 7, and 8: After you return to US-101, turn left heading west. Go 1.3 miles and turn left on Olympic Hot Springs Road and go approximately 0.25 mile and turn left on Bear Tracks Road (PA-H-600). Go through the gate on Bear Tracks Road (PA-H-600). Continue up Bear Tracks Road (PA-H-600) another 0.25 mile where the main road takes a hard curve right, and continue straight on a less traveled section of the driveway. Continue another 0.15 mile to another gate on the left, continue through this gate and go another 0.27 mile to where you will see the flagging for the PA-H-650 road headed into unit 6 on the left. Continue past this point another 0.56 mile to the corner of unit 7. Continue past this point another 370 feet to the corner of unit 8.

Timber Sale Cruise Report Alley Cat

Sale Name: ALLEY CAT

Sale Type: LUMP SUM

Region: OLYMPIC

District: STRAITS

Lead Cruiser: Kevin Peterson

Other Cruisers:

Cruise Narrative:

Location:

This sale is located west of Port Angeles on US 101. Most of the units are behind gates using private easements to access. A few keys or codes are needed to access some units.

Cruise Design:

Please refer to the cruise design table for BAFs used. Unit 4B I used a 1:5 ITS for the volume. Units 9, 12 and 14 are not included on this cruise and have their own RUP cruises.

Most logs were cruised in 40' lengths except for RC at 36' and HQ DF at 34'. Merch height was determined at 40% of the diameter at 16'.

Timber Quality:

This sale has a wide variety of timber products on its. The main component is DF throughout the sale, about a third of the DF is high quality and diameters have a very large range. RC and MA are very common scattered in the units and have a lot of variability in the size. Maple has a lot of defect. There is also some RA and GF in some units. Main defect is butt rot, sweep and forked tops.

Logging and Stand Conditions:

This sale is 100% ground based harvest. Most of the sale isn't too bad to walk thru, but there are definitely areas that have heavy brush and some slope.

General Remarks:

Contact the lead forester for gate and access info.

Timber Sale Notice Volume (MBF)

MBF Volume by Grade									
Sp	DBH	Rings/In	Age	All	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	18.8	10.4		1,844	176	945	530	187	6
RC	16.2			418			329	89	
WH	15.3			170		21	110	39	
MA	17.5			170		55	41	41	33
RA	15.9			163		59	28	60	16
GF	22.9			119		76	26	5	11
ALL	17.2	10.4		2,884	176	1,156	1,064	422	66

Timber Sale Notice Weight (tons)

Sp	Tons by Grade					
	All	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	14,639	1,158	7,114	4,623	1,675	69
RC	3,854			3,034	820	
MA	2,149		764	560	523	303
WH	1,881		219	1,242	419	
RA	1,507		496	237	630	143
GF	1,023		620	262	48	94
ALL	25,052	1,158	9,213	9,958	4,115	609

Timber Sale Overall Cruise Statistics

BA (sq ft/acre)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR SE (%)	Net Vol (bf/acre)	Vol SE (%)
269.2	5.3	111.1	2.4	30,556	6.0

Timber Sale Unit Cruise Design

Unit	Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
ALLEY CAT U1	B2: VR, 2 BAF (62.5, 40 for some species) Measure All, Sighting Ht = 4.5 ft	10.0	10.5	6	6	1
ALLEY CAT U2	B2C: VR, 2 BAF (62.5, 40 for some species) Measure/Count Plots, Sighting Ht = 4.5 ft	8.4	8.7	5	5	0
ALLEY CAT U3	B2C: VR, 2 BAF (71.11, 40 for some species) Measure/Count Plots, Sighting Ht = 4.5 ft	22.1	23.2	12	10	0
ALLEY CAT U4A	B2C: VR, 2 BAF (62.5, 40 for some species) Measure/Count Plots, Sighting Ht = 4.5 ft	26.0	27.0	14	14	0
ALLEY CAT U4B	ST: Strip/Percent Sample (5 tree expansion)	2.7	2.7	1	1	0
ALLEY CAT U5	B2: VR, 2 BAF (71.11, 40 for some species) Measure All, Sighting Ht = 4.5 ft	6.7	7.1	5	5	0
ALLEY CAT U6	B2: VR, 2 BAF (62.5, 40 for some species) Measure All, Sighting Ht = 4.5 ft	8.9	9.6	5	5	0
ALLEY CAT U7	B2: VR, 2 BAF (54.44, 40 for some species) Measure All, Sighting Ht = 4.5 ft	1.5	1.5	2	2	0
ALLEY CAT U8	B2: VR, 2 BAF (54.44, 40 for some species) Measure All, Sighting Ht = 4.5 ft	5.3	5.5	3	3	0
ALLEY	B1: VR, 1 BAF (40) Measure All, Sighting	1.7	1.7	2	2	0

Unit	Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
CAT U10	Ht = 4.5 ft					
ALLEY CAT U11	B1: VR, 1 BAF (20) Measure All, Sighting Ht = 4.5 ft	0.5	0.5	1	1	0
ALLEY CAT U13	B1: VR, 1 BAF (40) Measure All, Sighting Ht = 4.5 ft	0.7	0.7	1	1	0
All		94.4	98.7	57	55	1

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	14.8	40	5,778	5,297	8.3	3,846.8	500.0
DF	LIVE	2 SAW	HQ-A	13.9	34	1,209	1,209	0.0	866.5	114.1
DF	LIVE	2 SAW	HQ-B	16.1	34	3,669	3,504	4.5	2,400.8	330.8
DF	LIVE	3 SAW	Domestic	8.9	40	5,937	5,619	5.4	4,623.2	530.4
DF	LIVE	4 SAW	Domestic	5.8	27	2,027	1,978	2.4	1,674.8	186.7
DF	LIVE	SPECIAL MILL	HQ-A	19.3	34	1,864	1,864	0.0	1,157.5	176.0
DF	LIVE	UTILITY	Pulp	5.2	34	62	62	0.0	69.0	5.9
GF	LIVE	2 SAW	Domestic	15.2	40	886	808	8.9	619.5	76.2
GF	LIVE	3 SAW	Domestic	8.9	38	293	281	4.4	261.6	26.5
GF	LIVE	4 SAW	Domestic	6.7	18	59	53	10.4	47.6	5.0
GF	LIVE	UTILITY	Pulp	14.4	40	120	120	0.0	93.8	11.3
MA	LIVE	2 SAW	Domestic	15.1	39	1,001	584	41.7	763.7	55.1
MA	LIVE	3 SAW	Domestic	10.9	36	677	433	36.1	559.6	40.8
MA	LIVE	4 SAW	Domestic	6.7	37	484	438	9.5	523.2	41.4
MA	LIVE	CULL	Cull	6.6	20	177	0	100.0	0.0	0.0
MA	LIVE	UTILITY	Pulp	5.5	28	347	347	0.0	302.8	32.8
RA	LIVE	2 SAW	Domestic	14.5	37	691	620	10.2	496.3	58.6
RA	LIVE	3 SAW	Domestic	10.9	30	322	293	8.9	237.4	27.7
RA	LIVE	4 SAW	Domestic	6.8	32	694	641	7.7	630.1	60.5
RA	LIVE	CULL	Cull	7.2	17	15	0	100.0	0.0	0.0
RA	LIVE	UTILITY	Pulp	6.3	23	169	169	0.0	143.0	15.9
RC	LIVE	3 SAW	Domestic	10.6	35	4,023	3,486	13.3	3,033.9	329.1
RC	LIVE	4 SAW	Domestic	5.4	25	961	947	1.5	819.9	89.4
WH	LIVE	2 SAW	Domestic	14.9	40	259	227	12.3	219.4	21.4
WH	LIVE	3 SAW	Domestic	9.0	40	1,182	1,161	1.7	1,242.5	109.6
WH	LIVE	4 SAW	Domestic	5.1	29	422	416	1.5	418.9	39.3

Timber Sale Log Sort x Diameter Bin Summary

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	5 - 8	LIVE	Pulp	5.2	35	62	0.0	69.0	5.9
DF	5 - 8	LIVE	Domestic	6.1	30	4,007	3.5	3,605.0	378.2
DF	9 - 11	LIVE	Domestic	10.3	40	3,277	6.0	2,481.5	309.3
DF	12 - 14	LIVE	Domestic	13.1	40	2,994	8.2	2,366.0	282.6
DF	12 - 14	LIVE	HQ-A	13.4	34	708	0.0	553.2	66.8
DF	12 - 14	LIVE	HQ-B	13.7	34	611	0.0	457.5	57.7
DF	15 - 19	LIVE	HQ-A	16.3	34	1,499	0.0	969.6	141.5
DF	15 - 19	LIVE	HQ-B	16.5	34	2,415	4.0	1,618.2	227.9
DF	15 - 19	LIVE	Domestic	16.9	40	1,961	6.1	1,281.6	185.1
DF	20+	LIVE	HQ-B	22.9	34	479	11.8	325.0	45.2
DF	20+	LIVE	Domestic	23.1	40	656	12.8	410.7	61.9
DF	20+	LIVE	HQ-A	24.2	34	866	0.0	501.2	81.7
GF	5 - 8	LIVE	Domestic	7.0	27	189	4.2	183.6	17.8
GF	9 - 11	LIVE	Domestic	9.7	40	145	6.9	125.7	13.7
GF	12 - 14	LIVE	Domestic	13.5	40	226	5.9	174.5	21.4
GF	12 - 14	LIVE	Pulp	14.4	40	120	0.0	93.8	11.3
GF	15 - 19	LIVE	Domestic	16.3	40	582	10.0	445.0	54.9
MA	5 - 8	LIVE	Pulp	5.4	27	287	0.0	246.2	27.0
MA	5 - 8	LIVE	Domestic	6.1	37	310	4.0	376.2	29.3
MA	5 - 8	LIVE	Cull	6.2	19	0	100.0	0.0	0.0
MA	9 - 11	LIVE	Cull	9.5	21	0	100.0	0.0	0.0
MA	9 - 11	LIVE	Domestic	10.6	37	540	33.2	692.9	51.0
MA	9 - 11	LIVE	Pulp	10.7	40	61	0.0	56.5	5.7
MA	12 - 14	LIVE	Domestic	13.8	38	266	37.9	364.3	25.1
MA	15 - 19	LIVE	Domestic	16.6	38	291	44.5	369.7	27.5
MA	20+	LIVE	Domestic	22.0	30	48	39.9	43.3	4.5
RA	5 - 8	LIVE	Domestic	5.9	36	402	5.0	396.1	37.9
RA	5 - 8	LIVE	Pulp	6.4	22	169	0.0	143.0	15.9
RA	5 - 8	LIVE	Cull	7.2	17	0	100.0	0.0	0.0
RA	9 - 11	LIVE	Domestic	10.4	33	532	10.3	471.3	50.3
RA	12 - 14	LIVE	Domestic	12.7	40	216	15.1	210.5	20.4
RA	15 - 19	LIVE	Domestic	15.7	35	404	7.3	285.8	38.1
RC	5 - 8	LIVE	Domestic	5.8	28	1,489	4.2	1,352.7	140.6
RC	9 - 11	LIVE	Domestic	10.6	36	1,025	7.8	861.6	96.7
RC	12 - 14	LIVE	Domestic	13.7	36	1,178	12.8	1,003.9	111.2
RC	15 - 19	LIVE	Domestic	17.0	36	608	23.0	526.8	57.4
RC	20+	LIVE	Domestic	21.2	36	132	25.0	108.8	12.5

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
WH	5 - 8	LIVE	Domestic	5.9	32	878	1.7	938.1	82.9
WH	9 - 11	LIVE	Domestic	10.4	40	699	1.6	723.3	66.0
WH	12 - 14	LIVE	Domestic	14.1	40	102	15.0	103.6	9.6
WH	15 - 19	LIVE	Domestic	15.3	40	125	9.9	115.8	11.8

DRAFT

Cruise Unit Report ALLEY CAT U1

Unit Sale Notice Volume (MBF): ALLEY CAT U1

Sp	DBH	Rings/In	Age	MBF Volume by Grade					
				All	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	16.1			176	22	76	57	21	
WH	16.8			53		10	37	6	
RC	17.8			33			28	4	
GF	16.7			26			13	2	11
MA	14.9			14		8	2	4	
RA	11.5			9				9	
ALL	16.0			311	22	94	137	47	11

Unit Cruise Design: ALLEY CAT U1

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2: VR, 2 BAF (62.5, 40 for some species) Measure All, Sighting Ht = 4.5 ft	10.0	10.5	6	6	1

Unit Cruise Summary: ALLEY CAT U1

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	12	12	2.0	0
WH	4	4	0.7	0
RC	6	6	1.0	0
GF	2	2	0.3	0
MA	3	3	0.5	0
RA	2	2	0.3	0
ALL	29	29	4.8	0

Unit Cruise Statistics: ALLEY CAT 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	125.0	83.7	34.2	140.8	29.0	8.4	17,597	88.5	35.2
WH	41.7	122.5	50.0	126.8	10.8	5.4	5,283	122.9	50.3
RC	40.0	89.4	36.5	81.6	22.9	9.3	3,265	92.3	37.7
GF	20.8	154.9	63.2	126.5	32.6	23.1	2,636	158.3	67.3
MA	20.0	109.5	44.7	71.6	29.7	17.1	1,432	113.5	47.9

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 (%)
RA	13.3	154.9	63.2	68.9	7.6	5.4	918	155.1	63.5
ALL	260.8	49.1	20.0	119.4	34.9	6.5	31,131	60.2	21.1

Unit Summary: ALLEY CAT U1

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	12	ALL	16.1	70	88	18,619	17,597	5.5	88.4	125.0	31.2	176.0
GF	LIVE	CUT	2	ALL	16.7	75	95	2,722	2,636	3.2	13.7	20.8	5.1	26.4
MA	LIVE	CUT	3	ALL	14.9	46	55	2,195	1,432	34.8	16.5	20.0	5.2	14.3
RA	LIVE	CUT	2	ALL	11.5	52	64	969	918	5.3	18.5	13.3	3.9	9.2
RC	LIVE	CUT	6	ALL	17.8	60	75	3,713	3,265	12.1	23.1	40.0	9.5	32.6
WH	LIVE	CUT	4	ALL	16.8	80	100	5,452	5,283	3.1	27.1	41.7	10.2	52.8
ALL	LIVE	CUT	29	ALL	16.0	67	83	33,671	31,131	7.5	187.3	260.8	65.0	311.3
ALL	ALL	ALL	29	ALL	16.0	67	83	33,671	31,131	7.5	187.3	260.8	65.0	311.3

Cruise Unit Report ALLEY CAT U2

Unit Sale Notice Volume (MBF): ALLEY CAT U2

Sp	DBH	Rings/In	Age	MBF Volume by Grade				
				All	Spec Mill	2 Saw	3 Saw	4 Saw
DF	16.2			372	36	148	132	56
RC	12.0			5			4	1
ALL	16.0			377	36	148	136	57

Unit Cruise Design: ALLEY CAT U2

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2C: VR, 2 BAF (62.5, 40 for some species) Measure/Count Plots, Sighting Ht = 4.5 ft	8.4	8.7	5	5	0

Unit Cruise Summary: ALLEY CAT U2

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	25	25	5.0	0
RC	1	1	0.2	0
ALL	26	26	5.2	0

Unit Cruise Statistics: ALLEY CAT 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	312.5	28.3	12.6	141.7	26.9	5.4	44,278	39.1	13.7
RC	8.0	223.6	100.0	77.7	0.0	0.0	621	223.6	100.0
ALL	320.5	23.4	10.5	140.1	28.2	5.5	44,900	36.6	11.8

Unit Summary: ALLEY CAT U2

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	25	ALL	16.2	78	99	45,796	44,278	3.3	218.3	312.5	77.6	371.9
RC	LIVE	CUT	1	ALL	12.0	55	68	703	621	11.6	10.2	8.0	2.3	5.2
ALL	LIVE	CUT	26	ALL	16.0	77	97	46,499	44,900	3.4	228.5	320.5	80.0	377.2
ALL	ALL	ALL	26	ALL	16.0	77	97	46,499	44,900	3.4	228.5	320.5	80.0	377.2

Cruise Unit Report ALLEY CAT U3

Unit Sale Notice Volume (MBF): ALLEY CAT U3

Sp	DBH	Rings/In	Age	MBF Volume by Grade					
				All	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	24.2	9.7		278	31	177	58	12	
RC	17.9			156			129	27	
RA	18.3			88		42	16	20	10
MA	22.1			70		36	14	9	12
GF	23.5			39		28	10	1	
WH	17.0			10			9	1	
ALL	20.3	9.7		641	31	283	235	71	22

Unit Cruise Design: ALLEY CAT U3

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2C: VR, 2 BAF (71.11, 40 for some species) Measure/Count Plots, Sighting Ht = 4.5 ft	22.1	23.2	12	10	0

Unit Cruise Summary: ALLEY CAT U3

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	11	12	1.0	3
RC	24	28	2.3	0
RA	7	12	1.0	0
MA	15	15	1.3	0
GF	2	2	0.2	0
WH	1	1	0.1	0
ALL	60	70	5.8	3

Unit Cruise Statistics: ALLEY CAT 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 (%)
DF	71.1	159.5	46.1	176.7	18.5	5.6	12,564	160.6	46.4
RC	93.3	66.7	19.3	75.6	29.3	6.0	7,060	72.9	20.2
RA	40.0	120.6	34.8	99.2	13.4	5.1	3,969	121.3	35.2
MA	50.0	103.0	29.7	63.8	35.3	9.1	3,188	108.9	31.1
GF	11.9	346.4	100.0	148.4	3.6	2.6	1,758	346.4	100.0

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 (%)
WH	5.9	346.4	100.0	76.1	0.0	0.0	451	346.4	100.0
ALL	272.2	43.9	12.7	106.5	44.6	5.8	28,990	62.6	13.9

Unit Summary: ALLEY CAT U3

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	11	ALL	24.2	98	124	13,257	12,564	5.2	22.3	71.1	14.5	277.7
GF	LIVE	CUT	2	ALL	23.5	96	123	1,921	1,758	8.5	3.9	11.9	2.4	38.9
MA	LIVE	CUT	15	ALL	22.1	61	75	4,886	3,188	34.7	18.8	50.0	10.6	70.5
RA	LIVE	CUT	7	ALL	18.3	66	81	4,388	3,969	9.6	21.9	40.0	9.4	87.7
RC	LIVE	CUT	24	ALL	17.9	47	58	7,959	7,060	11.3	53.4	93.3	22.1	156.0
WH	LIVE	CUT	1	ALL	17.0	57	70	496	451	9.1	3.8	5.9	1.4	10.0
ALL	LIVE	CUT	60	ALL	20.1	63	79	32,906	28,990	11.9	124.1	272.2	60.4	640.7
ALL	ALL	ALL	60	ALL	20.1	63	79	32,906	28,990	11.9	124.1	272.2	60.4	640.7

