



TIMBER NOTICE OF SALE

SALE NAME: TREE WELL

AGREEMENT NO: 30-104820

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

SALE LOCATION: Sale located approximately 5 miles south of Port Angeles

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, timber type change, the PA-H-1050 road in Unit 1; timber sale boundary tags, trees marked with a red ring in Unit 2; timber sale boundary tags, timber type change, Little River Rd. and the PA-H-1000 in Unit 3.

All forest products above located on part(s) of Sections 21, 27, 28, 29 and 31 all in Township 30 North, Range 6 West, W.M., containing 203 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, Hemlock, Redcedar, Red alder, Maple, Silver 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% and less. Non-tethered self-leveling tracked equipment is limited to sustained slopes that are 45 percent and less. Rubber tired skidders are restricted unless approved by the Contact Administrator. Authority to use other equipment or to operate outside the equipment specifications detailed above must be approved in writing by the State.



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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:

26.70 stations of required construction. 9.95 stations of required reconstruction. 42.30 stations of optional construction. 209.60 stations of required prehaul maintenance. 52.80 stations of decommissioning.

Rock identified to be used out of a State lands rock pit shall meet specifications as identified within the Road Plan, which will be determined by the Contract Administrator. If the rock does not meet the specifications, a commercial source shall be used that does and at the Purchaser's expense.

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

On the PA-H-1050 from stations 28+60 to 39+60, 57+50 to 65+85 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 restriction 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: \$104,550.00 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, one on the PA-H-1000; you will need to obtain a AA1 key from Olympic Region Dispatch Center and a combination lock on Old Mill Rd.; please contact the Contract Administrator to obtain combination.

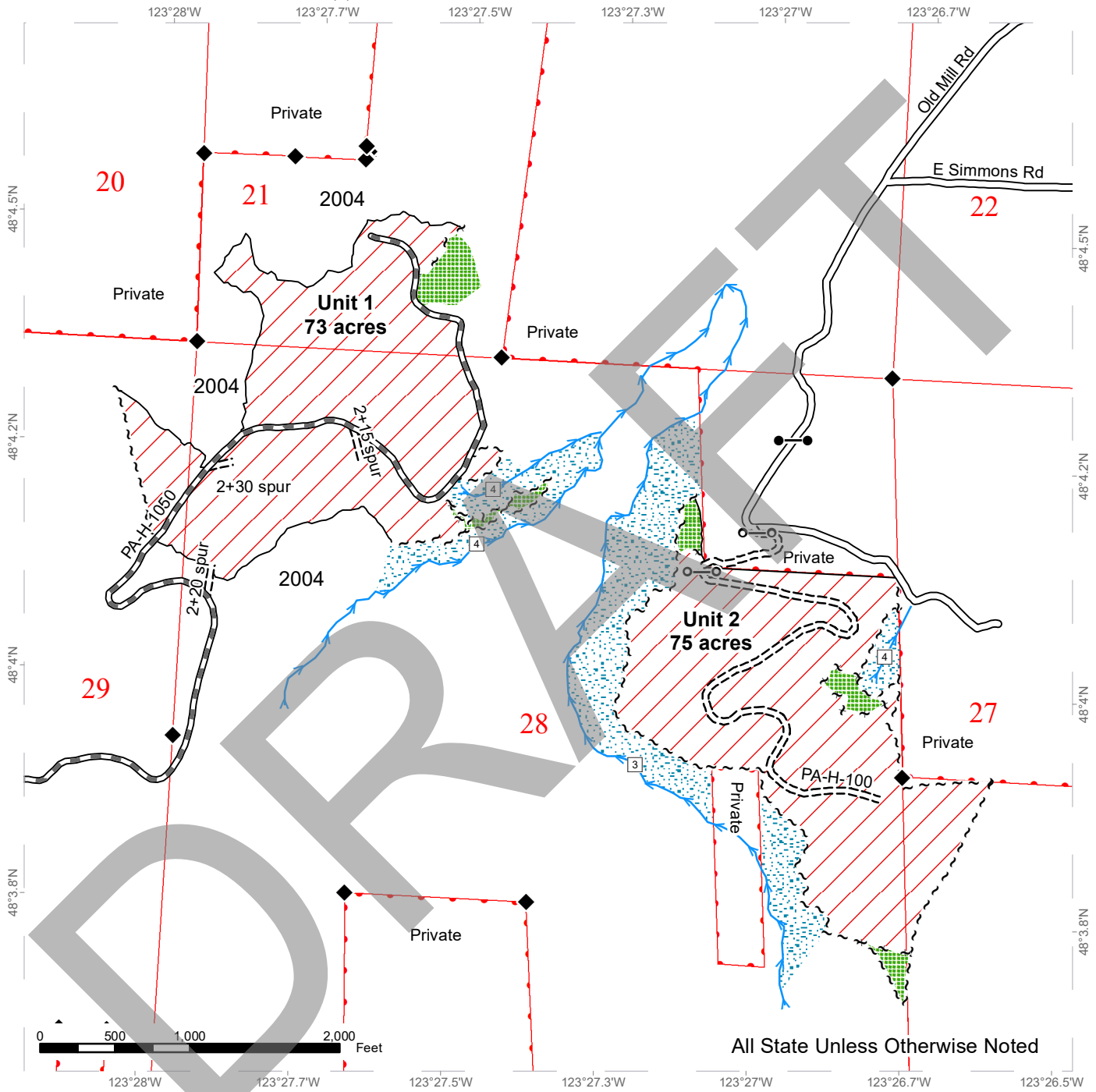
All trees 60 inches in Diameter at Breast Height (DBH) and greater shall not be felled unless for safety reasons, which must be approved by the Contract Administrator. If trees 60 in DBH or greater need to be felled for safety reasons, trees will be left where felled.

There are extreme hazard abatement requirements associated with this proposal, see contract for details.

TIMBER SALE MAP

SALE NAME: TREE WELL
AGREEMENT#: 30-104820
TOWNSHIP(S): T30R6W
TRUST(S): State Forest Transfer (1)

REGION: Olympic Region
COUNTY(S): Clallam
ELEVATION RGE: 1142-2052



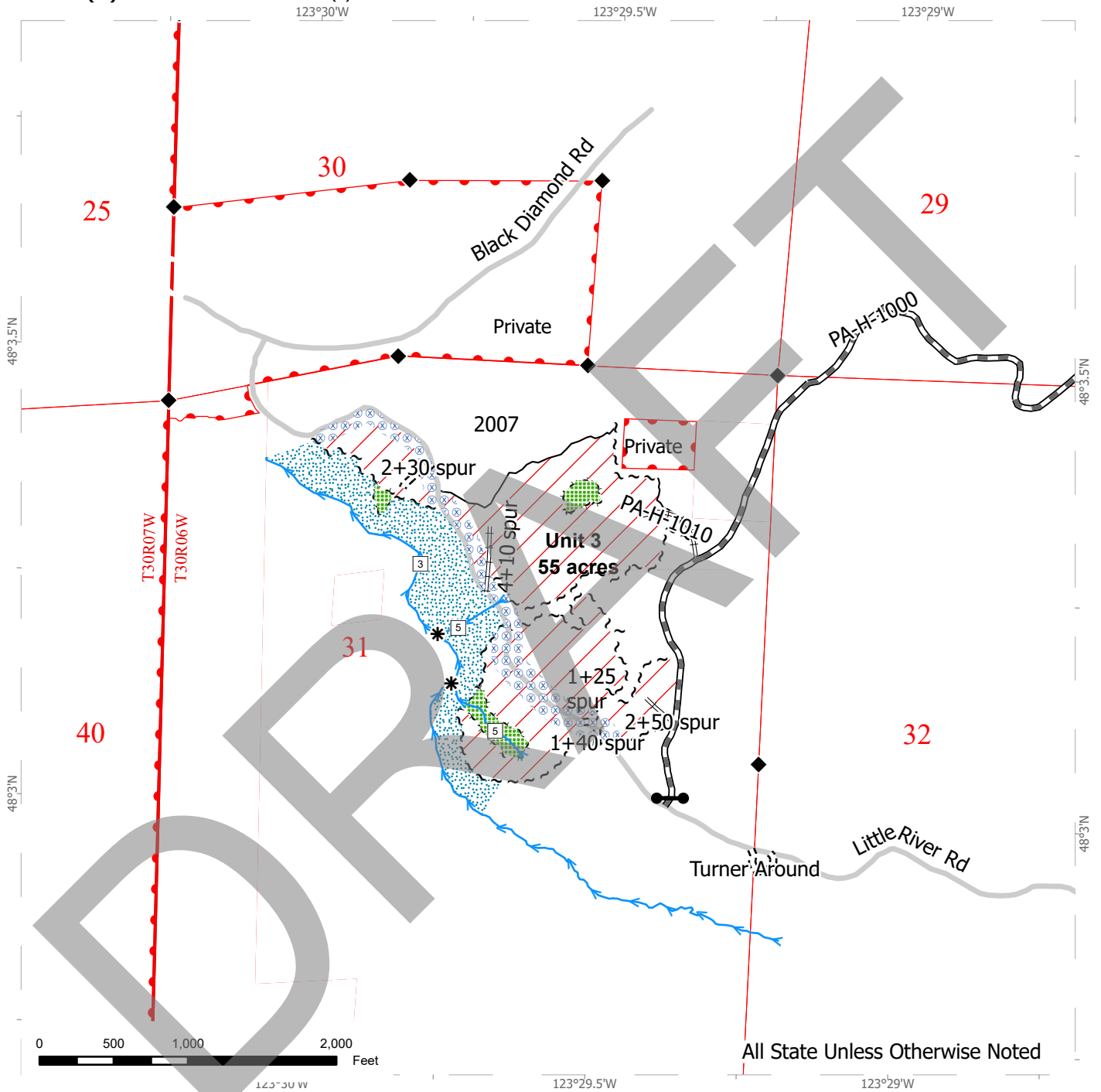
All State Unless Otherwise Noted

Variable Retention Harvest	Sale Boundary Tags	County Road	Streams
DNR Managed Lands	Timber Type Change	Existing Roads	Stream Type
Leave Tree Area	Leave Tree Tags	Required Pre-Haul Maintenance	Stream Type Break
Riparian Mgt Zone	Right of Way Tags	Required Construction	Survey Monument
Take / Removal Trees	Take / Removal Trees	Required Reconstruction	
	Optional Construction		

TIMBER SALE MAP

SALE NAME: TREE WELL
AGREEMENT #: 30-104820
TOWNSHIP(S): T30R6W
TRUST(S): State Forest Transfer (1)