Cruise Unit Report ALLEY CAT U4A

Unit Sale Notice Volume (MBF): ALLEY CAT U4A

Sp	DBH	Rings/In	Age	MBF Volume by Grade					
				All	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	17.4	11.0		377	28	211	101	31	5
RC	13.7			134			96	38	
MA	13.0			63		6	20	17	20
RA	12.7			45		16	4	19	6
GF	26.5			41		39	1	1	
WH	15.1			30		12	10	8	
ALL	14.9	11.0		690	28	285	232	114	31

Unit Cruise Design: ALLEY CAT U4A

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2C: VR, 2 BAF (62.5, 40 for some species) Measure/Count Plots, Sighting Ht = 4.5 ft	26.0	27.0	14	14	0

Unit Cruise Summary: ALLEY CAT U4A

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	25	25	1.8	1
RC	25	25	1.8	0
MA	15	16	1.1	0
RA	7	7	0.5	0
GF	2	2	0.1	0
WH	3	3	0.2	0
ALL	77	78	5.6	1

Unit Cruise Statistics: ALLEY CAT U4A

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	110.0	116.9	31.2	131.7	37.2	7.4	14,485	122.7	32.1
RC	71.4	73.4	19.6	72.0	37.9	7.6	5,144	82.7	21.0
MA	45.7	164.1	43.9	53.3	21.7	5.6	2,436	165.5	44.2
RA	20.0	203.8	54.5	86.5	44.8	16.9	1,730	208.7	57.0
GF	8.9	374.2	100.0	178.1	6.2	4.4	1,590	374.2	100.1

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 (%)
WH	13.4	270.2	72.2	85.6	44.0	25.4	1,146	273.7	76.5
ALL	269.5	34.8	9.3	98.5	48.8	5.6	26,531	59.9	10.8

Unit Summary: ALLEY CAT U4A

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	25	ALL	17.4	69	86	15,457	14,485	6.3	66.6	110.0	26.4	376.6
GF	LIVE	CUT	2	ALL	26.5	110	142	1,773	1,590	10.3	2.3	8.9	1.7	41.3
MA	LIVE	CUT	15	ALL	13.0	46	56	3,577	2,436	31.9	49.6	45.7	12.7	63.3
RA	LIVE	CUT	7	ALL	12.7	44	53	1,947	1,730	11.1	22.7	20.0	5.6	45.0
RC	LIVE	CUT	25	ALL	13.7	41	49	5,755	5,144	10.6	69.8	71.4	19.3	133.7
WH	LIVE	CUT	3	ALL	15.1	57	70	1,251	1,146	8.4	10.8	13.4	3.4	29.8
ALL	LIVE	CUT	77	ALL	14.9	52	64	29,759	26,531	10.8	221.8	269.5	69.1	689.8
ALL	ALL	ALL	77	ALL	14.9	52	64	29,759	26,531	10.8	221.8	269.5	69.1	689.8

Cruise Unit Report ALLEY CAT U4B

Unit Sale Notice Volume (MBF): ALLEY CAT U4B

Sp	DBH	Rings/In	Age	MBF Volume by Grade				
				All	2 Saw	3 Saw	4 Saw	Utility
RC	17.9			7		6	1	
MA	16.8			2	0	1	1	
DF	17.0			2		1	0	
WH	15.5			1		1	0	
RA	12.0			0			0	0
ALL	17.0			13	0	9	3	0

Unit Cruise Design: ALLEY CAT U4B

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
ST: Strip/Percent Sample (5 tree expansion)	2.7	2.7	1	1	0

Unit Cruise Summary: ALLEY CAT U4B

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
RC	10	10	10.0	0
MA	7	7	7.0	0
DF	2	2	2.0	0
WH	2	2	2.0	0
RA	1	1	1.0	0
ALL	22	22	22.0	0

Unit Cruise Statistics: ALLEY CAT U4B

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	32.4	0.0	0.0	79.7	22.7	7.2	2,584	22.7	7.2
MA	19.9	0.0	0.0	46.6	30.6	11.6	925	30.6	11.6
DF	5.9	0.0	0.0	108.6	9.0	6.4	636	9.0	6.4
WH	4.9	0.0	0.0	90.4	26.5	18.7	440	26.5	18.7
RA	1.5	0.0	0.0	82.9	0.0	0.0	120	0.0	0.0
ALL	64.5	0.0	0.0	73.0	30.2	6.4	4,706	30.2	6.4

Unit Summary: ALLEY CAT U4B

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	2	ALL	17.0	75	95	677	636	6.0	3.7	5.9	1.4	1.7
MA	LIVE	CUT	7	ALL	16.8	47	57	1,469	925	37.0	12.9	19.9	4.8	2.5
RA	LIVE	CUT	1	ALL	12.0	57	70	135	120	11.0	1.8	1.4	0.4	0.3
RC	LIVE	CUT	10	ALL	17.9	56	70	2,930	2,584	11.8	18.6	32.4	7.7	7.0
WH	LIVE	CUT	2	ALL	15.5	65	80	477	440	7.8	3.7	4.9	1.2	1.2
ALL	LIVE	CUT	22	ALL	17.0	56	69	5,689	4,706	17.3	40.7	64.5	15.6	12.7
ALL	ALL	ALL	22	ALL	17.0	56	69	5,689	4,706	17.3	40.7	64.5	15.6	12.7

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Cruise Unit Report ALLEY CAT U5

Unit Sale Notice Volume (MBF): ALLEY CAT U5

Sp	DBH	Rings/In	Age	MBF Volume by Grade				
				All	Spec Mill	2 Saw	3 Saw	4 Saw
DF	21.3			305	47	169	74	15
GF	23.0			12		9	2	
MA	16.9			10			4	6
RC	18.6			10			10	
ALL	20.7			336	47	178	89	21

Unit Cruise Design: ALLEY CAT U5

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2: VR, 2 BAF (71.11, 40 for some species) Measure All, Sighting Ht = 4.5 ft	6.7	7.1	5	5	0

Unit Cruise Summary: ALLEY CAT U5

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	18	19	3.8	0
GF	1	1	0.2	0
MA	3	3	0.6	0
RC	3	3	0.6	0
ALL	25	26	5.2	0

Unit Cruise Statistics: ALLEY CAT 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	270.2	50.6	22.6	168.5	32.8	7.7	45,541	60.3	23.9
GF	14.2	223.6	100.0	124.1	0.0	0.0	1,765	223.6	100.0
MA	24.0	149.1	66.7	59.3	27.5	15.9	1,424	151.6	68.5
RC	24.0	223.6	100.0	59.3	66.0	38.1	1,423	233.1	107.0
ALL	332.4	49.9	22.3	150.9	44.7	8.9	50,152	67.0	24.1

Unit Summary: ALLEY CAT U5

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	18	ALL	21.3	87	111	47,724	45,541	4.6	109.2	270.2	58.5	305.1
GF	LIVE	CUT	1	ALL	23.0	86	110	1,765	1,765	0.0	4.9	14.2	3.0	11.8
MA	LIVE	CUT	3	ALL	16.9	56	68	1,877	1,424	24.1	15.4	24.0	5.8	9.5
RC	LIVE	CUT	3	ALL	18.6	50	62	1,698	1,423	16.2	12.7	24.0	5.6	9.5
ALL	LIVE	CUT	25	ALL	20.7	81	102	53,064	50,152	5.5	142.2	332.4	72.9	336.0
ALL	ALL	ALL	25	ALL	20.7	81	102	53,064	50,152	5.5	142.2	332.4	72.9	336.0

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Cruise Unit Report ALLEY CAT U6

Unit Sale Notice Volume (MBF): ALLEY CAT U6

Sp	DBH	Rings/In	Age	MBF Volume by Grade				
				All	Spec Mill	2 Saw	3 Saw	4 Saw
DF	19.3			226	11	122	68	25
RC	18.0			45			39	7
WH	10.6			27			9	18
ALL	16.6			298	11	122	116	49

Unit Cruise Design: ALLEY CAT U6

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2: VR, 2 BAF (62.5, 40 for some species) Measure All, Sighting Ht = 4.5 ft	8.9	9.6	5	5	0

Unit Cruise Summary: ALLEY CAT U6

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	14	14	2.8	0
RC	7	7	1.4	0
WH	3	3	0.6	0
ALL	24	24	4.8	0

Unit Cruise Statistics: ALLEY CAT 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 (%)
DF	175.0	68.7	30.7	145.0	24.0	6.4	25,373	72.8	31.4
RC	56.0	95.8	42.9	91.2	23.6	8.9	5,109	98.7	43.8
WH	37.5	149.1	66.7	81.1	37.2	21.5	3,042	153.6	70.0
ALL	268.5	43.1	19.3	124.9	33.2	6.8	33,524	54.3	20.4

Unit Summary: ALLEY CAT U6

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	14	ALL	19.3	85	107	26,795	25,373	5.3	86.1	175.0	39.8	225.8
RC	LIVE	CUT	7	ALL	18.0	66	82	5,856	5,109	12.8	31.7	56.0	13.2	45.5

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
WH	LIVE	CUT	3	ALL	10.6	50	61	3,042	3,042	0.0	61.2	37.5	11.5	27.1
ALL	LIVE	CUT	24	ALL	16.6	70	87	35,693	33,524	6.1	179.0	268.5	64.6	298.4
ALL	ALL	ALL	24	ALL	16.6	70	87	35,693	33,524	6.1	179.0	268.5	64.6	298.4

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Cruise Unit Report ALLEY CAT U7

Unit Sale Notice Volume (MBF): ALLEY CAT U7

Sp	DBH	Rings/In	Age	MBF Volume by Grade				
				All	2 Saw	3 Saw	4 Saw	Utility
DF	17.5			25	13	10	2	
WH	15.3			8		6	1	
RC	13.1			7		4	3	
MA	25.0			2	1			0
ALL	16.0			41	14	21	6	0

Unit Cruise Design: ALLEY CAT U7

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2: VR, 2 BAF (54.44, 40 for some species) Measure All, Sighting Ht = 4.5 ft	1.5	1.5	2	2	0

Unit Cruise Summary: ALLEY CAT U7

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	5	5	2.5	0
WH	2	2	1.0	0
RC	3	3	1.5	0
MA	1	1	0.5	0
ALL	11	11	5.5	0

Unit Cruise Statistics: ALLEY CAT U7

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	136.1	28.3	20.0	121.6	14.2	6.3	16,550	31.6	21.0
WH	54.4	0.0	0.0	95.2	8.6	6.1	5,185	8.6	6.1
RC	60.0	47.1	33.3	75.4	10.8	6.2	4,525	48.4	33.9
MA	20.0	141.4	100.0	52.2	0.0	0.0	1,044	141.4	100.0
ALL	270.5	6.7	4.7	100.9	27.7	8.4	27,304	28.5	9.6

Unit Summary: ALLEY CAT U7

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	5	ALL	17.5	76	96	17,217	16,550	3.9	81.5	136.1	32.5	24.8
MA	LIVE	CUT	1	ALL	25.0	64	78	1,883	1,044	44.5	5.9	20.0	4.0	1.6
RC	LIVE	CUT	3	ALL	13.1	51	63	4,858	4,525	6.9	64.1	60.0	16.6	6.8
WH	LIVE	CUT	2	ALL	15.3	65	80	5,185	5,185	0.0	42.6	54.4	13.9	7.8
ALL	LIVE	CUT	11	ALL	16.0	65	81	29,144	27,304	6.3	194.1	270.5	67.0	41.0
ALL	ALL	ALL	11	ALL	16.0	65	81	29,144	27,304	6.3	194.1	270.5	67.0	41.0

Cruise Unit Report ALLEY CAT U8

Unit Sale Notice Volume (MBF): ALLEY CAT U8

Sp	DBH	Rings/In	Age	MBF Volume by Grade				Utility
				All	2 Saw	3 Saw	4 Saw	
DF	17.5			58	30	24	4	
WH	16.0			42		37	4	
RC	14.2			22		14	8	
RA	15.3			16		8	8	
MA	17.3			8	3		5	1
ALL	16.1			145	33	83	29	1

Unit Cruise Design: ALLEY CAT U8

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2: VR, 2 BAF (54.44, 40 for some species) Measure All, Sighting Ht = 4.5 ft	5.3	5.5	3	3	0

Unit Cruise Summary: ALLEY CAT U8

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	5	5	1.7	0
WH	3	4	1.3	0
RC	4	4	1.3	0
RA	2	2	0.7	0
MA	2	2	0.7	0
ALL	16	17	5.7	0

Unit Cruise Statistics: ALLEY CAT U8

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	90.7	91.7	52.9	121.6	14.2	6.3	11,033	92.7	53.3
WH	72.6	43.3	25.0	109.3	22.9	13.2	7,937	49.0	28.3
RC	53.3	43.3	25.0	78.6	11.7	5.9	4,192	44.9	25.7
RA	26.7	173.2	100.0	110.8	55.4	39.2	2,954	181.9	107.4
MA	26.7	86.6	50.0	59.8	17.9	12.7	1,594	88.4	51.6
ALL	270.0	4.7	2.7	102.6	30.3	7.6	27,709	30.6	8.0

Unit Summary: ALLEY CAT U8

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	5	ALL	17.5	76	96	11,478	11,033	3.9	54.3	90.7	21.7	57.9
MA	LIVE	CUT	2	ALL	17.3	57	70	2,153	1,594	26.0	16.3	26.7	6.4	8.4
RA	LIVE	CUT	2	ALL	15.3	70	86	2,954	2,954	0.0	20.9	26.7	6.8	15.5
RC	LIVE	CUT	4	ALL	14.2	53	66	4,414	4,192	5.0	48.5	53.3	14.2	22.0
WH	LIVE	CUT	3	ALL	12.1	48	87	7,937	7,937	0.0	90.9	72.6	20.9	41.7
ALL	LIVE	CUT	16	ALL	14.6	58	83	28,936	27,709	4.2	230.9	270.0	69.9	145.5
ALL	ALL	ALL	16	ALL	14.6	58	83	28,936	27,709	4.2	230.9	270.0	69.9	145.5

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Cruise Unit Report ALLEY CAT U10

Unit Sale Notice Volume (MBF): ALLEY CAT U10

Sp	DBH	Rings/In	Age	MBF Volume by Grade	
				All	4 Saw
DF	8.5			20	20
ALL	8.5			20	20

Unit Cruise Design: ALLEY CAT U10

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1: VR, 1 BAF (40) Measure All, Sighting Ht = 4.5 ft	1.7	1.7	2	2	0

Unit Cruise Summary: ALLEY CAT U10

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	2	9	4.5	0
ALL	2	9	4.5	0

Unit Cruise Statistics: ALLEY CAT U10

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	180.0	15.7	11.1	65.7	5.3	3.7	11,832	16.6	11.7
ALL	180.0	15.7	11.1	65.7	5.3	3.7	11,832	16.6	11.7

Unit Summary: ALLEY CAT U10

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	2	ALL	8.5	38	45	12,520	11,832	5.5	456.8	180.0	61.7	20.5
ALL	LIVE	CUT	2	ALL	8.5	38	45	12,520	11,832	5.5	456.8	180.0	61.7	20.5
ALL	ALL	ALL	2	ALL	8.5	38	45	12,520	11,832	5.5	456.8	180.0	61.7	20.5

Cruise Unit Report ALLEY CAT U11

Unit Sale Notice Volume (MBF): ALLEY CAT U11

Sp	DBH	Rings/In	Age	MBF Volume by Grade			
				All	3 Saw	4 Saw	Utility
DF	14.8			4	3	0	1
GF	14.0			1	1		
ALL	14.7			4	3	0	1

Unit Cruise Design: ALLEY CAT U11

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1: VR, 1 BAF (20) Measure All, Sighting Ht = 4.5 ft	0.5	0.5	1	1	0

Unit Cruise Summary: ALLEY CAT U11

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	5	5	5.0	0
GF	1	1	1.0	0
ALL	6	6	6.0	0

Unit Cruise Statistics: ALLEY CAT U11

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	100.0	0.0	0.0	79.9	14.0	6.2	7,990	14.0	6.2
GF	20.0	0.0	0.0	67.4	0.0	0.0	1,347	0.0	0.0
ALL	120.0	0.0	0.0	77.8	14.4	5.9	9,337	14.4	5.9

Unit Summary: ALLEY CAT U11

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	5	ALL	14.8	55	68	8,323	7,990	4.0	83.7	100.0	26.0	3.6
GF	LIVE	CUT	1	ALL	14.0	55	68	1,347	1,347	0.0	18.7	20.0	5.3	0.6
ALL	LIVE	CUT	6	ALL	14.7	55	68	9,670	9,337	3.4	102.4	120.0	31.3	4.2
ALL	ALL	ALL	6	ALL	14.7	55	68	9,670	9,337	3.4	102.4	120.0	31.3	4.2

Cruise Unit Report ALLEY CAT U13

Unit Sale Notice Volume (MBF): ALLEY CAT U13

Sp	DBH	Rings/In	Age	MBF Volume by Grade		
				All	3 Saw	4 Saw
RA	11.3			5		5
DF	12.0			2	2	
ALL	11.5			7	2	5

Unit Cruise Design: ALLEY CAT U13

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1: VR, 1 BAF (40) Measure All, Sighting Ht = 4.5 ft	0.7	0.7	1	1	0

Unit Cruise Summary: ALLEY CAT U13

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
RA	3	3	3.0	0
DF	1	1	1.0	0
ALL	4	4	4.0	0

Unit Cruise Statistics: ALLEY CAT U13

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 (%)
RA	120.0	0.0	0.0	62.5	18.1	10.5	7,504	18.1	10.5
DF	40.0	0.0	0.0	80.2	0.0	0.0	3,209	0.0	0.0
ALL	160.0	0.0	0.0	67.0	19.1	9.6	10,712	19.1	9.6

Unit Summary: ALLEY CAT U13

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	1	ALL	12.0	58	72	3,209	3,209	0.0	50.9	40.0	11.5	2.1
RA	LIVE	CUT	3	ALL	11.3	48	58	7,971	7,504	5.9	172.3	120.0	35.7	5.0
ALL	LIVE	CUT	4	ALL	11.5	51	62	11,179	10,712	4.2	223.2	160.0	47.2	7.1
ALL	ALL	ALL	4	ALL	11.5	51	62	11,179	10,712	4.2	223.2	160.0	47.2	7.1