REGION: Olympic Region
COUNTY(S): Clallam
ELEVATION RGE: 1120-2040



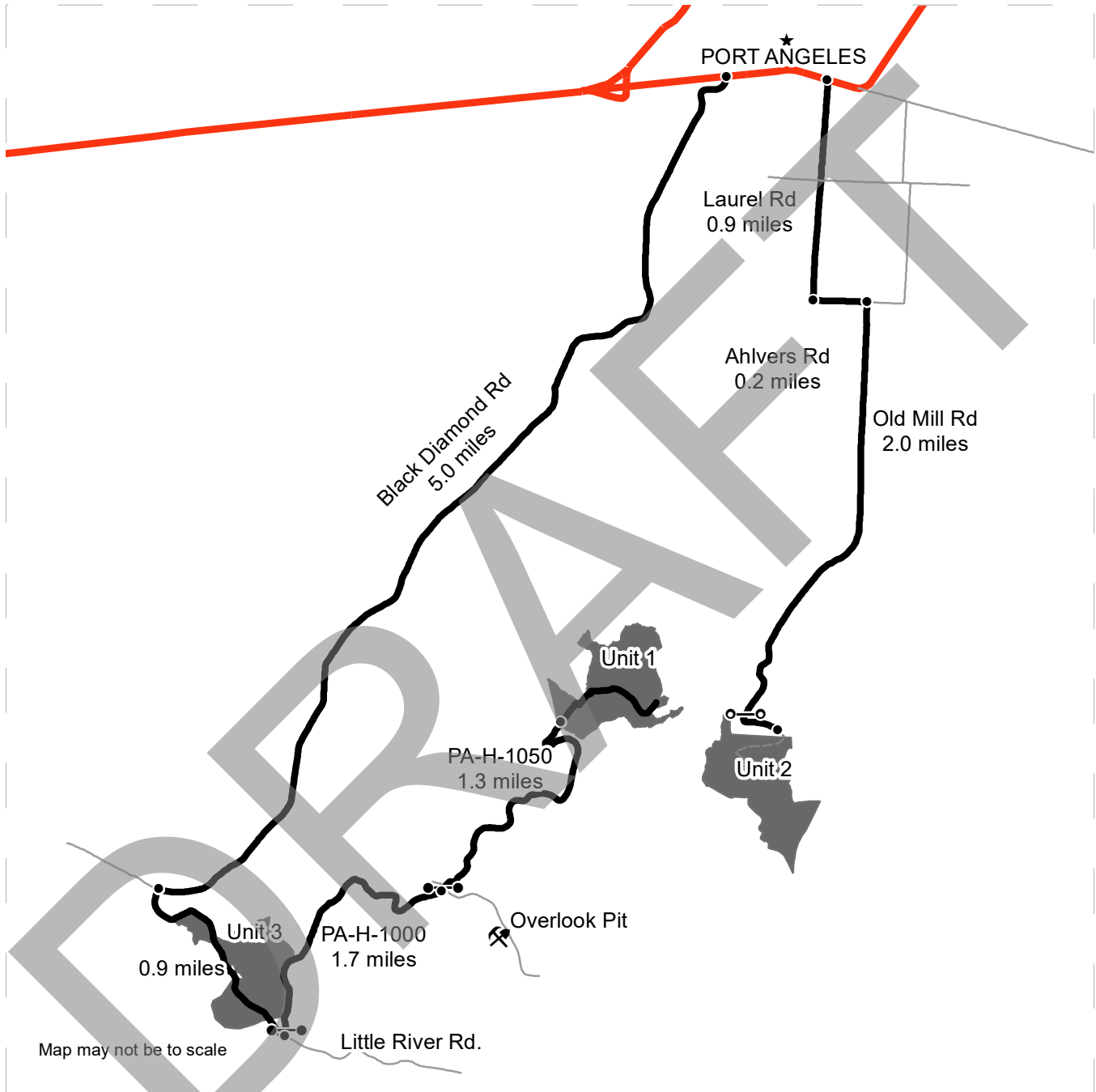
All State Unless Otherwise Noted

Variable Retention Harvest	Timber Type Change	Streams
Leave Tree Area	County Road	Stream Type
Riparian Mgt Zone	Existing Roads	Stream Break
Hazard Abatement Area	Required Pre-Haul Maintenance	Survey Monument
DNR Managed Lands	Required Construction	Gates (Corporate)
Sale Boundary Tags	Required Reconstruction	
Leave Tree Tags		

DRIVING MAP

SALE NAME: TREE WELL
 AGREEMENT#: 30-104820
 TOWNSHIP(S): T30R6W
 TRUST(S): State Forest Transfer (1)

REGION: Olympic Region
 COUNTY(S): Clallam
 ELEVATION RGE: 1142-2052



Map may not be to scale

- Timber Sale Unit
- Haul Route
- Other Road
- View Only Route
- Distance Indicator
- Gate (786)
- Gate (Combo)
- Rock Pit
- Town

DRIVING DIRECTIONS:

Unit 3: From Port Angeles, proceed south on Black Diamond Rd for 5.0 miles. Then turn left on Little River Rd and continue for 0.9 miles. Unit 3 will be on your left.

Unit 1: From unit 3, turn left onto PA-H-1000 and proceed through locked gate for 1.7 miles. Turn left onto PA-H-1050 and continue for 1.3 miles before arriving at Unit 1.