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

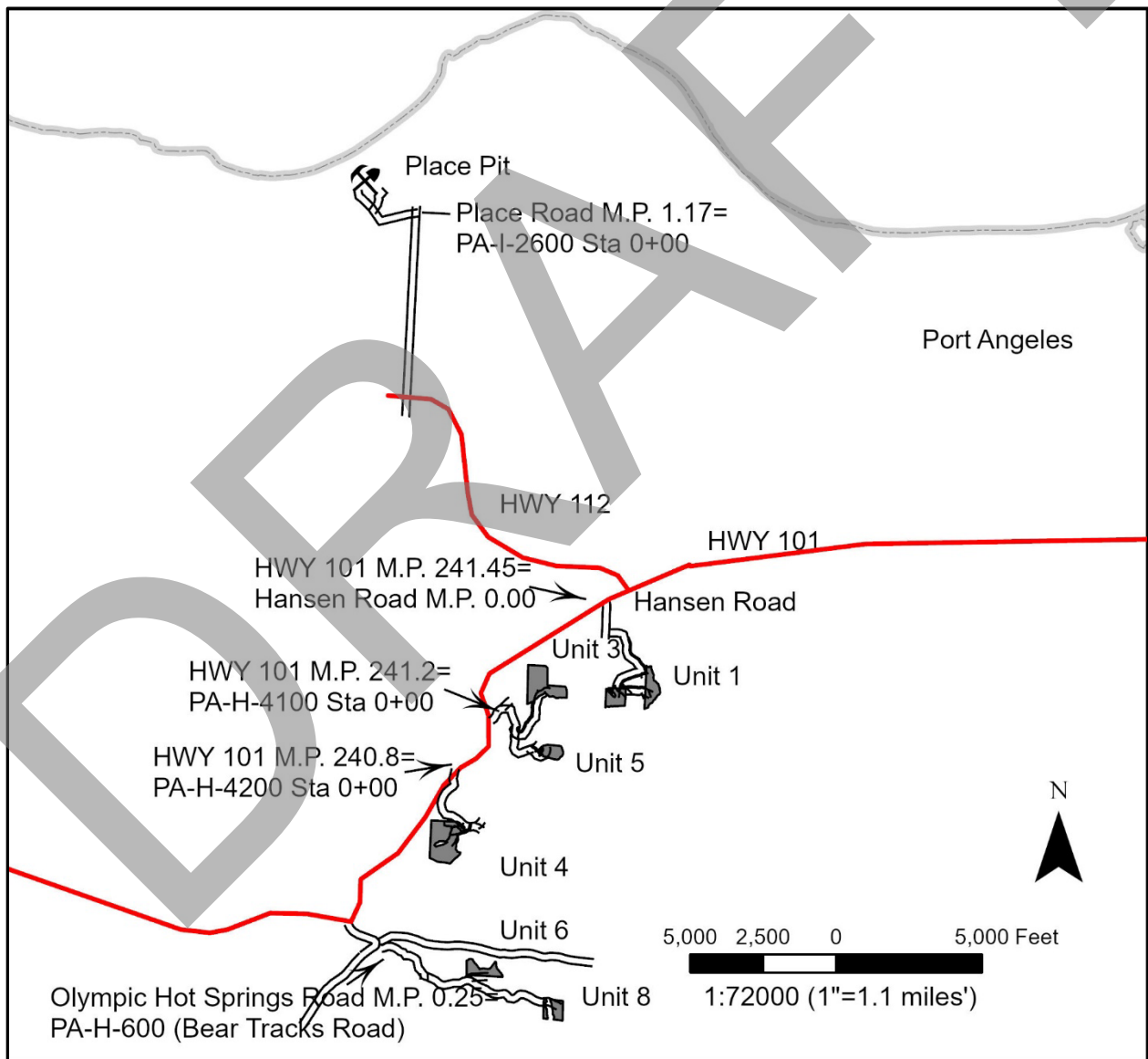
ALLEY CAT TIMBER SALE ROAD PLAN
CLALLAM COUNTY
STRAITS DISTRICT
OLYMPIC REGION

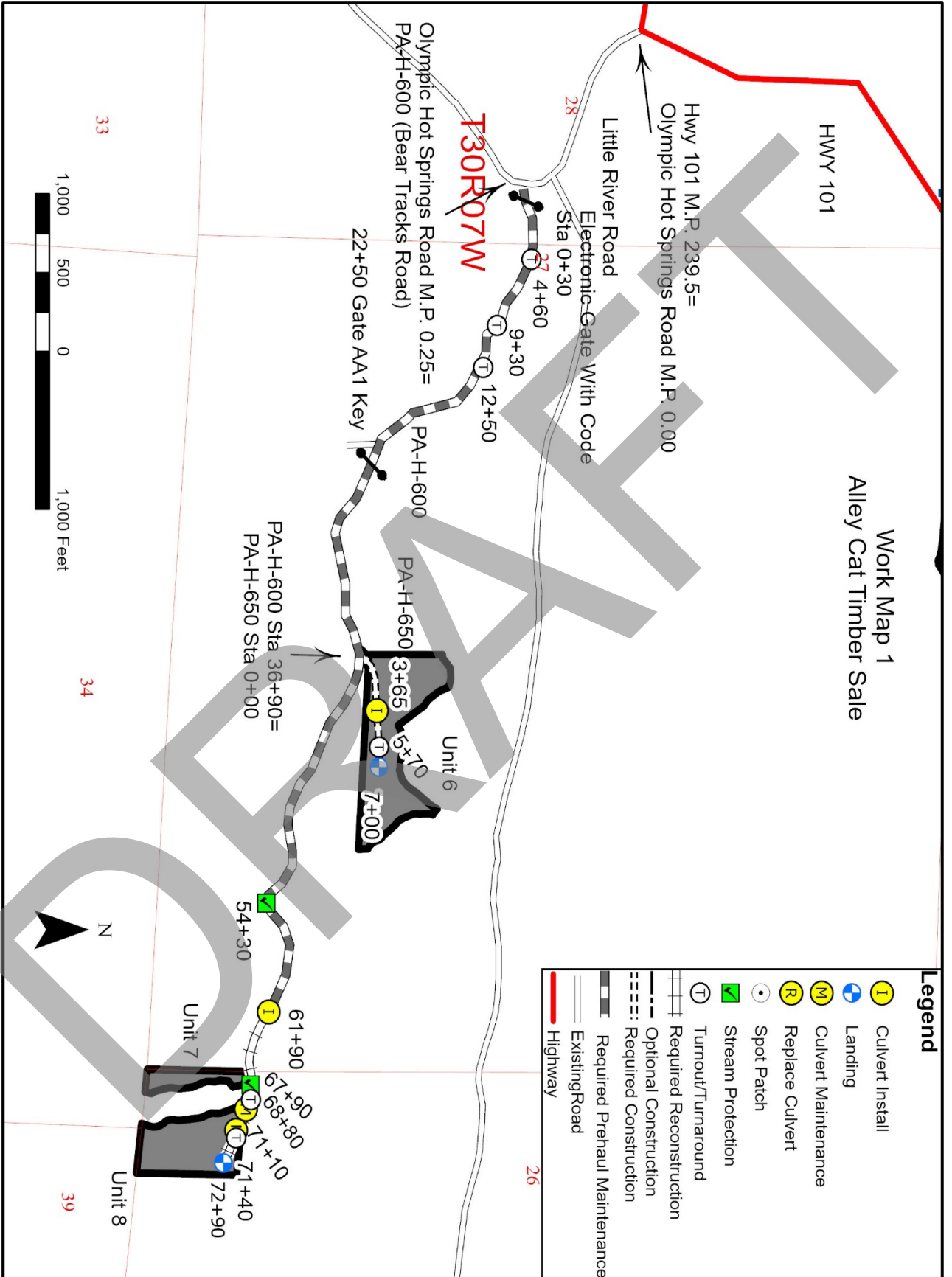
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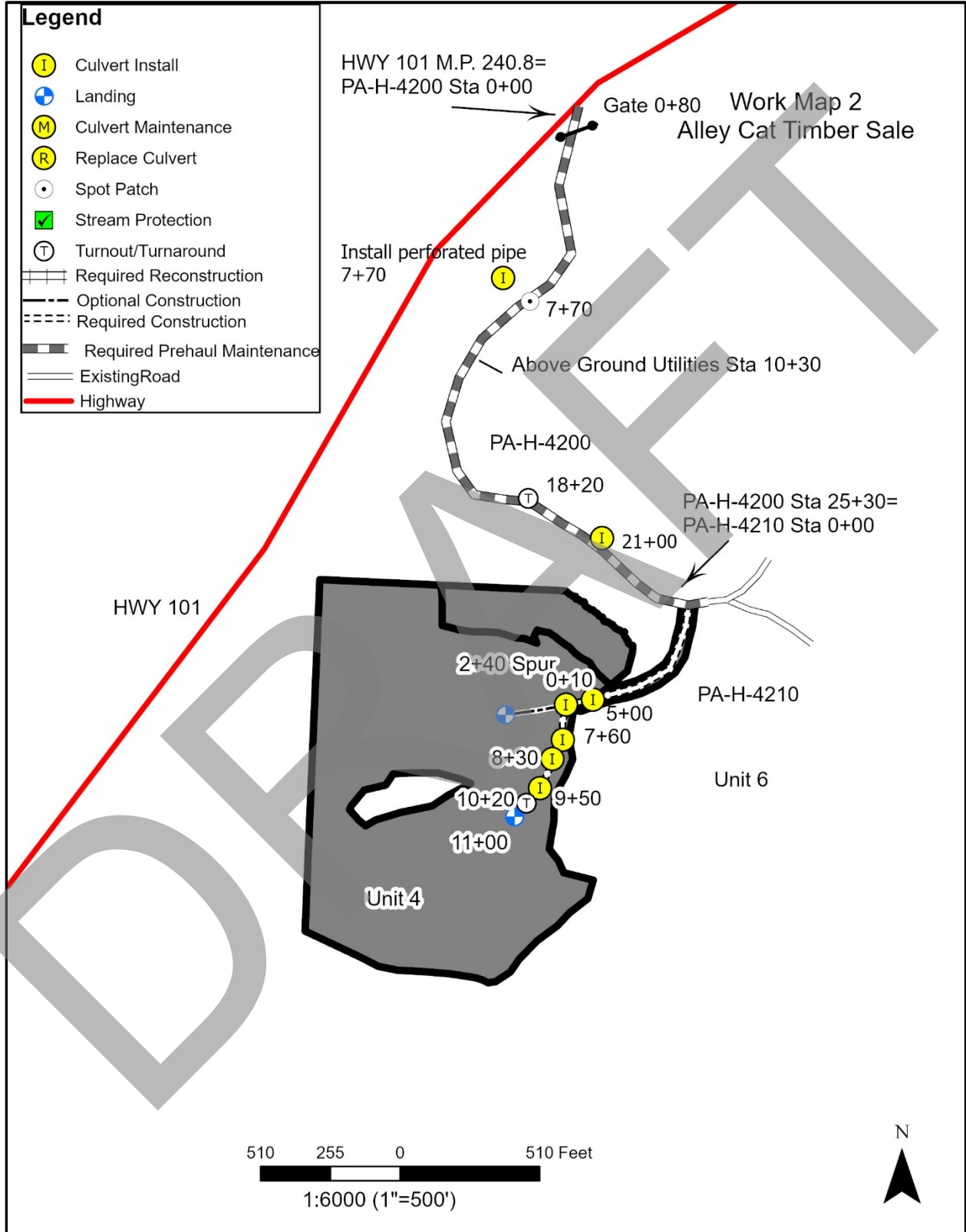
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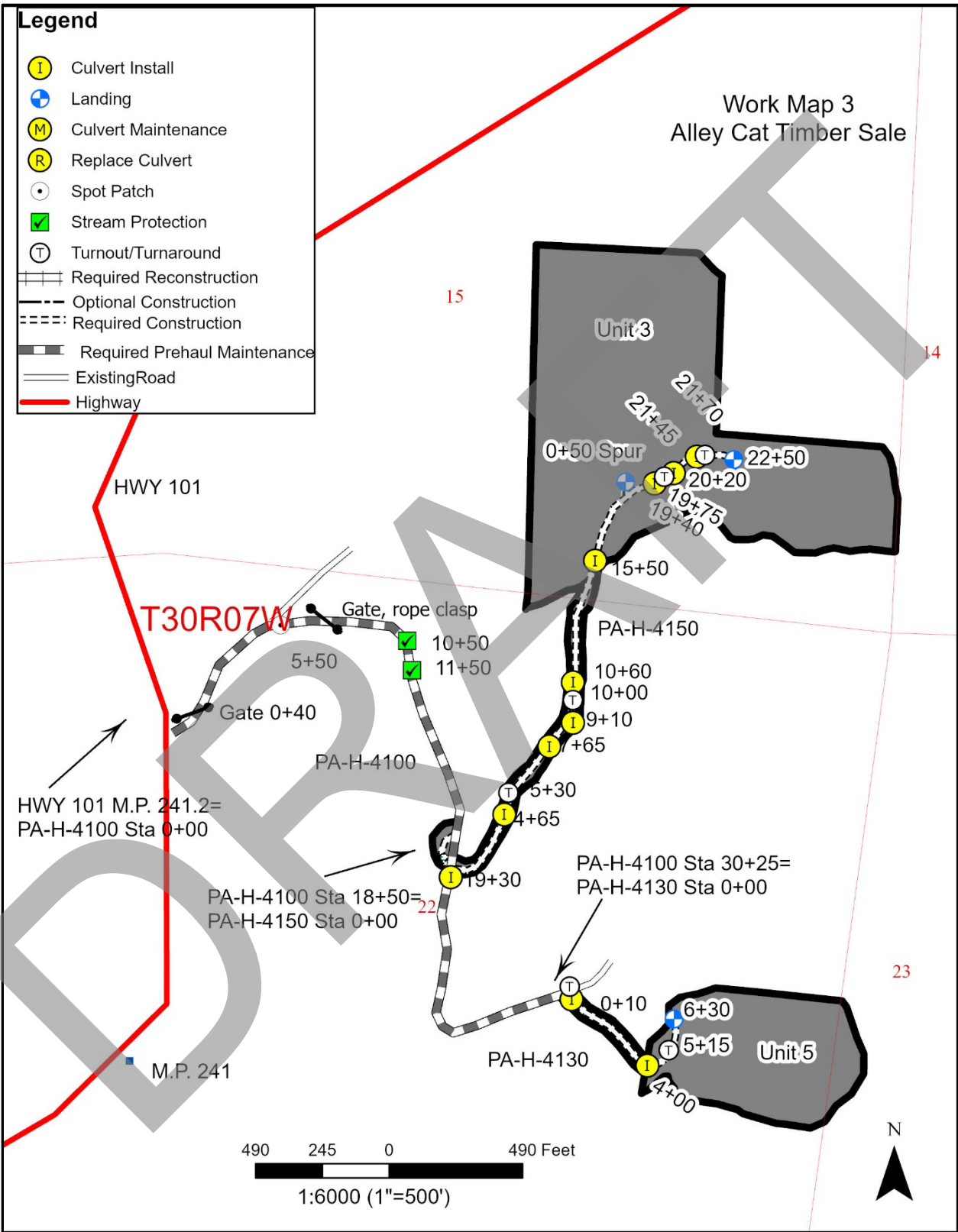
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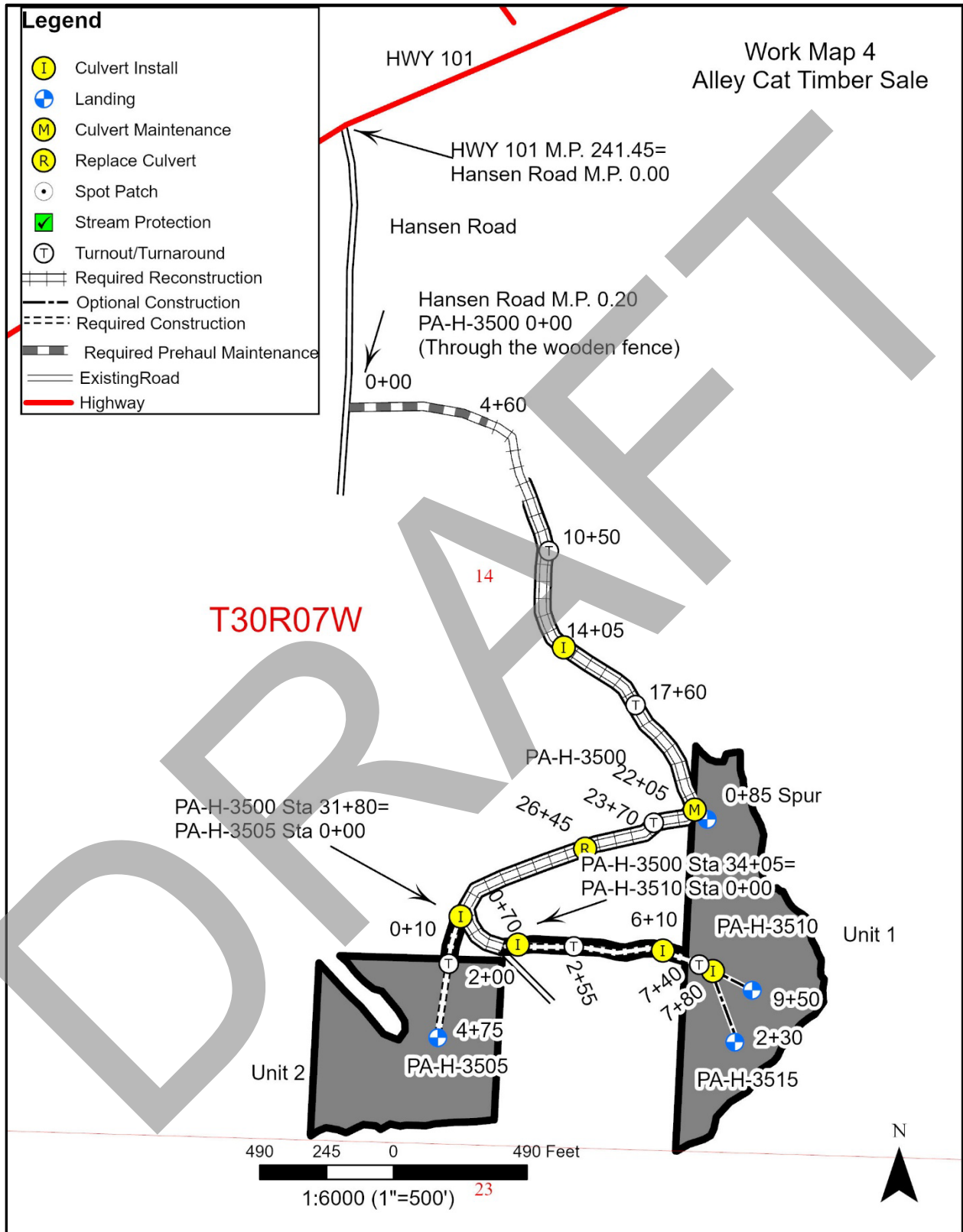
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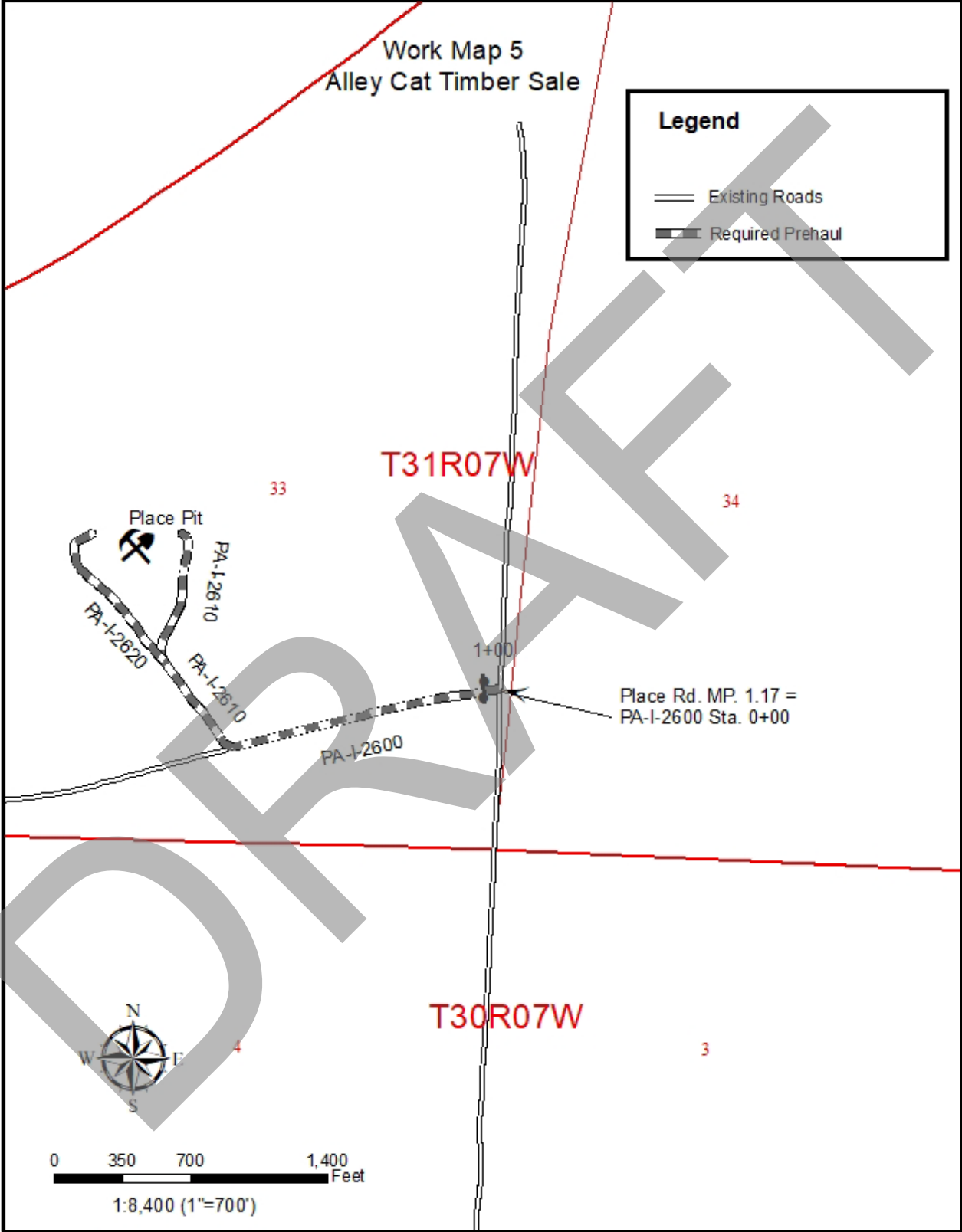