Unit 2: From Port Angeles, head south on Laurel Rd for 0.9 miles. Then turn left on Ahlvers Rd and continue for 0.2 miles. Turn right on Old Mill Rd and continue for 1.8 miles. Proceed through locked gate for 0.2 miles. Continue on foot following planned road for 0.1 miles before arriving at unit 2.



Timber Sale Cruise Report Tree Well

Sale Name: TREE WELL

Sale Type: LUMP SUM

Region: OLYMPIC

District: STRAITS

Lead Cruiser: Kevin Peterson

Other Cruisers:

Cruise Narrative:

Location:

This sale is in Port Angeles off of Little River Rd. Unit 1 needs an AA1 key to access and Unit 2 is past a private gate with a code to enter.

Cruise Design:

I used a 62.50/40 BAF for units 1 and 2, 40 BAF was used for RA and RC. For unit 3 I used a 40 BAF for all species. Merch height was determined at 40% of the diameter at 16'. Logs were cruised in 40', 36' and 34' lengths.

Timber Quality:

This sale is mostly mature DF with about a third of the DF being HQ. There was also some patches of pole quality timber throughout the sale. There is also a mixture of WH, RA and RC in patches throughout the sale. Main defects were sweep, spike knots and forked tops.

Logging and Stand Conditions:

This sale is 100% ground based harvest. Most of the sale is pretty brush free and easy to move through. There is a gentle to moderate slope in all the units.