SECTION 0 – SCOPE OF PROJECT

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>
PA-H-600	0+00 to 61+90	Prehaul Maintenance
PA-H-600	61+90 to 72+90	Reconstruction
PA-H-650	0+00 to 7+00	Construction
PA-H-4200	0+00 to 25+30	Prehaul Maintenance
PA-H-4210	0+00 to 11+00	Construction
PA-H-4100	0+00 to 30+25	Prehaul Maintenance
PA-H-4150	0+00 to 22+50	Construction
PA-H-4130	0+00 to 6+30	Construction
PA-H-3500	0+00 to 4+60	Prehaul Maintenance
PA-H-3500	4+60 to 34+05	Reconstruction
PA-H-3505	0+00 to 4+75	Construction
PA-H-3510	0+00 to 7+40	Construction
0+85 Spur	0+00 to 0+85	Construction
PA-I-2600	0+00 to 14+00	Prehaul Maintenance
PA-I-2610	0+00 to 12+00	Prehaul Maintenance
PA-I-2620	0+00 to 6+50	Prehaul Maintenance

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>
2+40 Spur	0+00 to 2+40	Construction
0+50 Spur	0+00 to 0+50	Construction
PA-H-3510	7+40 to 9+50	Construction
PA-H-3515	0+00 to 2+30	Construction

0-4 CONSTRUCTION

This project includes, but is not limited to the following construction requirements:

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
PA-H-650	0+00 to 7+00	Construction

PA-H-4210	0+00 to 11+00	Construction
PA-H-4150	0+00 to 22+50	Construction
PA-H-4130	0+00 to 6+30	Construction
PA-H-3505	0+00 to 4+75	Construction
PA-H-3510	0+00 to 9+50	Construction
2+40 Spur	0+00 to 2+40	Construction
0+50 Spur	0+00 to 0+50	Construction
PA-H-3515	0+00 to 2+30	Construction
0+85 Spur	0+00 to 0+85	Construction
Total Stations	67.1 Stations	

Construction includes, but is not limited to: Clearing, grubbing, right-of-way debris disposal, excavation and/or embankment to subgrade, end hauling material for construction, compacting road surfaces, constructing ditchlines, constructing ditchouts, constructing turnouts and turnarounds, curve widening, acquisition and installation of drainage structures, application of rock, spreading grass seed and hay.

0-5 RECONSTRUCTION

This project includes, but is not limited to the following reconstruction requirements:

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
PA-H-600	61+90 to 72+90	Reconstruction
PA-H-3500	4+60 to 34+05	Reconstruction
Total Stations	40.45 Stations	

Reconstruction includes, but is not limited to: Removal of all vegetative material with minimum loss of rock and dispose of in accordance with Clause 2-9 and Clause 3-23. Cleaning ditches and constructing ditches, constructing headwalls, cleaning culvert inlets and outlets in accordance with Clause 2-6 and Clause 2-7. Installing additional culverts and replacing culverts in accordance with the culvert list. Grading, shaping and compacting existing road surface, turnouts and turnaround in accordance with Clause 2-5, realigning road segments, spreading grass seed and hay, and the application of rock in accordance with the Rock List.

0-6 PRE-HAUL MAINTENANCE

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

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
PA-H-600	0+00 to 61+90	Grade, shape and compact existing running surface in accordance to Clause 2-5, apply rock in accordance

		with Rock list and brush road in accordance to Clause 3-1. Clean culverts in accordance to Clause 2-6. Install sediment control in accordance to Clause 8-1.
PA-H-4200	0+00 to 25+30	Grade, shape and compact existing running surface in accordance to Clause 2-5, apply rock in accordance with Rock list and brush road in accordance to Clause 3-1.
PA-H-4100	0+00 to 30+25	Grade, shape and compact existing running surface in accordance to Clause 2-5, apply rock in accordance with Rock list and brush road in accordance to Clause 3-1. Clean ditches in accordance to Clause 2-7. Remove vegetative material in accordance to Clause 2-9. Install sediment control in accordance to Clause 8-1.
PA-H-3500	0+00 to 4+60	Grade, shape and compact existing running surface in accordance to Clause 2-5, apply rock in accordance with Rock list and brush road in accordance to Clause 3-1. Clean culverts in accordance to Clause 2-6
PA-I-2600	0+00 to 14+00	Grade, shape and compact existing running surface in accordance to Clause 2-5, apply rock in accordance with Rock list and brush road in accordance to Clause 3-1.
PA-I-2610	0+00 to 12+00	Grade, shape and compact existing running surface in accordance to Clause 2-5, apply rock in accordance with Rock list and brush road in accordance to Clause 3-1.
PA-I-2620	0+00 to 6+50	Grade, shape and compact existing running surface in accordance to Clause 2-5, apply rock in accordance with Rock list and brush road in accordance to Clause 3-1.
Total Stations	154.55 Stations	

Pre-haul maintenance includes, but is not limited to: Brushing right-of-way, right-of-way debris disposal, cleaning ditches, constructing ditches, installing additional culverts, widening road segments, constructing headwalls, cleaning culvert inlets and outlets, cross drain culvert replacements, installing erosion control materials and sediment removal structures, spot rocking, grading and shaping existing road surface and turnouts, constructing additional turnouts, compaction of road surface, application of rock, acquisition and application of grass seed and hay.

0-7 POST-HAUL MAINTENANCE

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

0-12 DEVELOP ROCK SOURCE

Purchaser may develop an existing rock source called Place Pit. Rock source development will involve digging and loading useable rock as determined by the Contract Administrator out of the active pit face to obtain ballast material. Work for developing rock sources is listed in Section 6 ROCK AND SURFACING.

In the event that the rock pit(s) listed above cannot meet rock specifications in accordance to specifications listed in Section 6, subsection rock gradations and in the opinion of the Contract Administrator, purchaser shall obtain rock meeting rock specification from a commercial source at their own expense.

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.

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

1-6 ORDER OF PRECEDENCE

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

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

1-12 SURVEY MONUMENTS

At no time during construction, reconstruction, or maintenance shall survey monuments, witness trees, or bearing trees be disturbed or damaged. If damaged or disturbed, Purchaser shall hire a licensed land surveyor to repair, replace, and/or reset them.

SUBSECTION ROAD MARKING

1-15 ROAD MARKING

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

- Orange ribbon and paint for construction centerlines.
- Construction stakes for everything else.

1-18 REFERENCE POINT DAMAGE

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

SUBSECTION TIMING

1-20 COMPLETE BY DATE

Purchaser shall complete reconstruction, construction and pre-haul road work before the start of timber haul.

1-21 HAUL APPROVAL

Purchaser shall not use roads under this road plan without written approval from the Contract Administrator.

1-22 WORK NOTIFICATIONS

Purchaser shall notify the Contract Administrator a minimum of 14 business calendar days before work begins.

1-23 ROAD WORK PHASE APPROVAL

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

- Subgrade construction
- Drainage installation
- Subgrade compaction
- Rock application
- Rock compaction

SUBSECTION RESTRICTIONS

1-25 ACTIVITY TIMING RESTRICTION

On the following road(s), are not allowed during the listed closure period(s) unless authorized in writing by the Contract Administrator.

<u>Road</u>	<u>Stations</u>	<u>Activity</u>	<u>Closure Period</u>
All	All	All	Weekends and State Recognized Holidays
All	All	All roadwork activities including Timber Haul and rock pit development.	November 1 st – April 30 th
All	All	All	8:00 PM – 6:00 AM (Year Around)

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

1-27 TIMING RESTRICTION FOR MARBLED MURRELET

On the following road(s), timber felling, road work or operation of heavy equipment performed during the marbled murrelet nesting season (April 1 through September 23), is restricted to, two hours after sunrise to two hours before sunset. This does not apply to hauling timber, rock or equipment.

<u>Road</u>	<u>Stations</u>
PA-I-2600, PA-I-2610, PA-I-2620	ALL

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:

- Wheel track rutting exceeds 6 inches on jaw run, pit run roads.
- Wheel track rutting exceeds 4 inches on crushed rock roads.
- Wheel track rutting exceeds 4 inches on native surface roads.
- 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.

1-33 SNOW PLOWING RESTRICTION

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

SUBSECTION OTHER INFRASTRUCTURE

1-40 ROAD APPROACHES TO COUNTY ROADS AND STATE HIGHWAYS

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

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

The following county roads and state highways are affected by this sale:

<u>Road Name</u>
Little River Road
Highway 101
Place Road
Olympic Hot springs
Hansen road

1-43 ROAD WORK AROUND UTILITIES

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

<u>Road</u>	<u>Stations</u>	<u>Utility</u>	<u>Utility Contact</u>
PA-H-4200	10+30	Above ground power	811
PA-H-4150	17+40 to 18+00	Buried Waterline	N/A

SECTION 2 – MAINTENANCE

2-1 GENERAL ROAD MAINTENANCE

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

2-2 ROAD MAINTENANCE – PURCHASER MAINTENANCE

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

2-3 ROAD MAINTENANCE – DESIGNATED MAINTAINER

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

2-4 PASSAGE OF LIGHT VEHICLES

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

2-5 MAINTENANCE GRADING – EXISTING ROAD

On the following road(s), Purchaser shall use a grader to shape the existing surface.

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
PA-H-600	0+00 to 61+90	Grade, shape, compact and remove shoulder vegetation.
PA-H-4200	0+00 to 25+30	Grade, shape, compact and remove shoulder vegetation.

PA-H-4100	0+00 to 30+25	Grade, shape, compact and remove shoulder vegetation.
PA-H-3500	0+00 to 4+60	Grade, shape, compact and remove shoulder vegetation.
PA-I-2600	0+00 to 14+00	Grade, shape, compact and remove shoulder vegetation.
PA-I-2610	0+00 to 12+00	Grade, shape, compact and remove shoulder vegetation.
PA-I-2620	0+00 to 6+50	Grade, shape, compact and remove shoulder vegetation.

2-6 CLEANING CULVERTS

On the following road(s), Purchaser shall clean the inlets and outlets of all culverts and shall obtain written approval from the Contract Administrator before start of timber haul.

<u>Road</u>	<u>Stations</u>
PA-H-600	69+50, 71+10
PA-H-3500	22+05

2-7 CLEANING DITCHES, HEADWALLS, AND CATCH BASINS

On the following road(s), Purchaser shall clean and/or construct ditches, headwalls, and catchbasins. Work must be completed before the start of timber haul 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. Ditchlines, headwalls, and catch basins shall not encroach into the existing road.

<u>Road</u>	<u>Stations</u>	<u>Left and/or Right</u>
PA-H-4100	11+50 to 23+80	Left
PA-H-4100	23+80 to 30+25	Right

2-9 REMOVING VEGETATIVE MATERIAL

On the following road(s), Purchaser shall remove all vegetative material, dirt, mud and other debris on the existing road surface with a minimum loss of rock. Material must be disposed of as specified in Clauses 4-35 through 4-38.

<u>Road</u>	<u>Stations</u>
PA-H-4100	5+50 to 30+25
PA-H-3500	4+60 to 34+05

SECTION 3 – CLEARING, GRUBBING, AND DISPOSAL

SUBSECTION BRUSHING

3-1 BRUSHING

On the following road(s), Purchaser shall cut vegetative material up to 5 inches in diameter, including limbs, as shown on the BRUSHING DETAIL. Brushing must be achieved by 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>
PA-H-600	0+00 to 61+90
PA-H-4200	0+00 to 25+30
PA-H-4100	0+00 to 30+25
PA-H-3500	0+00 to 4+60
PA-I-2600	0+00 to 14+00
PA-I-2610	0+00 to 12+00
PA-I-2620	0+00 to 6+50

3-2 BRUSHING RESTRICTION

Pulling, digging, pushing over, and other non-cutting methods used for vegetation removal may not be used for brushing. Excavator buckets, log loaders and similar equipment may not be used for brushing unless otherwise approved in writing by the Contract Administrator.

3-3 BRUSH REMOVAL

Remove brushing debris from the road surface, ditchlines, and culvert inlets and outlets. Brush should be disposed of so that it will not fall back onto the road prism.

SUBSECTION CLEARING

3-5 CLEARING

Purchaser shall fall all vegetative material larger than 5 inches DBH or over 15 feet high between the marked right-of-way boundaries, or as approved by Contract Administrator. Clearing must be completed before starting excavation and embankment.

3-7 RIGHT-OF-WAY DECKING

Purchaser shall deck all right-of-way timber. Decks must be parallel to the road centerline and placed within the cleared right-of-way. Decks must be free of dirt, limbs,

and other right-of-way debris, and removable by standard log loading equipment from the roadbed.

3-8 PROHIBITED DECKING AREAS

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

- Within the grubbing limits.
- Within 50 feet of any stream.
- In locations that interfere with the construction of the road prism.
- In locations that impede drainage.
- On slopes greater than 40%.
- Against standing trees.

SUBSECTION GRUBBING

3-10 GRUBBING

Purchaser shall remove all stumps between the grubbing limits specified on the TYPICAL SECTION SHEET. Purchaser shall also remove stumps with undercut roots outside the grubbing limits. Purchaser shall remove stumps using a hydraulic mounted excavator unless authorized in writing by the Contract Administrator. Grubbing must be completed before starting excavation and embankment.

3-12 STUMP PLACEMENT

Purchaser shall place grubbed stumps outside of the clearing limits, as directed by the Contract Administrator and in compliance with all other clauses in this road plan. Stumps must be positioned upright, with root wads in contact with the forest floor and on stable locations.

3-14 STUMPS WITHIN DESIGNATED WASTE AREAS

Purchaser is not required to remove stumps within waste areas if they are cut flush with the ground.

SUBSECTION ORGANIC DEBRIS

3-20 ORGANIC DEBRIS DEFINITION

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

3-21 DISPOSAL COMPLETION

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

3-23 PROHIBITED DISPOSAL AREAS

Purchaser shall not place organic debris in the following areas:

- Within 50 feet of a cross drain culvert.
- Within 100 feet of a live stream, or wetland,
- On road subgrades, or excavation and embankment slopes.
- On slopes greater than 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 grubbing limits in accordance with Clause 3-23 unless otherwise detailed in this road plan and as directed by the Contract Administrator.

SUBSECTION PILE

3-30 EXCLUSION OF DOZER BLADES

Purchaser shall not use dozer blades for the piling of organic debris.

3-31 PILING

Purchaser shall pile organic debris no closer than 20 feet from standing timber and no higher than 20 feet in areas specified in Clause 3-22 DESIGNATED WASTE AREA FOR ORGANIC DEBRIS. Piles must be free of rock and soil.

3-32 END HAULING ORGANIC DEBRIS

On slopes greater than 45%, Purchaser shall end haul or push organic debris to a waste area located by the Contract Administrator.

SECTION 4 – EXCAVATION

4-1 EXCAVATOR CONSTRUCTION

Purchaser shall use a track mounted hydraulic excavator for construction, reconstruction and maintenance work unless stated otherwise within this Road Plan or authorized in writing by the Contract Administrator.

4-2 PIONEERING

Pioneering may not extend past construction that will be completed during the current construction season. 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:

- Grade and alignment must have smooth continuity, without abrupt changes in direction.
- Maximum grades may not exceed 19 percent favorable and 16 percent adverse.
- Minimum curve radius is 60 feet at centerline.
- Maximum grade change for sag vertical curves is 5% in 100 feet.
- Maximum grade change for crest vertical curves is 4% in 100 feet.

4-4 SWITCHBACK STANDARDS

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

Purchaser shall follow these standards for switchbacks:

- Maximum adverse grades for switchbacks is 10%.
- Maximum favorable grades for switchbacks is 15%.
- Maximum transition grades entering and leaving switchbacks is a 5% grade change.
- Transition grades required to meet switchback grade limitations must be constructed on the tangents preceding and departing from the switchbacks.

4-5 CUT SLOPE RATIO

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

4-12 FULL BENCH CONSTRUCTION

Where side slopes exceed 45%, Purchaser shall use full bench construction for the entire subgrade width. Purchaser shall end haul waste material to the location specified in Clause 4-37 WASTE AREA LOCATION.

4-15 NO EXCAVATION IN SUBGRADE

At the specified locations, Purchaser shall not excavate the subgrade.

<u>Road</u>	<u>Stations</u>
PA-H-4150	17+40 to 18+00

SUBSECTION INTERSECTIONS, TURNOUTS AND TURNAROUNDS

4-20 SUBGRADE DIMENSIONS FOR INTERSECTIONS

Purchaser shall construct the subgrade to the dimensions shown on the INTERSECTION DETAIL.

4-21 TURNOUTS

Purchaser shall construct turnouts intervisible with a maximum distance of 1,000 feet between turnouts unless otherwise shown on drawings. Locations may be adjusted to fit the final subgrade alignment and sight distances. Locations changes are subject to written approval by the Contract Administrator. Minimum dimensions are shown on the TYPICAL SECTION SHEET.

4-22 TURNAROUNDS

Turnarounds must be no larger than 50 feet long and 30 feet wide. Locations are subject to written approval by the Contract Administrator.

4-23 SUBGRADE FLARE FOR INTERSECTIONS

Intersections shall be constructed/reconstructed to include additional intersection flare.

SUBSECTION DITCH CONSTRUCTION

4-25 DITCH CONSTRUCTION AND RECONSTRUCTION

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

4-28 DITCH DRAINAGE

Ditches must drain to cross-drain culverts or ditchouts.

SUBSECTION WASTE MATERIAL (DIRT)

4-35 WASTE MATERIAL DEFINITION

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

4-36 DISPOSAL OF WASTE MATERIAL

Purchaser may sidecast waste material on side slopes up to 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. The amount of material allowed in a waste area is at the discretion of the Contract Administrator.

Note: All amount values are estimated bank yards.

<u>Waste Area Location</u>	<u>Waste Generated From Road</u>	<u>Waste Generated at Stations</u>	<u>Estimated Volume</u>	<u>Comment</u>
PA-H-4150 Sta 0+50	PA-H-4150	3+65 to 5+00	1500	Endhaul for road construction

4-38 PROHIBITED WASTE DISPOSAL AREAS

Purchaser shall not deposit waste material in the following areas:

- Within 50 feet of a cross drain culvert.
- Within 100 feet of a live stream or wetland.
- Within a riparian 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.

4-39 WASTE AREA COMPACTION

Excavated material may be deposited adjacent to the road prism on side slopes up to 45% if the waste material is compacted and free of debris. On side slopes of 45% or more, all excavation shall be end hauled or pushed to designated waste areas. All waste material shall be compacted. The minimum acceptable compaction is achieved by placing embankments in 2 foot or shallower lifts and routing excavation equipment over the entire width of the lifts, with the exception of side hill embankments too narrow to accommodate excavation equipment which may be placed by end-dumping or sidecasting until sufficiently wide to support the equipment.

SUBSECTION BORROW

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.

4-46 COMMON BORROW

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

4-47 NATIVE MATERIAL

Native material consists of naturally occurring material that is free of organic debris, trash, and rocks greater than 12 inches in any dimension.

SUBSECTION SHAPING

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.

4-56 DRY WEATHER SHAPING

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

SUBSECTION COMPACTION

4-60 FILL COMPACTION

Purchaser shall compact all embankment and waste material in accordance with the COMPACTION LIST by routing equipment over the entire width of each lift. A plate compactor must be used for areas specifically requiring keyed embankment construction and for embankment segments too narrow to accommodate 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, except ditch. Purchaser shall obtain written approval from the Contract Administrator for subgrade compaction before placement of rock.

4-62 DRY WEATHER COMPACTION

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

4-63 EXISTING SURFACE COMPACTION

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

4-64 WASTE MATERIAL COMPACTION

All waste material shall be compacted by running equipment over it or bucket tamping.

4-65 CULVERT BACKFILL COMPACTION

Culvert backfills shall be accomplished by using a jumping jack compactor, performing at least 2 passes per lift, in lifts not to exceed 8 inches.

4-66 COMPACTION BY METHOD

Compaction shall consist of three complete passes over the entire width of each lift with a vibratory drum roller weighing a minimum of 6,000 pounds at a maximum operating speed of 3 mph. For embankment segments too narrow to accommodate a drum roller, a plate compactor shall be used.

SECTION 5 – DRAINAGE

5-1 REMOVAL OF SHOULDER BERMS

Purchaser shall remove berms from road shoulders. The construction of ditchouts is required where ponding could result from the effects of sidecast debris.

SUBSECTION CULVERTS

5-5 CULVERTS

Purchaser shall install culverts as part of this contract. Culverts must be installed concurrently with subgrade work and must be installed before subgrade compaction and rock application. Culvert locations and the minimum requirements for culvert length and diameter are designated on the CULVERT 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 10-17 through 10-22.

5-6 CULVERT TYPE

Purchaser may install culverts made of plastic in accordance with Clauses 10-17 through 10-24.

5-12 UNUSED MATERIALS STATE PROPERTY

On required roads, any materials listed on the CULVERT LIST and ROCK LIST that are not installed will become the property of the state. Purchaser shall stockpile materials as directed by the Contract Administrator.

5-13 CONTINGENCY CULVERTS

The following culverts will be supplied by the Purchaser and are available for installation as directed by the Contract Administrator. In the event that culverts are not used, culverts shall be stockpiled at Port Angeles Work Center.

<u>Road</u>	<u>Size</u>
On any portion of road used for timber or rock haul.	18" x 30' culvert 18" culvert band

SUBSECTION CULVERT INSTALLATION

5-15 CULVERT INSTALLATION

Culvert installation must be in accordance with the TYPICAL CROSS DRAIN CULVERT INSTALLATION DETAIL SHEET, TYPICAL TYPE NS NP CULVERT INSTALLATION DETAIL SHEET, the National Corrugated Metal Pipe Association's "Installation Manual for Corrugated Steel Drainage Structures" 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 over 15 inches diameter 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 District Engineer or his/her designee for the installation of culverts 30 inches in diameter and over before backfilling.

5-17 CROSS DRAIN SKEW AND SLOPE

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

5-18 CULVERT DEPTH OF COVER

Cross drain culverts must be installed with a depth of cover of not less than 12 inches of compacted subgrade over the top of the culvert at the shallowest point. Stream crossing culverts must be installed with a depth of cover specified in the Engineer's design, TYPICAL TYPE NS NP DETAIL SHEET, or recommended by the culvert manufacturer for the type and size of the pipe, whichever is greater.

SUBSECTION ENERGY DISSIPATERS

5-20 ENERGY DISSIPATERS

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

Rock used for energy dissipaters must weigh at least 10 pounds. 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. Placement must be with a zero-drop-height method only.

5-21 DOWNSPOUTS AND FLUMES

Downspouts and flumes longer than 10 feet must be staked on both sides at maximum intervals of 10 feet with 6-foot heavy-duty steel posts, and fastened securely to the

posts with No. 10 galvanized smooth wire or 1/2-inch bolts in accordance with the TYPICAL CULVERT INSTALLATION DETAILS SHEET.

SUBSECTION CATCH BASINS, HEADWALLS, AND ARMORING

5-25 CATCH BASINS

Purchaser shall construct catch basins to resist erosion. Minimum dimensions of catch basins are 1-2 feet wide, 1-2 feet deep and 2-4 feet long.

5-26 HEADWALLS FOR CROSS DRAIN CULVERTS

Purchaser shall construct headwalls in accordance with the TYPICAL CROSS DRAIN CULVERT INSTALLATION DETAIL at all cross drain culverts that specify the placement of rock. Rock used for headwalls must consist of oversize or quarry spall material. 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. No placement by end dumping or dropping of rock is allowed.

5-27 ARMORING FOR STREAM CROSSING CULVERTS

Purchaser shall place rip rap in conjunction with or immediately following construction of the embankment. Rock must be placed on shoulders, slopes, and around culvert inlets and outlets as designated on the TYPICAL TYPE NS NP CULVERT INSTALLATION DETAIL or as directed by the Contract Administrator. Rock may not restrict the flow of water into culvert inlets or catch basins. Rock must be set in place by machine. Placement must be with a zero-drop-height method only. No placement by end dumping or dropping of rock is allowed.

SUBSECTION SURFACE DRAINAGE

5-33 NATIVE SURFACE ROADS

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

SECTION 6 – ROCK AND SURFACING

SUBSECTION ROCK SOURCE

6-2 ROCK SOURCE ON STATE LAND

Rock used in accordance with the quantities on the ROCK LIST may be obtained from the following source(s) on state land at no charge to the Purchaser. Purchaser shall obtain written approval from the Contract Administrator for the use of material from any other source. If other operators are using, or desire to use the rock source(s), a joint operating plan must be developed. All parties shall follow this plan. Purchaser shall notify the Contract Administrator a minimum of 5 calendar days before starting any operations in the listed locations.

<u>Source</u>	<u>Location</u>	<u>Rock Type</u>
Place Pit	T31N R07W Sec 33	Pit Run

6-5 ROCK FROM COMMERCIAL SOURCE

Rock used in accordance with the quantities on the ROCK LIST may/shall be obtained from any commercial source at the Purchaser's expense. Rock sources are subject to written approval by the Contract Administrator before their use. Rock source(s) must be a WSDOT certified source. Prior to approval, purchaser shall submit a passing sieve test performed by procedure described in WSDOT FOP for WAQTC T 27/11.

<u>Rock Type</u>	<u>Amount</u>
5/8" inch minus	430 cubic yards
1 1/4" minus	750 cubic yards
2" minus or 3" jaw run	1690 cubic yards

SUBSECTION ROCK SOURCE DEVELOPMENT

6-10 ROCK SOURCE DEVELOPMENT PLAN BY STATE

Purchaser shall conduct rock source development and use at the following sources, in accordance with the written ROCK SOURCE DEVELOPMENT PLAN prepared by the state and included in this road plan. Upon completion of operations, the rock source must be left in the condition specified in the ROCK SOURCE DEVELOPMENT PLAN, and approved in writing by the Contract Administrator. Purchaser shall notify the Contract Administrator a minimum of 5 calendar days before starting any operations in the rock source.

<u>Source</u>	<u>Rock Type</u>
Place Pit	Pit Run
Place Pit	Light Loose Rip Rap

6-12 ROCK SOURCE SPECIFICATIONS

6-13 ROCK EXPLORATION

Purchaser shall provide an excavator with operator for up to 10 hours of exploration of rock and other related work as directed by the Contract Administrator.

SUBSECTION ROCK MANUFACTURE

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.
- The crushing operation must be concluded within 30 working days from the time it begins.
- All testing and operations must be performed in accordance with the attached ROCK CRUSHING COMPLIANCE PROCEDURE.
- Purchaser shall produce sieve analysis for crushing operations every 2000 yards days for each rock gradation type.
- Purchaser may use a commercial testing lab to produce sieve analyses.
- Sieve analysis for acceptance of aggregate shall be performed by procedure described in WSDOT FOP for WAQTC T 27/11.

6-22 FRACTURE REQUIREMENT FOR ROCK

A minimum of 5% 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 provide manufacture rock in accordance with the types and amounts listed in the Manufacturing list below. Rock must meet the following specifications for gradation and uniform quality during manufacture and placement into a stockpile. Purchaser shall provide a sieve analysis upon request from the Contract Administrator.

<u>Rock Type</u>	<u>Amount</u>
5/8" inch minus	430 cubic yards
1 1/4" minus	750 cubic yards
2" minus or 3" jaw run	1690 cubic yards
Pit Run	4680 cubic yards
Light Loose Rip Rap	10 cubic yards

6-24 ROCK CRUSHING COMPLIANCE PROCEDURE

Phase I. Equipment Adjustment

Step 1:

At start up of crushing operations, the Purchaser will notify the Contract Administrator when the rock meets the gradation specifications in the contract. None of the rock crushed during this calibration period will be counted toward the amount required to be crushed, and this rock must be kept separate from accepted rock crushed later.

Step 2:

The Purchaser will test the rock. Two samples will be taken. If the rock meets specifications, crushing may begin. If the rock does not meet specifications, return to Step 1.

Phase II. Production

Step 3:

The Purchaser will continue periodic testing to ensure that rock stays in spec. Testing will take place according to the following schedule:

- After the first 500 yards
 - After every 2,000 yards thereafter.
- a) Any time a sample is out of spec, but is within 5%*, the Purchaser will be notified and a second sample will be taken later in the day. If the second sample meets specifications, the rock crushed during that day will be accepted. If the second sample also fails to meet spec, none of the rock crushed since the last acceptable test will be counted toward the amount to be crushed.
 - b) Any time a sample is out of spec and is more than 5% off in any category, none of the rock crushed since the last acceptable test will be accepted and that rock must be kept separate from the stockpile. Return to Step 1.
 - c) Purchaser is strongly encouraged to take their own samples regularly and keep their operations in spec to avoid unnecessary expenses.
 - The 5% will be applied only to sieve specs for 2" to ¼"; rock that is out of spec in larger sizes must be kept separate from the acceptable rock. Periodic visual inspection required for all rock gradations larger than 2". If in the opinion of the Contract Administrator that gradations are not meeting specifications, Contract Administrator may require testing of material 2" or larger.

SUBSECTION ROCK GRADATIONS

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.

6-26 5/8-INCH MINUS CRUSHED ROCK

Passing 5/8" square sieve	100%
% Passing 3/8" square sieve	55 - 75%
% Passing U.S. #4 sieve	40 - 60%

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

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

6-28 1 ¼-INCH MINUS CRUSHED ROCK

% Passing 1 ¼" square sieve	100%
% Passing 5/8" square sieve	55 - 75%
% Passing U.S. #4 sieve	20 - 50%

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

6-30 2-INCH MINUS CRUSHED ROCK

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

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

6-34 3-INCH JAW RUN ROCK

% Passing 3" square sieve	100%
% Passing 1 ½" square sieve	45 - 65%

6-41 PIT RUN ROCK

No more than 50 percent of the rock may be larger than 8 inches in any dimension and no rock may be larger than 12 inches in any dimension. Select Pit Run rock may not contain more than 5 percent by weight of organic debris, dirt, and trash. Rock may require processing to meet this specification.

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%	500 lbs. to 1 ton (18" - 28")
15% to 80%	50 lbs. to 500 lbs. (8" - 18")
10% to 20%	3 inch to 50 lbs. (3" - 8")

SUBSECTION ROCK MEASUREMENT

6-55 ROCK APPLICATION MEASURED BY COMPACTED DEPTH

Measurement of specified rock depths, are defined as the compacted depth(s) using the compaction methods required in this road plan. Estimated quantities specified in the ROCK LIST are estimated truck yards. Purchaser shall apply adequate amounts of rock to meet the specified rock depths. Specified rock depths are minimum requirements and are not subject to reduction.

SUBSECTION ROCK APPLICATION

6-70 APPROVAL BEFORE ROCK APPLICATION

Purchaser shall obtain written approval from the Contract Administrator for subgrade drainage installation included grading and compaction before rock application.

6-71 ROCK APPLICATION

Purchaser shall apply rock in accordance with the specifications and quantities shown on the ROCK LIST. Rock must be spread, shaped, and compacted full width concurrent with rock hauling operations. The Contract Administrator will direct locations for rock that is to be applied as spot patching. Road surfaces must be compacted in accordance with the COMPACTION LIST by routing equipment over the entire width and in lifts not to exceed 6 inches.

6-72 ROCK APPLICATION AFTER HAULING

On the following road(s), upon completion of all hauling operations, Purchaser shall apply rock in accordance with the quantities shown on the ROCK LIST.

<u>Road</u>	<u>Stations</u>	<u>Rock Type</u>
PA-H-600	0+00 to 14+00	Lift of 5/8 " minus
PA-H-600	14+00 to 22+50	Spot Patch of 5/8 " minus

PA-H-4200	0+00 to 25+30	Spot Patch of 1 ¼" minus
PA-H-3500	0+00 to 4+60	Lift of 5/8 " minus
PA-H-4100	0+00 to 5+50	Spot Patch of 1 ¼" minus

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.

6-76 DRY WEATHER ROCK COMPACTION

On the following roads, The Contract Administrator may require the application of water to facilitate compaction of the rock surfacing. The method of water application is subject to approval by the Contract Administrator.

6-78 ROCK FOR SPOT PATCHING

Rock for spot patching shall be applied before any grading is done and before any rock lifts are applied. Once applied, spot patches shall be graded into the existing running surface.

SUBSECTION DUST ABATEMENT

6-80 WATERING FOR DUST ABATEMENT

Purchaser shall use water for dust abatement as directed by the Contract Administrator.

SUBSECTION SIGNS

7-2 SIGN INSTALLATION (NON-HIGHWAY)

The Purchaser shall be responsible for the purchase, installation, and maintenance of the following road signs. Signs shall be installed a minimum of 1 days before rock haul begins. Signs shall be at least 2 feet in any direction, and shall be orange with black lettering.