Timber Sale Notice Volume (MBF)

Sp	DBH	Rings/In	Age	MBF Volume by Grade					
				All	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	17.0	8.6		4,841	100	1,974	2,121	611	36
WH	13.5			736		265	278	159	33
RC	15.9			322			260	61	
RA	16.2			210		61	102	34	13
MA	15.8			29		7		18	4
SF	18.0			12			11	1	
ALL	16.2	8.6		6,149	100	2,307	2,772	884	86

Timber Sale Notice Weight (tons)

Sp	Tons by Grade					
	All	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	40,466	747	14,926	18,739	5,772	282
WH	7,660		2,514	3,068	1,642	436

Sp	Tons by Grade					
	All	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
RC	3,036			2,505	531	
RA	2,020		607	954	328	131
MA	315		62		216	37
SF	114			100	14	
ALL	53,612	747	18,110	25,366	8,503	885

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 (%)
254.7	3.6	118.8	2.6	30,428	4.4

Timber Sale Unit Cruise Design

Unit	Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
TREE WELL U1	B2C: VR, 2 BAF (62.5, 40 for some species) Measure/Count Plots, Sighting Ht = 4.5 ft	72.3	76.6	36	18	1
TREE WELL U2	B2C: VR, 2 BAF (62.5, 40 for some species) Measure/Count Plots, Sighting Ht = 4.5 ft	74.5	78.1	38	14	0
TREE WELL U3	B1C: VR, 1 BAF (40) Measure/Count Plots, Sighting Ht = 4.5 ft	55.3	55.2	31	14	0
All		202.1	209.8	105	46	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	14.1	40	3,331	3,125	6.2	4,932.4	631.6
DF	LIVE	2 SAW	HQ-A	13.9	34	75	66	11.7	128.0	13.3
DF	LIVE	2 SAW	HQ-B	15.8	34	6,565	6,276	4.4	9,352.0	1,268.5
DF	LIVE	2 SAW	Pole	13.6	40	298	298	0.0	513.3	60.2
DF	LIVE	3 SAW	Domestic	9.0	40	10,580	10,244	3.2	18,328.4	2,070.3
DF	LIVE	3 SAW	HQ-B	12.1	32	134	134	0.0	210.8	27.0
DF	LIVE	3 SAW	Pole	8.2	40	116	116	0.0	200.3	23.4
DF	LIVE	4 SAW	Domestic	5.6	29	3,086	3,023	2.0	5,772.5	610.9
DF	LIVE	SPECIAL MILL	HQ-A	18.0	34	520	496	4.7	747.0	100.2
DF	LIVE	UTILITY	Pulp	6.6	34	178	178	0.0	281.7	36.0
MA	LIVE	2 SAW	Domestic	13.5	30	41	33	19.9	62.2	6.7
MA	LIVE	4 SAW	Domestic	8.9	37	107	90	15.9	215.7	18.2

Sp	Status	Grade	Sort	Dia	Len	BF Gross	BF Net	Defect %	Tons	MBF Net
MA	LIVE	UTILITY	Pulp	6.7	24	20	20	0.0	36.8	4.1
RA	LIVE	2 SAW	Domestic	13.6	35	362	302	16.6	607.4	61.0
RA	LIVE	3 SAW	Domestic	10.7	39	556	505	9.1	954.2	102.0
RA	LIVE	4 SAW	Domestic	6.2	25	183	167	8.9	327.6	33.8
RA	LIVE	UTILITY	Pulp	5.6	26	63	63	0.0	131.0	12.7
RC	LIVE	3 SAW	Domestic	9.7	36	1,506	1,288	14.5	2,504.5	260.2
RC	LIVE	4 SAW	Domestic	5.3	25	303	303	0.0	531.4	61.3
SF	LIVE	3 SAW	Domestic	10.1	40	54	54	0.0	99.7	10.9
SF	LIVE	4 SAW	Domestic	5.5	18	7	7	0.0	14.2	1.3
WH	LIVE	2 SAW	Domestic	13.8	40	1,361	1,313	3.5	2,514.4	265.4
WH	LIVE	3 SAW	Domestic	8.2	40	1,447	1,377	4.9	3,068.3	278.3
WH	LIVE	4 SAW	Domestic	5.3	29	793	786	0.8	1,642.1	158.9
WH	LIVE	UTILITY	Pulp	5.4	31	164	164	0.0	435.6	33.1

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	34	73	0.0	176.1	14.8
DF	5 - 8	LIVE	Domestic	6.2	33	6,697	2.2	13,164.5	1,353.4
DF	5 - 8	LIVE	Pole	7.5	40	50	0.0	95.3	10.0
DF	9 - 11	LIVE	Pole	9.0	40	66	0.0	105.0	13.4
DF	9 - 11	LIVE	Domestic	10.6	40	5,914	4.0	10,039.7	1,195.2
DF	12 - 14	LIVE	Domestic	13.1	40	2,869	4.2	4,489.7	579.9
DF	12 - 14	LIVE	Pole	13.6	40	298	0.0	513.3	60.2
DF	12 - 14	LIVE	HQ-B	13.7	34	1,296	4.2	2,141.2	262.0
DF	12 - 14	LIVE	HQ-A	13.9	34	66	11.7	128.0	13.3
DF	15 - 19	LIVE	HQ-B	16.4	34	4,932	4.5	7,190.4	996.7
DF	15 - 19	LIVE	Domestic	16.7	40	737	7.0	1,109.1	149.0
DF	15 - 19	LIVE	HQ-A	17.4	34	397	5.8	616.3	80.2
DF	20+	LIVE	HQ-B	20.5	34	182	0.0	231.1	36.8
DF	20+	LIVE	Pulp	21.9	30	105	0.0	105.6	21.1
DF	20+	LIVE	HQ-A	23.7	34	99	0.0	130.7	20.0
DF	20+	LIVE	Domestic	27.2	32	176	12.5	230.2	35.5
MA	5 - 8	LIVE	Pulp	5.0	28	11	0.0	21.0	2.2
MA	5 - 8	LIVE	Domestic	8.1	40	57	17.4	152.8	11.5
MA	9 - 11	LIVE	Pulp	9.4	18	10	0.0	15.9	2.0
MA	9 - 11	LIVE	Domestic	10.8	30	33	13.2	62.9	6.6
MA	12 - 14	LIVE	Domestic	13.5	30	33	19.9	62.2	6.7

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
RA	5 - 8	LIVE	Pulp	5.6	26	63	0.0	131.0	12.7
RA	5 - 8	LIVE	Domestic	6.0	25	153	7.0	290.3	30.9
RA	9 - 11	LIVE	Domestic	10.5	38	519	9.7	991.6	105.0
RA	12 - 14	LIVE	Domestic	13.6	35	302	16.6	607.4	61.0
RC	5 - 8	LIVE	Domestic	5.9	28	592	3.2	1,162.2	119.7
RC	9 - 11	LIVE	Domestic	10.3	36	533	10.5	984.7	107.8
RC	12 - 14	LIVE	Domestic	13.1	36	179	24.2	373.1	36.1
RC	15 - 19	LIVE	Domestic	16.2	36	287	21.5	515.9	57.9
SF	5 - 8	LIVE	Domestic	5.5	18	7	0.0	14.2	1.3
SF	9 - 11	LIVE	Domestic	10.1	40	54	0.0	99.7	10.9
WH	5 - 8	LIVE	Pulp	5.4	32	164	0.0	435.6	33.1
WH	5 - 8	LIVE	Domestic	6.1	33	1,672	3.3	3,728.8	337.9
WH	9 - 11	LIVE	Domestic	9.5	40	492	3.7	981.7	99.4
WH	12 - 14	LIVE	Domestic	13.6	40	1,140	2.5	2,207.1	230.4
WH	15 - 19	LIVE	Domestic	16.1	40	173	10.0	307.3	34.9

Cruise Unit Report TREE WELL U1

Unit Sale Notice Volume (MBF): TREE WELL U1

Sp	DBH	Rings/In	Age	MBF Volume by Grade				
				All	2 Saw	3 Saw	4 Saw	Utility
DF	17.7	8.5		1,636	846	586	204	
WH	14.0			220	66	112	42	
RC	16.2			172		139	33	
MA	15.8			29	7		18	4
RA	18.0			26		22		4
SF	18.0			12		11	1	
ALL	16.8	8.5		2,095	918	870	298	8

Unit Cruise Design: TREE WELL U1

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	72.3	76.6	36	18	1

Unit Cruise Summary: TREE WELL U1

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	38	92	2.6	2
WH	7	17	0.5	0
RC	13	31	0.9	0
MA	4	5	0.1	0
RA	1	3	0.1	0
SF	1	1	0.0	0
ALL	64	149	4.1	2