<u>Road</u>	<u>Station</u>	<u>Sign</u>
PA-H-600	0+00	A sign to indicate trucks are using the area

SUBSECTION STREAM CROSSING STRUCTURES GENERAL

7-5 STRUCTURE DEBRIS

Purchaser shall not allow debris from the installation or removal of structures to enter any stream. Components removed from existing structure(s) must be removed from state land or, as directed in writing, by the Contract Administrator. 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, and as directed by the District Engineer or their designee.

7-7 BANK PROTECTION FOR STREAM CROSSING STRUCTURES

Purchaser shall design and construct bank protection to prevent the undermining of the structure.

SUBSECTION GATE CLOSURE

7-70 GATE CLOSURE

Purchaser shall keep gates closed and locked except during periods of 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.

SECTION 8 – EROSION CONTROL

8-1 SEDIMENT CONTROL STRUCTURES

On the following road(s), sediment control shall be accomplished using as listed or other methods as approved in writing by the Contract Administrator.

<u>Road</u>	<u>Stations</u>	<u>Left and/or Right</u>	<u>Comments</u>
PA-H-600	54+30	Left and Right	Silt Fence 30 feet Roadside
PA-H-600	67+90	Left and Right	Silt Fence 30 feet Roadside
PA-H-4210	8+30	Left and Right	Silt Fence 30 feet Roadside
PA-H-4100	10+50	Left and Right	Silt Fence 30 feet Roadside

PA-H-4100	11+50	Left and Right	Silt Fence 30 feet Roadside
PA-H-4150	10+60	Left and Right	Silt Fence 30 feet Roadside

8-2 PROTECTION FOR EXPOSED SOIL

Purchaser shall provide and evenly spread a 3-inch layer of straw or hay to all exposed soils at culvert installations within 50 feet of a stream or wetland. Soils must be covered before the first anticipated storm event. Soils may not sit exposed during any rain event.

SUBSECTION REVEGETATION

8-15 REVEGETATION

On the following road(s), Purchaser shall spread grass seed and/or straw and/or hay mulch on all exposed soils including, but not limited to, stream culverts, waste areas, sidcast pullback areas, stream crossing removals, bridge installations, and other areas directed by the Contract Administrator. Revegetation of exposed soils shall be accomplished by manual dispersal of grass seed unless otherwise detailed in this Road Plan. Other methods of covering must be approved in writing by the Contract Administrator.

8-16 REVEGETATION SUPPLY

The Purchaser shall provide the all seed, mulch, straw and/or hay, matting etc..

8-17 REVEGETATION TIMING

Purchaser shall revegetate during the first available opportunity. Soils shall not be allowed to sit exposed during any rain event.

8-18 PROTECTION FOR SEED

Purchaser shall provide a protective cover over the revegetated area. The protective cover may consist of but not be limited to, such items as dispersed hay mulch 3" thick or jute matting. Seed must be covered before the first anticipated storm event. Seed may not be allowed to sit exposed during any rain event. The protective cover requirement may be waived in writing by the Contract Administrator if Purchaser is able to demonstrate a revegetation plan that will result in the establishment of a uniform dense crop (at least 50% coverage) of 3-inch tall grass by October 31.

8-19 ASSURANCE FOR SEEDED AREA

Purchaser shall ensure the growth of a uniform and dense crop (at least 50% coverage) of 3-inch tall grass. Purchaser shall reapply the grass seed and/or straw and/or hay mulch in areas that have failed to germinate or have been damaged through any cause, restore eroded or disturbed areas, clean up and properly dispose of eroded materials, and reapply at no addition cost to the state.

SUBSECTION SEED, FERTILIZER, AND MULCH

8-25 GRASS SEED

Purchaser shall evenly spread the seed mixture listed below on all exposed soil inside the grubbing limits or as directed by Contract Administrator at a rate of 60 pounds per acre of exposed soil. Grass seed must meet the following specifications:

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

<u>Kind and Variety of Seed in Mixture</u>	<u>% by Weight</u>	<u>Minimum % germination</u>
Perennial Rye	35-45	90
Red Fescue	30-40	90
Highland Bent	5-15	85
White Clover	10-20	90
Inert and Other Crop	0.5	

SECTION 9 – POST-HAUL ROAD WORK

SUBSECTION POST-HAUL MAINTENANCE

9-5 POST-HAUL MAINTENANCE

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

<u>Road</u>	<u>Stations</u>	<u>Additional Requirements</u>
All	All	Clean culverts, clean ditches, grade road shape and compact as directed by the Contract Administrator.
PA-H-600	0+00 to 14+00	Apply post haul rock per Clause 6-72.
PA-H-600	14+00 to 22+50	Apply post haul rock per Clause 6-72.
PA-H-4200	0+00 to 25+30	Apply post haul rock per Clause 6-72.

PA-H-3500	0+00 to 4+60	Apply post haul rock per Clause 6-72.
PA-H-4100	0+00 to 5+50	Apply post haul rock per Clause 6-72.

SUBSECTION POST-HAUL LANDING MAINTENANCE

9-10 LANDING DRAINAGE

Purchaser shall provide for drainage of the landing surface as approved in writing by the Contract Administrator.

9-11 LANDING EMBANKMENT

Purchaser shall slope landing embankments to the original construction specifications.

SECTION 10 MATERIALS

SUBSECTION GEOTEXTILES

10-6 GEOTEXTILE FOR TEMPORARY SILT FENCE

Geotextiles must meet the following minimum requirements for strength and property qualities, and must be designed by the manufacturer to be used for filtration. Woven slit-film geotextiles are not allowed. Material must be free of defects, cuts, and tears.

	<u>ASTM Test</u>	<u>Requirements</u>
Type	--	Unsupported between posts
Apparent opening size	D 4751	No. 30 max., No. 100 min.
Water permittivity	D 4491	0.02 sec ⁻¹
Grab tensile strength	D 4632	180 lb in machine direction, 100lb in cross-machine direction
Grab tensile elongation	D 4632	30% max. at 180 lb or more
Ultraviolet stability	D 4355	70% retained after 500 hours of exposure

SUBSECTION CULVERTS

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.

10-20 FLUME AND DOWNSPOUT

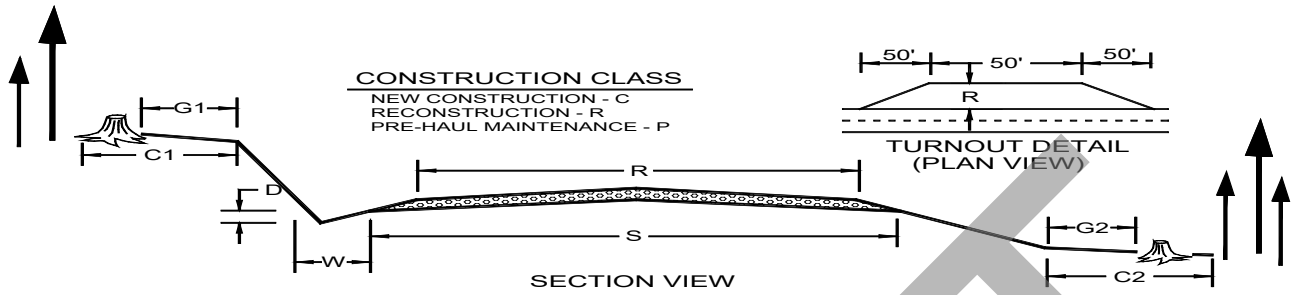
Downspouts and flumes must meet the AASHTO specification designated for the culvert. Plastic downspouts and flumes must be Type S – double walled with a corrugated exterior and smooth interior.

10-22 PLASTIC BAND

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

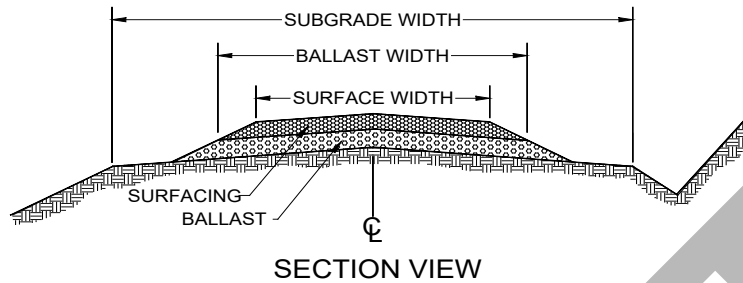
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TYPICAL SECTION SHEET



ROAD NAME	START STATION	END STATION	CONSTRUCTION CLASS	TOLERANCE CLASS	SUBGRADE WIDTH (S)	ROAD WIDTH (R)	CROWN AT CL (in)	DITCH WIDTH (W)	DITCH DEPTH (D)	GRUBBING CUT BANK (G1)	GRUBBING FILL TOE (G2)	ROAD CUT CLEARING (C1)	ROAD FILL CLEARING (C2)
PA-H-600	0+00	61+90	P	A		12	3"						
PA-H-600	61+90	72+90	R	C		12	3"	3'	1'	5'	5'	5'	5'
PA-H-650	0+00	7+00	C	C	16	12	3"	2'	1'	5'	5'	5'	5'
PA-H-4200	0+00	25+30	P	C		12	3"						
PA-H-4210	0+00	11+00	C	C	17	12	3"	3'	1'	5'	5'	5'	5'
PA-H-4100	0+00	30+25	P	C		12	3"						
PA-H-4150	0+00	22+50	C	C	16	12	3"	3'	1'	5'	5'	5'	5'
PA-H-4130	0+00	6+30	C	C	16	12	3"	3'	1'	5'	5'	5'	5'
PA-H-3500	0+00	4+60	P	A		12	3"						
PA-H-3500	4+60	34+05	R	A	16	12	3"	2'	1'	1'	1'	1'	1'
PA-H-3505	0+00	4+75	C	C	17	12	3"	2'	1'	5'	5'	5'	5'
PA-H-3510	0+00	7+40	C	C	17	12	3"	3'	1'	5'	5'	5'	5'
0+85 Spur	0+00	0+85	C	C	16	12	3"	2'	1'	5'	5'	5'	5'
2+40 Spur	0+00	2+40	C	C	17	12	3"	3'	1'	5'	5'	5'	5'
0+50 Spur	0+00	0+50	C	C	17	12	3"	3'	1'	5'	5'	5'	5'
PA-H-3510	7+40	9+50	C	C	17	12	3"	3'	1'	5'	5'	5'	5'
PA-H-3515	0+00	2+30	C	C	17	12	3"	3'	1'	5'	5'	5'	5'
PA-I-2600	0+00	14+00	P	C		12	3"						
PA-I-2610	0+00	12+00	P	C		12	3"						
PA-I-2620	0+00	6+50	P	C		12	3"						

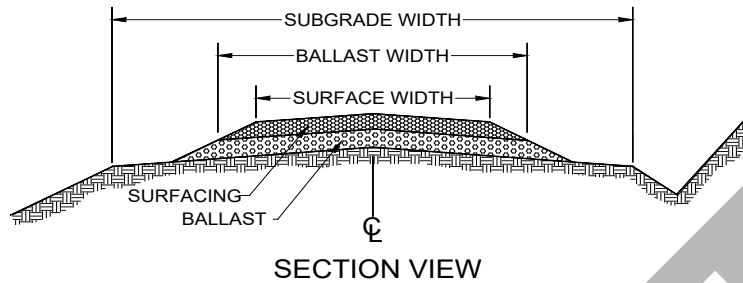
ROCK LIST SHEET



1. Rock quantities, subtotals and totals are "truck measure" estimates. Rock shall be applied to at least the depths listed.
2. All depths are compacted depths.
3. Rock slopes shall be 1½ (H) : 1 (V).
4. All rock sources are subject to approval by the Contract Administrator.
5. Pitrun is defined as pitrun or ballast per Line 6. Crushed is defined as any crushed rock from ¼" minus to 4" minus per Line 6. Oversize is defined as oversize, quarry spalls, light loose rip rap, or heavy loose rip rap per Line 6.
6. Rock sources: 1: Commercial 1 ¼ inch minus, 2: Commercial 5/8 inch minus, 3: 2" minus or 3" jaw run rock 4. Place Pit Pit Run

ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd ³ /sta)	Pitrun SUBTOTAL(yd ³)	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd ³ /sta)	Crushed Subtotal(yd ³)	Oversize/ Rip rap Source	Oversize/Rip Rap Quantity(yd ³)	
PA-H-600																
Misc Prehaul Rock	22+50	61+90							3				100			
Turnout	4+60								1				10			
Turnout	9+30								1				10			
Turnout	12+50								1				10			
Spot Patch	54+30								3				20			
Misc Prehaul Rock	61+90	72+90							3				50			
Culvert Install	61+90								1				10			
Spot Patch	67+90								3				20			
Turnout	68+80								3				20			
Turnout	71+40								3				20			
Landing	72+90								3				20			
Post Haul Lift	0+00	14+00							2	12	4	20	280			
Post Haul Rock	14+00	22+50							2				50			
PA-H-650																
Misc Traction Rock	0+00	7+00							3				70			
Culvert Install	3+65								1				10			
Turnout	5+70								3				20			
Landing	7+00								3				20			
Totals:									3: 360 1:50 2:330							

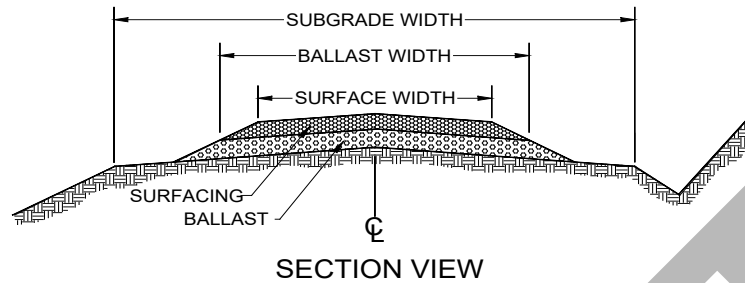
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PA-H-4200															
Misc Prehaul Rock	0+50	25+30							1				50		
Spot Patch	7+70								1				30		
Culvert Install	7+70														
Turnout	18+20								1				20		
Culvert Install	21+00								1				30		1
Misc Haul/Post Haul Rock	0+00	25+30							1				100		
PA-H-4210															
Lift	0+00	11+00	17	4	14	12	70	770							
Lift	0+00	1+00							3	12	6	35	40		
Culvert Install	5+00								1				10		
Culvert Install	7+60								1				10		
Culvert Install	8+30								1				20	4	4
Culvert Install	9+50								1				10		
Turnout	10+20			4				30							
Landing	11+00			4				30							
2+40 Spur															
Lift	0+00	2+40	17	4	14	12	70	170							
Culvert Install	0+10								1				10		
Landing	2+40			4				30							
Totals:								4:1030					1:290 3:40		5

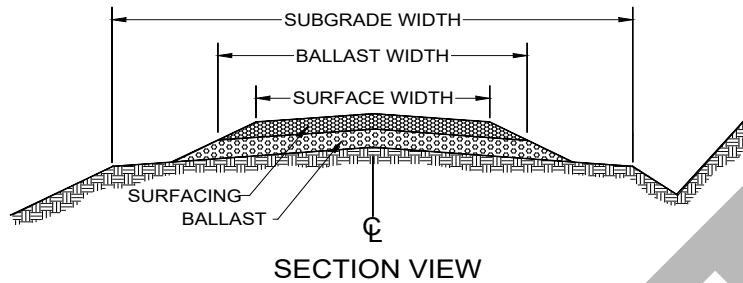
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PA-H-4100															
Spot Patch	5+50			4				100	3				30		
Spot Patch	10+50								3				20		
Spot Patch	11+50								3				20		
Misc Prehaul Rock	5+50	30+25							3				150		
Culvert Install	19+30								1				20		
Turnout	30+25								3				20		
Misc Posthaul Rock	0+00	5+50							1				30		
PA-H-4150															
Lift	0+00	22+50		4	14	12	70	1580							
Lift	0+00	15+50							3	12	4	20	310		
Culvert Install	4+65								1				10		
Turnout	5+30			4				30							
Culvert Install	7+65								1				20		
Culvert Install	9+10								1				30		
Turnout	10+00			4				30							
Culvert Install	10+60								1				30	4	5
Culvert Install	15+50								1				10		
Culvert Install	19+40								1				10		
Turnout	19+75			4				20							
Culvert Install	20+20								1				10		
Totals:								4:1760					1:170 3:550		4:5

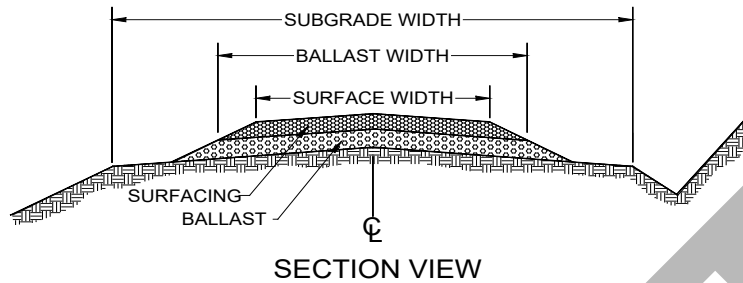
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PA-H-4150															
Culvert Install	21+45								1				10		
Turnout	21+70			4			30								
Landing	22+50			4			30								
0+50 Spur															
Lift	0+00	0+50	17	4	14	12	70	40							
Landing	0+50			4				30							
PA-H-4130															
Lift	0+00	6+30	17	4	14	12	70	450							
Lift	0+00	4+00							3	12	4	20	80		
Culvert Install	0+10								1				10		
Culvert Install	4+00								1				10		
Turnout	5+15			4			30								
Landing	6+30			4			30								
PA-H-3500															
Lift	0+00	4+60							1	12	4	20	100		
Post Haul Lift	0+00	4+60							2	12	4	20	100		
Lift	4+60	34+05							3	12	4	20	590		
Turnout	10+50								3				20		
Culvert Install	14+05								1				10		
Turnout	17+60								3				20		
Totals:							4:640					1:140 2:100 3:710			