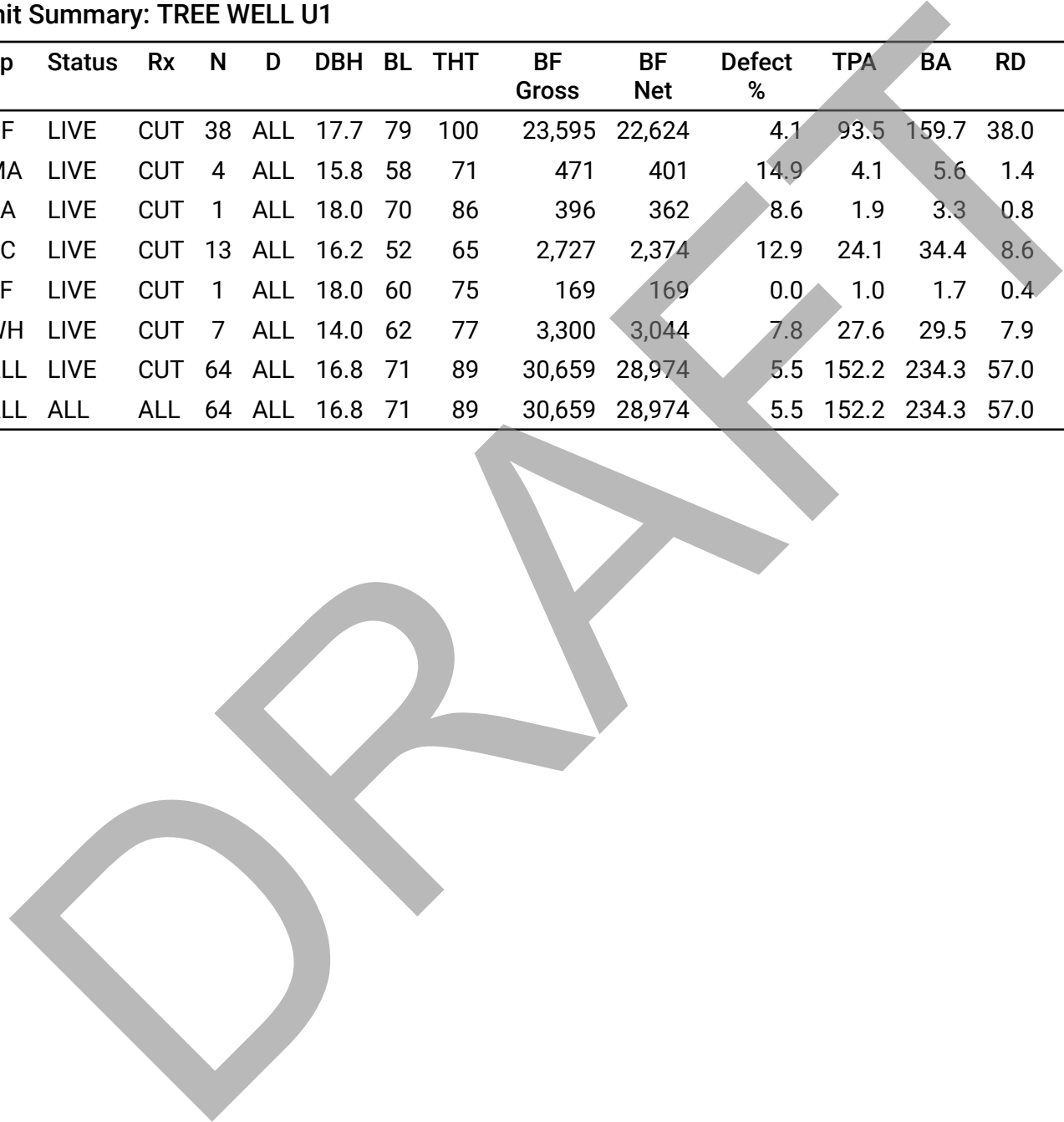
Unit Cruise Statistics: TREE WELL U1

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	159.7	82.8	13.8	141.6	28.7	4.7	22,624	87.7	14.6
WH	29.5	155.9	26.0	103.1	31.4	11.9	3,044	159.0	28.6
RC	34.4	169.2	28.2	68.9	30.5	8.5	2,374	171.9	29.4
MA	5.6	390.7	65.1	72.1	24.8	12.4	401	391.5	66.3
RA	3.3	442.1	73.7	108.7	0.0	0.0	362	442.1	73.7

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 (%)
SF	1.7	600.0	100.0	97.3	0.0	0.0	169	600.0	100.0
ALL	234.3	42.5	7.1	123.7	37.7	4.7	28,974	56.8	8.5

Unit Summary: TREE WELL U1

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	38	ALL	17.7	79	100	23,595	22,624	4.1	93.5	159.7	38.0	1,635.7
MA	LIVE	CUT	4	ALL	15.8	58	71	471	401	14.9	4.1	5.6	1.4	29.0
RA	LIVE	CUT	1	ALL	18.0	70	86	396	362	8.6	1.9	3.3	0.8	26.2
RC	LIVE	CUT	13	ALL	16.2	52	65	2,727	2,374	12.9	24.1	34.4	8.6	171.7
SF	LIVE	CUT	1	ALL	18.0	60	75	169	169	0.0	1.0	1.7	0.4	12.2
WH	LIVE	CUT	7	ALL	14.0	62	77	3,300	3,044	7.8	27.6	29.5	7.9	220.1
ALL	LIVE	CUT	64	ALL	16.8	71	89	30,659	28,974	5.5	152.2	234.3	57.0	2,094.8
ALL	ALL	ALL	64	ALL	16.8	71	89	30,659	28,974	5.5	152.2	234.3	57.0	2,094.8