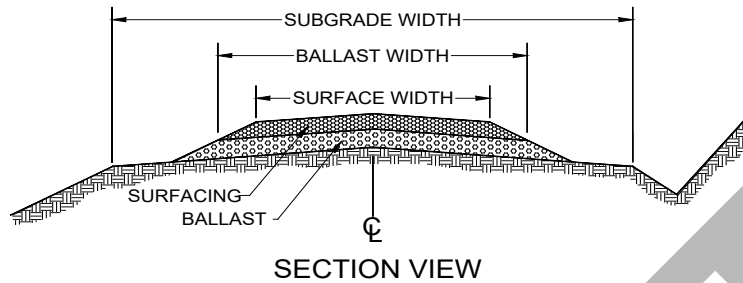
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PA-H-3500															
Turnout	23+70								3				30		
Culvert Replace	26+45								1				10		
PA-H-3505															
Lift	0+00	4+75	14	4	12	12	70	340							
Culvert Install	0+10								1				10		
Turnout	2+00			4				30							
Landing	4+75			4				30							
PA-H-3510															
Lift	0+00	9+50	14	4	12	12	70	670							
Culvert Install	0+70								1				10		
Turnout	2+55			4				30							
Culvert Install	6+10								1				10		
Turnout	7+40			4				30							
Culvert Install	7+80								1				10		
Landing	9+50			4				30							
PA-H-3515															
Native Surface	0+00	2+30													
Totals:								4: 1160					1:50 3:30		

ROCK LIST SHEET CONTINUED



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0+85 Spur															
Lift	0+00	0+85	16	4	12	12	70	70							
Landing	0+85			4				20							
PA-I-2600															
Misc Prehaul Rock	0+00	14+00							1				50		
Totals:							4: 90					1:50			
Grand Totals:							4: 4680					1: 750 2:430 3:1690			4:10

CULVERT LIST

ROAD NAME	STATION	CULVERT DIAMETER (in)	CULVERT LENGTH (ft)	FLUME LENGTH (ft)		RIP RAP - INLET (cy)	RIP RAP - OUTLET (cy)	BACKFILL MATERIAL	NOTES
PA-H-600	61+90	18	30					CR	Install
PA-H-600	69+50								Clean Inlet
PA-H-600	71+10								Clean Inlet
PA-H-650	3+65	18	30					CR	Install
PA-H-4210	5+00	18	30					CR	Install
PA-H-4210	7+60	18	30					CR	Install
PA-H-4210*	8+30	24	40			2.5	2.5	CR	Install
PA-H-4210	9+50	18	40					CR	Install
2+40 Spur	0+10	18	40					CR	Install
PA-H-4100	19+30	18	40					CR	Install
PA-H-4150	4+65	18	40					CR	Install
PA-H-4150	7+65	18	30					CR	Install
PA-H-4150	9+10	18	50					CR	Install
PA-H-4150*	10+60	24	40			2.5	2.5	CR	Install
PA-H-4150	15+50	18	30					CR	Install
PA-H-4150	19+40	18	40					CR	Install
PA-H-4150	20+20	18	40					CR	Install
PA-H-4150	21+45	18	40					CR	Install
PA-H-4130	0+10	18	40					CR	Install
PA-H-4130	4+00	18	40					CR	Install
PA-H-3500	14+05	18	30					CR	Install
PA-H-3500	26+45	18	30					CR	Replace
PA-H-3505	0+10	18	40					CR	Install
PA-H-3510	0+70	18	30					CR	Install
PA-H-3510	6+10	18	30					CR	Install
PA-H-3510	7+80	18	30					CR	Install
PA-H-3500	22+05								Clean Inlet
PA-H-4200	7+70	8	30						Install Perforated Pipe
PA-H-4200*	21+00	24	30			2.5	2.5	CR	Install

*indicates live water

COMPACTION LIST

Road	Stations	Type	Max Depth Per Lift (inches)	Equipment Type	Minimum Equipment Weight (lbs)	Minimum Number of Passes	Maximum Operating Speed (mph)
Pre-haul	All	Culvert Backfill	8"	Jumping Jack		3	
Pre-haul	All	Rock Lifts	6"	Vibratory Smooth Drum	6,000	3	3
Pre-haul	All	Pre-haul Surface		Vibratory Smooth Drum	6,000	3	3
Construction	All	Subgrade (Except Puncheon)	6"	Vibratory Smooth Drum	6,000	2	3
Construction	All	Culvert Backfill	8"	Jumping Jack		3	
Construction	All	Rock Placement	6"	Vibratory Smooth Drum	6,000	2	3
Reconstruction	All	Subgrade (Except Puncheon)	6"	Vibratory Smooth Drum	6,000	2	3
Reconstruction	All	Culvert Backfill	8"	Jumping Jack		3	
Reconstruction	All	Rock Placement	6"	Vibratory Smooth Drum	6,000	2	3
Post-haul Maintenance	All	Rock Placement	6"	Vibratory Smooth Drum	6,000	2	3

Typical Type Ns, Np Culvert Installation Detail Sheet.

-Water shall be diverted away from the work site before any "in stream" work begins, and shall continue until culvert installation is complete.

-Culvert lay shall match stream gradient up to 5%.

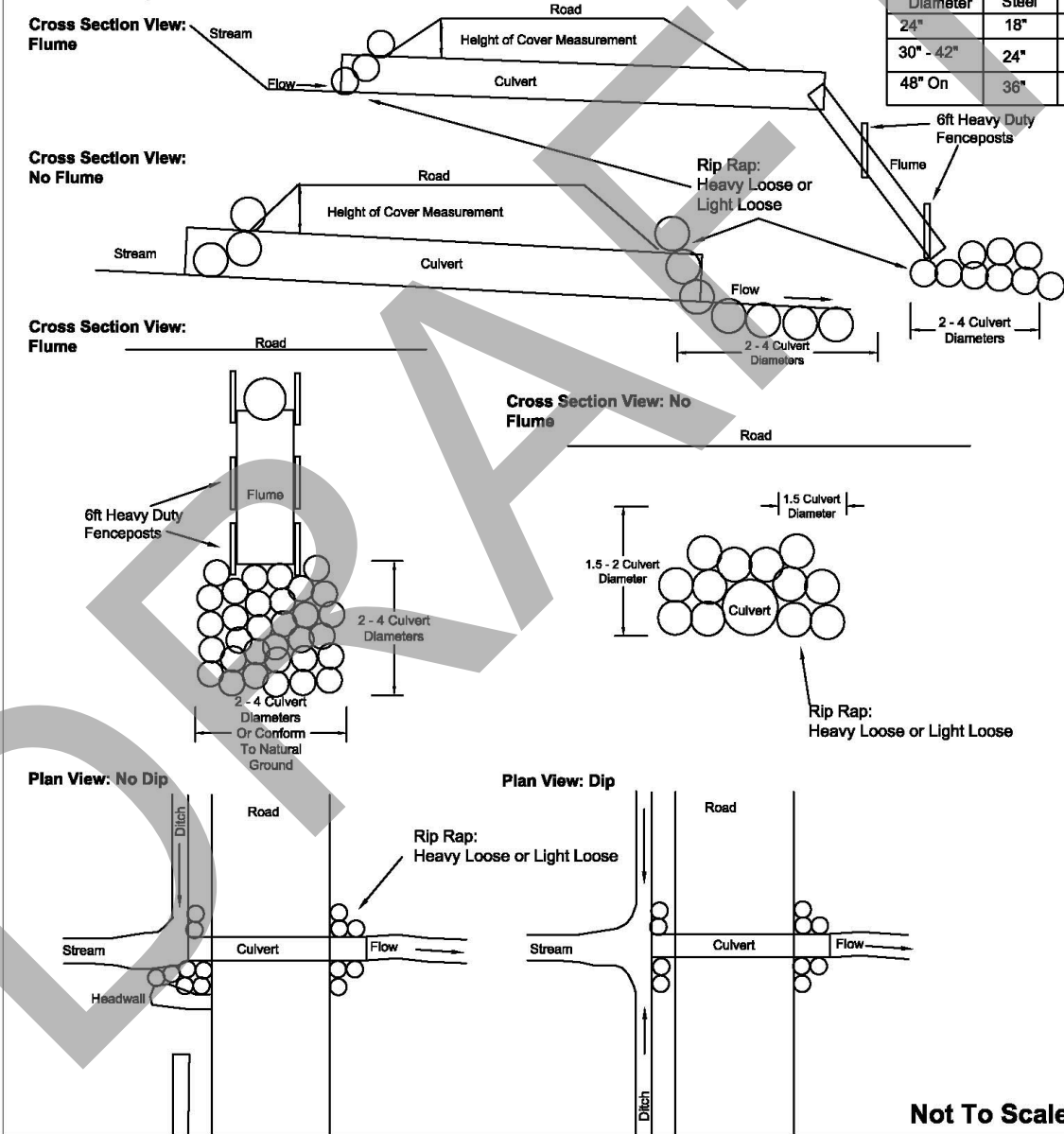
-Flumes longer than 10ft shall be staked on both sides at maximum intervals of 10ft with 6ft heavy duty steel fence posts, and fastened securely to the posts with No. 10 galvanized smooth wire or bolted to the fence posts.

-Rip rap shall be placed using a "zero height drop method", and shall be set in conjunction with the culvert installation.

-Rip rap shall be placed at headwalls, along the fill at the inlet, and at the end off flumes in accordance with this Detail. On culverts with no flume rip rap shall be placed along the fill at the outlet, unless there is stream drop or it is called for in the Road Plan, at which point it will be installed as an energy dissipater at the end of the culvert as specified in this Detail. All rip rap distance to be determined by the Contract Administrator or the District Engineer.

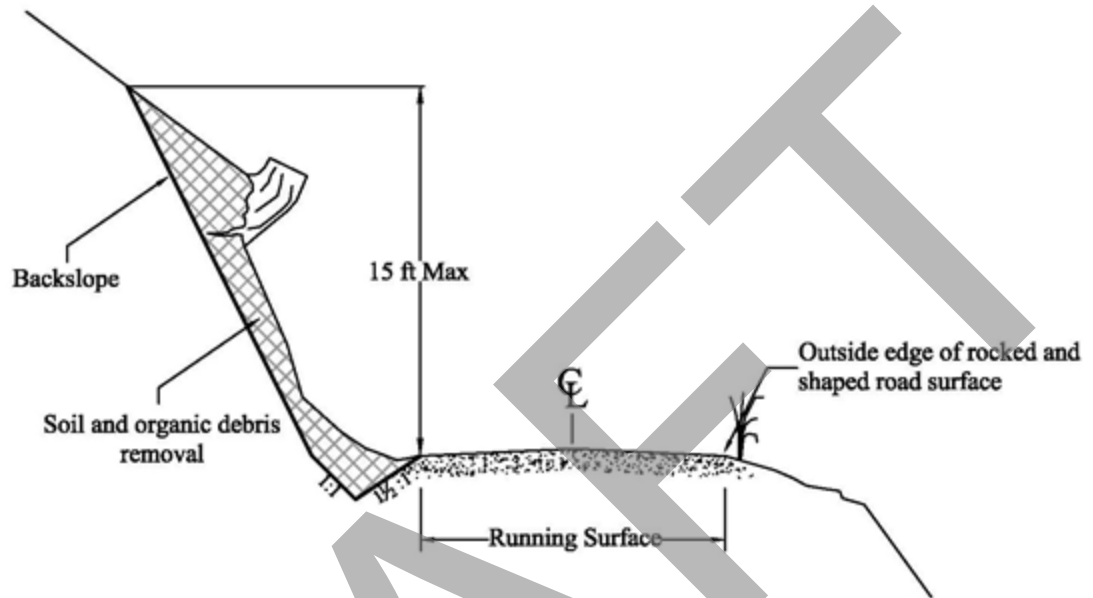
-Backfill compaction shall be achieved using a jumping jack, walk behind vibratory roller, or plate compactor on lifts not to exceed 8in. 3 complete passes per lift is required for compaction. Backfill shall be placed and compacted evenly on both sides of the culvert. Care shall be taken to ensure adequate compaction of backfill material under the haunches of the pipe. Excavation trench width shall be at least culvert diameter plus 3 times the width of the compactor footprint used.

Culvert Minimum Cover		
Diameter	Steel	Plastic
24"	18"	24"
30" - 42"	24"	24"
48" On	36"	36"



Not To Scale

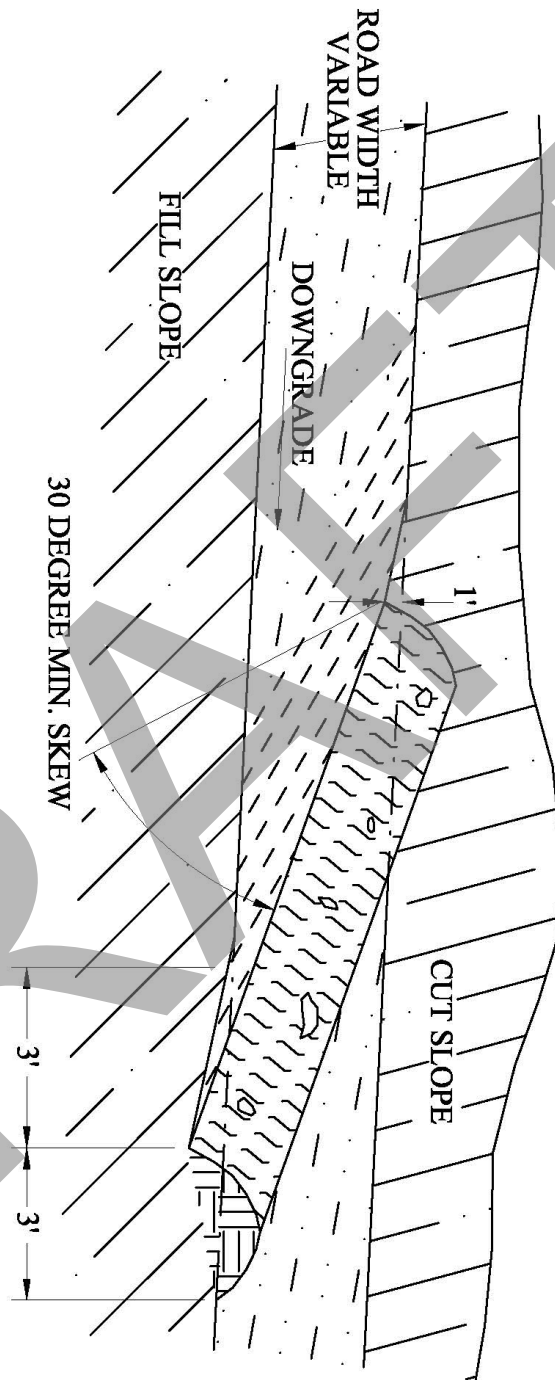
Ditch Cleaning Detail



1. The backslope shall be no steeper than $\frac{1}{2}:1$, unless the material is hardpan or solid rock, in which case it may be $\frac{1}{4}:1$.
2. If there is sufficient width for the ditch without affecting the cut bank, then removing bank material is not required.
3. Bank material above the ditch shall be removed to a maximum height of 15 feet, if needed to meet the requirements of this detail.
4. If there is insufficient width to clean or construct a ditch without disturbing more than 15 vertical feet of bank, the Contract Administrator may authorize changes to this plan in order to still meet the intent of having a ditch, while staying within the excavation limits already set.
5. Ditch cleaning or construction shall not shrink the running surface of the road.

DRIVABLE WATER BAR DETAIL

SCALE: NTS

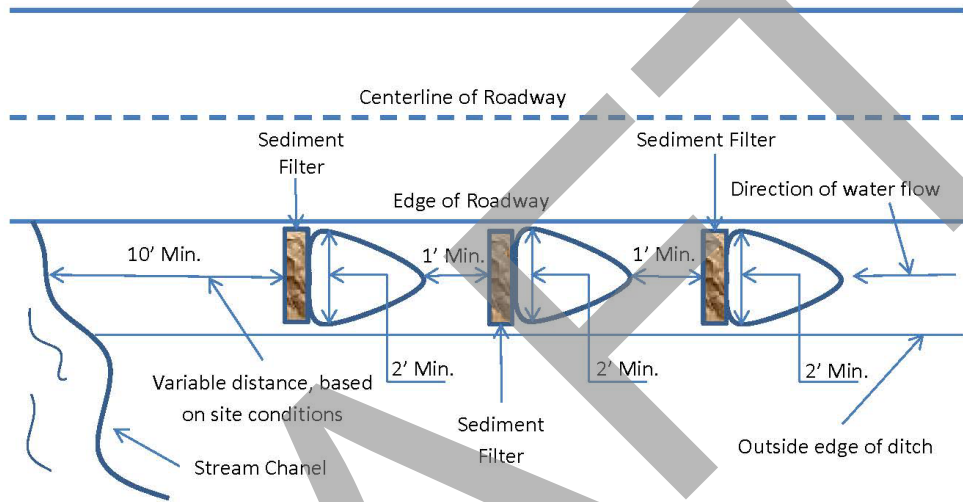


NOTES:

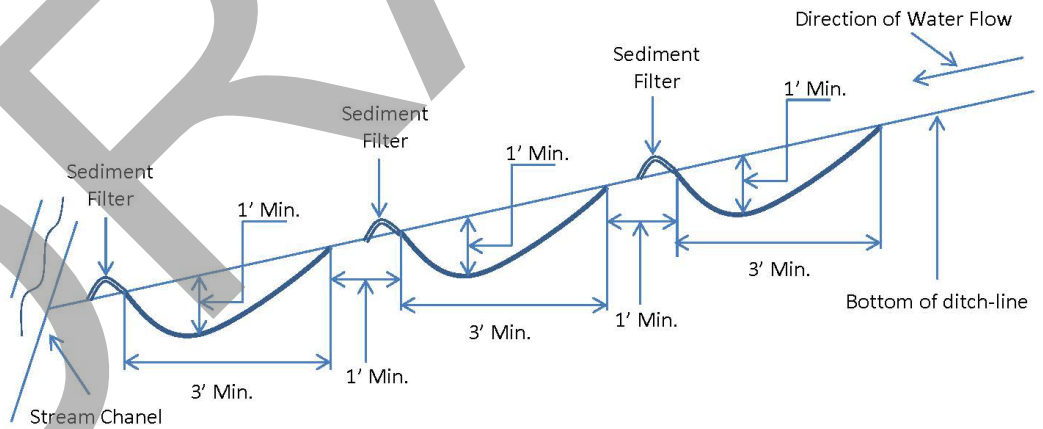
1. ALL WATER BARS SHALL BEGIN AT THE INTERSECTION OF THE ROADBED AND CUT SLOPE AND RUN ACROSS THE ENTIRE WIDTH OF THE ROADBED.
2. ALL WATER BARS SHALL HAVE FREE FLOWING OUTLETS.

SEDIMENT TRAP DETAIL

Top View

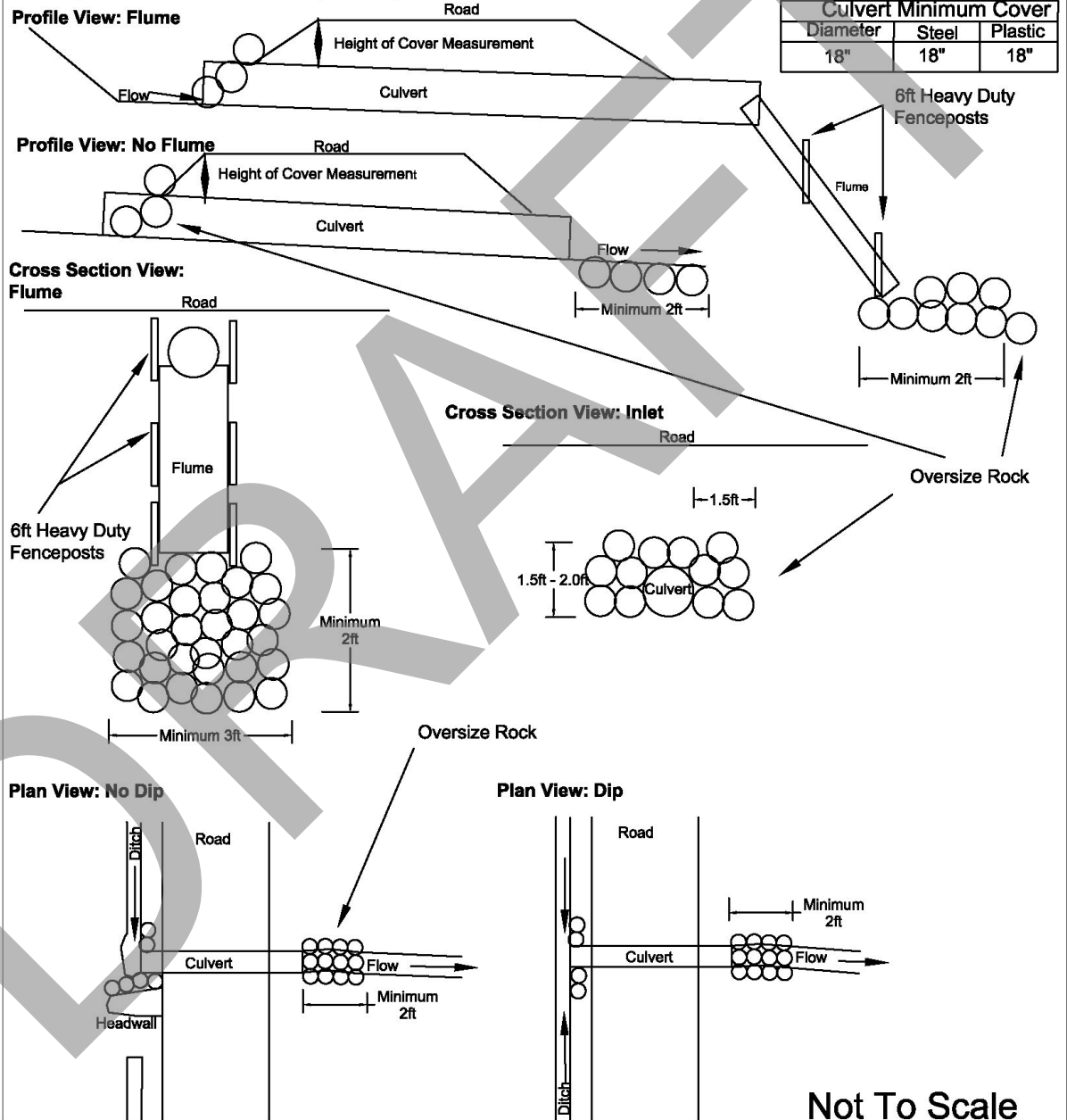


Profile View

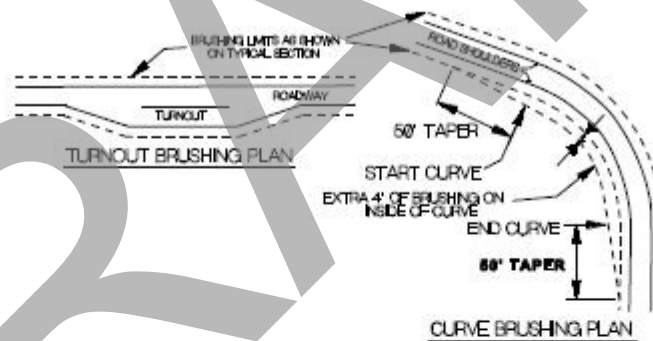
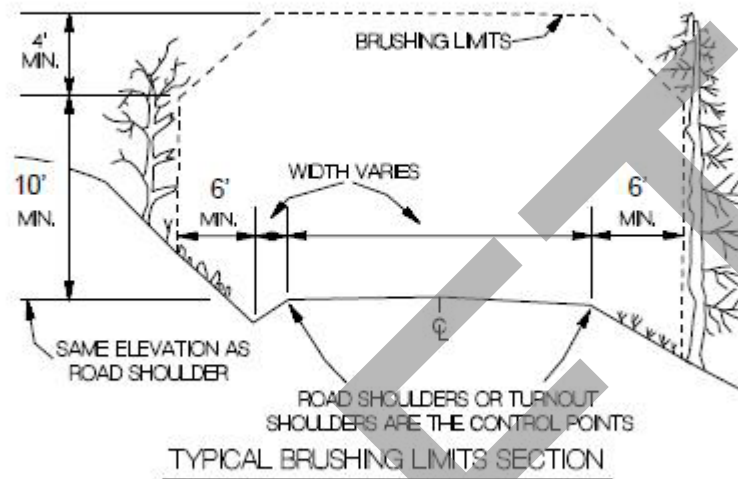


Typical Cross Drain Culvert Installation Detail Sheet

- Culvert lay shall not exceed 10%.
- Flumes longer than 10ft shall be staked on both sides at maximum intervals of 10ft with 6ft heavy duty steel fence posts, and fastened securely to the posts with No. 10 galvanized smooth wire or bolted to the fence posts.
- Oversize shall be placed using a "zero height drop method", and shall be set in conjunction with the culvert installation.
- Oversize shall be placed at headwalls, along the fill at the inlet, and at the end off flumes in accordance with this Detail. On culverts with no flume oversize shall be placed at the outlet as an energy dissipater as specified in this Detail. All oversize distance to be determined by the Contract Administrator.
- Backfill compaction for installations on existing roads shall be achieved using a jumping jack, or plate compactor on lifts not to exceed 8in. 3 complete passes per lift is required for compaction. Backfill shall be placed and compacted evenly on both sides of the culvert. Care shall be taken to ensure adequate compaction of backfill material under the haunches of the pipe. Excavation trench width shall be at least culvert diameter plus at least the width of the compactor footprint used..

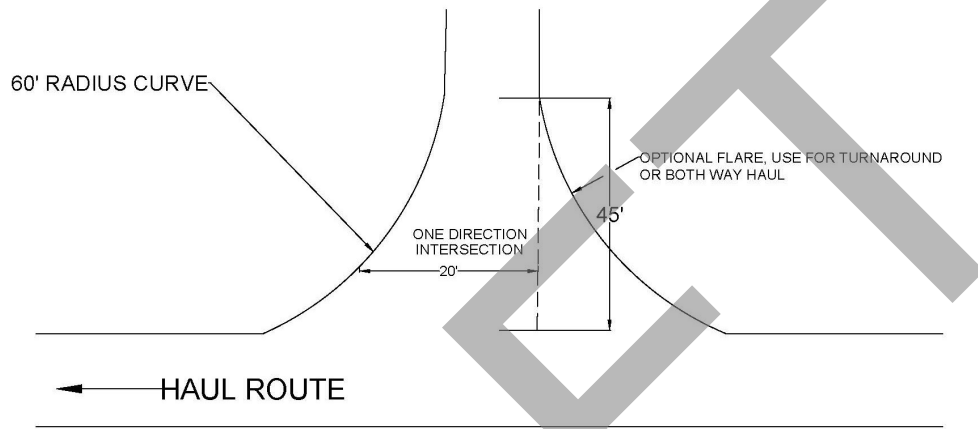


BRUSHING DETAIL



1. All vegetation within the brushing limits shall be cut to within 3 inches of the ground, unless otherwise directed by the Contract Administrator
2. All brush, trees, limbs, etc. shall be removed from the road surface, cut banks, culvert inlets/outlets, and ditch lines
3. All debris that may roll or move into the ditch line shall be removed and placed in a stable location

TYPICAL INTERSECTION



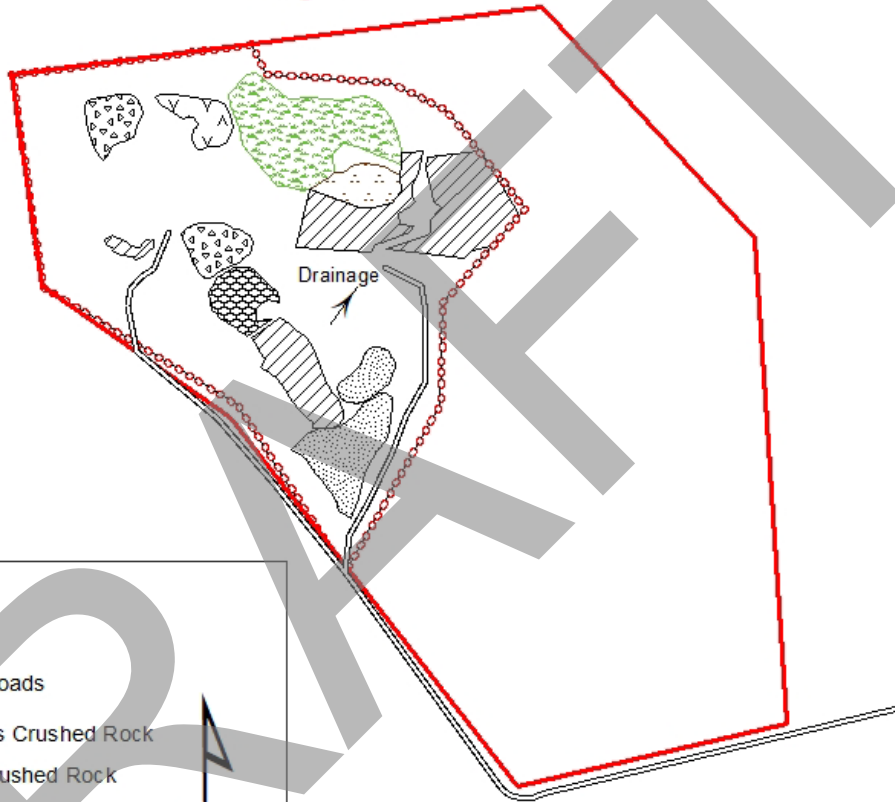
NOT TO SCALE

DRAFT

Place Pit

SE 1/4 Sec. 33, T.31N., R.7W., W.M.
Clallam County, Washington

8/18/2023
Greg Ellis



Legend

- Existing Roads
- 1 1/4" Minus Crushed Rock
- 2" Minus Crushed Rock
- 3" Minus Crushed Rock
- 3" Minus Jaw Run
- 36 Month Development Area
- Existing Pit Perimeter
- Overburden
- Permitted Boundry
- Reject Stockpile



0 150 300 600 Feet

1:3,600 (1" = 300')

Place Pit
ROCK SOURCE DEVELOPMENT PLAN
Sec. 33, T.31N., R.07W.
PIT USE REQUIREMENTS

PIT USE REQUIREMENTS include but are not limited to the following:

1. Activity and Marbled Murrelet restrictions per **Clause 1-25** and **Clause 1-27**
2. Purchaser shall give the Contract Administrator a minimum of 7 days' notice prior to commencing any operations, and prepare an approved ROCK SOURCE DEVELOPMENT PLAN as per **Clause 6-10**.
3. Only the quantities and sorts specified in this road plan for this sale may be used or manufactured, unless otherwise approved by the Contract Administrator in writing.
4. If Purchaser elects to use rock from a stockpile or from a pit face, Purchaser shall remove no more than the following volume of material (cubic yards truck measure) from the existing stockpile or pit face as shown on the PLAN VIEW and PROFILE VIEW, unless otherwise approved by the Contract Administrator in writing.
5. Maintain drainage of the pit floor and all drainage structures within the pit boundaries at all times to the designated settling ponds.
6. Excavated face height shall not exceed 15 feet.
7. All excavated slopes shall have a 1 1/2:1 backslope or less at the completion of operations.
8. A minimum 4 foot high berm shall be constructed and constantly maintained along the upper edge of excavated pit faces. No pit faces shall be left unblocked at any time.
9. All operations shall be completed prior to the end of each operating season, including but not limited to: drainage maintenance, sloping of the excavated face, and construction of berms, unless otherwise approved in writing by the Contract Administrator.
10. The quality and quantity of rock and materials are not guaranteed.
11. All material shall remain the property of the State.
12. At the conclusion of operations, Purchaser shall ask the Contract Administrator for written approval of the final rock source condition and compliance with the terms of this plan.
13. All operations shall be carried out in compliance with the regulation 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
14. All work shall be conducted according to relevant specifications in this Road Plan, and the Contract Administrator.

SUMMARY - Road Development Costs												
SALE NAME: Alley Cat	CONTRACT#: 30-104800				REGION: Olympic	DISTRICT: Straits						
LEGAL DESCRIPTION: 0												
ROAD NAME:	PA-H-650	PA-H-4210	PA-H-4150	PA-H-4130	PA-H-3505	PA-H-3510	2+40 Spur	0+50 Spur	PA-H-3515	0+85 Spur	PA-H-600	TOTAL: SHEET #2
ROAD TYPE:	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Recon.	
NUMBER OF STATIONS:	7.00	11.00	22.50	6.30	4.75	9.50	2.40	0.50	2.30	0.85	11.00	78.10
SIDESLOPE:	40%	20%	40%	20%	40%	30%	35%	20%	20%	30%	20%	315%
CLEARING AND GRUBBING:	\$1,329	\$1,530	\$4,771	\$797	\$1,113	\$2,014	\$562	\$63	\$291	\$199	\$1,097	\$13,767
ROAD BRUSHING:											\$198	\$3,312
EXCAVATION AND FILL:	\$3,362	\$2,486	\$15,848	\$1,424	\$2,281	\$2,684	\$814	\$113	\$520	\$240	\$2,486	\$32,257
ROAD GRADING:											\$72	\$72
DITCH CLEANING/CONSTRUCTION:											\$429	\$429
ROCK TOTALS (Cu. Yds.) / ROCK COSTS:												
Ballast:	4680	4,680	0	830	1720	510	400	760	200	70	0	4580
Surface:	2870	2,870	120	90	440	100	10	30	10	0	140	940
Over-size:	10	10	0	0	0	0	0	0	0	0	0	10
CULVERTS AND FLUMES:	\$924	\$4,536	\$9,772	\$2,464	\$1,232	\$2,772	\$1,212	\$0	\$0	\$0	\$924	\$23,857
STRUCTURES:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
MISC. EXPENSES:	\$41	\$64	\$397	\$37	\$28	\$56	\$14	\$3	\$15	\$5	\$145	\$803
OVERHEAD:	\$687	\$1,512	\$4,723	\$985	\$708	\$1,339	\$408	\$76	\$66	\$104	\$821	\$7,450
TOTAL COSTS:	\$9,280	\$20,409	\$63,758	\$13,300	\$9,559	\$18,071	\$5,507	\$1,033	\$890	\$1,403	\$9,944	\$53,153
COST PER STATION:	\$1,326	\$1,855	\$2,834	\$2,111	\$2,012	\$1,902	\$2,294	\$2,065	\$387	\$1,651	\$904	\$1,961
MOBILIZATION:			\$12,400									
ROAD DEACTIVATION AND ABANDONMENT COSTS:			\$0									
Prt Work		\$5,000										
NOTE: This appraisal has no allowance for profit and risk.												
Sheet 1 of 5												
Plans to be furnished by:												

SUMMARY - Road Development Costs									
SALE NAME:	Alley Cat	CONTRACT#:	30-104800	REGION:	Olympic	DISTRICT: Straits			
LEGAL DESCRIPTION: 0									
ROAD NAME:	PA-H-3500	PA-H-600	PA-H-4200	PA-H-4100	PA-I-2600	PA-I-2610	PA-I-2620	PA-H-3500	Posthaul
ROAD TYPE:	Recon.	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Posthaul
NUMBER OF STATIONS:	29.45	61.90	25.30	30.25	14.00	12.00	6.50	4.60	262.10
SIDESLOPE:	40%	0%	0%	0%	0%	0%	0%	0%	0%
CLEARING AND GRUBBING:	\$5,590	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ROAD BRUSHING:	\$530	\$1,114	\$455	\$545	\$252	\$216	\$117	\$83	\$0
EXCAVATION AND FILL:	\$14,143	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ROAD GRADING:	\$191	\$402	\$164	\$197	\$91	\$78	\$42	\$30	\$1,704
DITCH CLEANING/CONSTRUCTION:	\$1,149	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,120
ROCK TOTALS (Cu. Yds.)/ROCK COSTS:									
Ballast:	0	0	0	100	0	0	0	0	0
	\$0	\$0	\$0	\$985	\$0	\$0	\$0	\$0	\$0
Surface:	680	480	200	290	50	0	0	200	0
	\$16,962	\$12,348	\$5,389	\$7,814	\$1,347	\$0	\$0	\$1,920	\$0
Oversize:	0	0	0	10	0	0	0	0	0
	\$0	\$0	\$0	\$101	\$0	\$0	\$0	\$0	\$0
CULVERTS AND FLUMES:	\$1,848	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
STRUCTURES:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
MISC. EXPENSES:	\$0	\$362	\$148	\$177	\$82	\$70	\$38	\$27	\$1,533
OVERHEAD:	\$3,637	\$1,280	\$554	\$884	\$159	\$33	\$18	\$185	\$699.26
TOTAL COSTS:	\$44,050	\$15,507	\$6,711	\$10,701	\$1,932	\$397	\$215	\$2,245	\$7,056
COST PER STATION:	\$1,495.77	\$250.51	\$265.25	\$353.77	\$137.97	\$33.08	\$33.08	\$488.04	\$26.92

Forest Access Road Maintenance Specifications

Cuts and Fills

- Maintain slope lines to a stable gradient compatible with the construction materials cut slope/fill slope ratios. Remove slides up to 200 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 compact the road surface, turnouts, and shoulders to the original shape on the TYPICAL SECTION SHEET In slope or out slope 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, or as directed by the Contract Administrator.
- Remove shoulder berms, created by grading, to facilitate drainage, except as marked or directed by the Contract Administrator.
- For roads with geotextile fabric: spread surface aggregate to fill in soft spots and wheel ruts (barrel spread) to prevent damage to the geotextile fabric.

Drainage

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

Forest Access Road Maintenance Specifications

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.