Cruise Unit Report TREE WELL U2

Unit Sale Notice Volume (MBF): TREE WELL U2

Sp	DBH	Rings/In	Age	MBF Volume by Grade					
				All	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	17.4	9.0		2,143	67	775	986	279	36
WH	13.0			365		147	97	97	24
RA	15.9			183		61	80	34	9
RC	13.7			76			58	18	
ALL	16.2	9.0		2,767	67	983	1,222	427	69

Unit Cruise Design: TREE WELL 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	74.5	78.1	38	14	0

Unit Cruise Summary: TREE WELL U2

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	45	132	3.5	4
WH	10	29	0.8	0
RA	12	24	0.6	0
RC	4	10	0.3	0
ALL	71	195	5.1	4

Unit Cruise Statistics: TREE WELL 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	217.1	67.8	11.0	132.5	31.9	4.8	28,760	75.0	12.0
WH	47.7	168.1	27.3	102.8	35.7	11.3	4,905	171.8	29.5
RA	25.3	158.0	25.6	97.4	15.0	4.3	2,461	158.7	26.0
RC	10.5	244.9	39.7	96.8	20.5	10.3	1,019	245.8	41.0
ALL	300.6	33.8	5.5	123.6	32.8	3.9	37,145	47.1	6.7

Unit Summary: TREE WELL U2

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	45	ALL	17.4	77	97	29,992	28,760	4.1	131.5	217.1	52.0	2,142.6
RA	LIVE	CUT	12	ALL	15.9	59	71	2,773	2,461	11.3	18.3	25.3	6.3	183.3
RC	LIVE	CUT	4	ALL	13.7	44	54	1,119	1,019	8.9	10.3	10.5	2.8	75.9
WH	LIVE	CUT	10	ALL	13.0	58	71	4,957	4,905	1.1	51.7	47.7	13.2	365.4
ALL	LIVE	CUT	71	ALL	16.1	69	86	38,841	37,145	4.4	211.8	300.6	74.5	2,767.3
ALL	ALL	ALL	71	ALL	16.1	69	86	38,841	37,145	4.4	211.8	300.6	74.5	2,767.3

DRAFT

Cruise Unit Report TREE WELL U3

Unit Sale Notice Volume (MBF): TREE WELL U3

Sp	DBH	Rings/In	Age	MBF Volume by Grade					
				All	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	15.0	8.0		1,063	33	353	549	128	
WH	13.9			150		53	69	20	9
RC	17.6			74			63	11	
ALL	15.0	8.0		1,287	33	406	680	159	9

Unit Cruise Design: TREE WELL U3

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (40) Measure/Count Plots, Sighting Ht = 4.5 ft	55.3	55.2	31	14	0

Unit Cruise Summary: TREE WELL U3

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	56	139	4.5	4
WH	7	18	0.6	0
RC	5	13	0.4	0
ALL	68	170	5.5	4

Unit Cruise Statistics: TREE WELL 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	179.4	29.8	5.4	107.2	36.3	4.9	19,224	47.0	7.2
WH	23.2	202.7	36.4	117.0	40.7	15.4	2,717	206.7	39.5
RC	16.8	182.4	32.8	79.7	26.0	11.6	1,337	184.2	34.8
ALL	219.4	31.2	5.6	106.1	37.0	4.5	23,279	48.4	7.2

Unit Summary: TREE WELL U3

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	56	ALL	15.0	63	79	19,681	19,224	2.3	146.2	179.4	46.3	1,063.1
RC	LIVE	CUT	5	ALL	17.6	63	79	1,539	1,337	13.1	9.9	16.8	4.0	74.0

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
WH	LIVE	CUT	7	ALL	13.9	61	74	2,767	2,717	1.8	22.0	23.2	6.2	150.3
ALL	LIVE	CUT	68	ALL	15.0	63	78	23,986	23,279	2.9	178.1	219.4	56.5	1,287.3
ALL	ALL	ALL	68	ALL	15.0	63	78	23,986	23,279	2.9	178.1	219.4	56.5	1,287.3

DRAFT

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

TREE WELL TIMBER SALE ROAD PLAN
CLALLAM COUNTY
STRAITS DISTRICT
OLYMPIC REGION

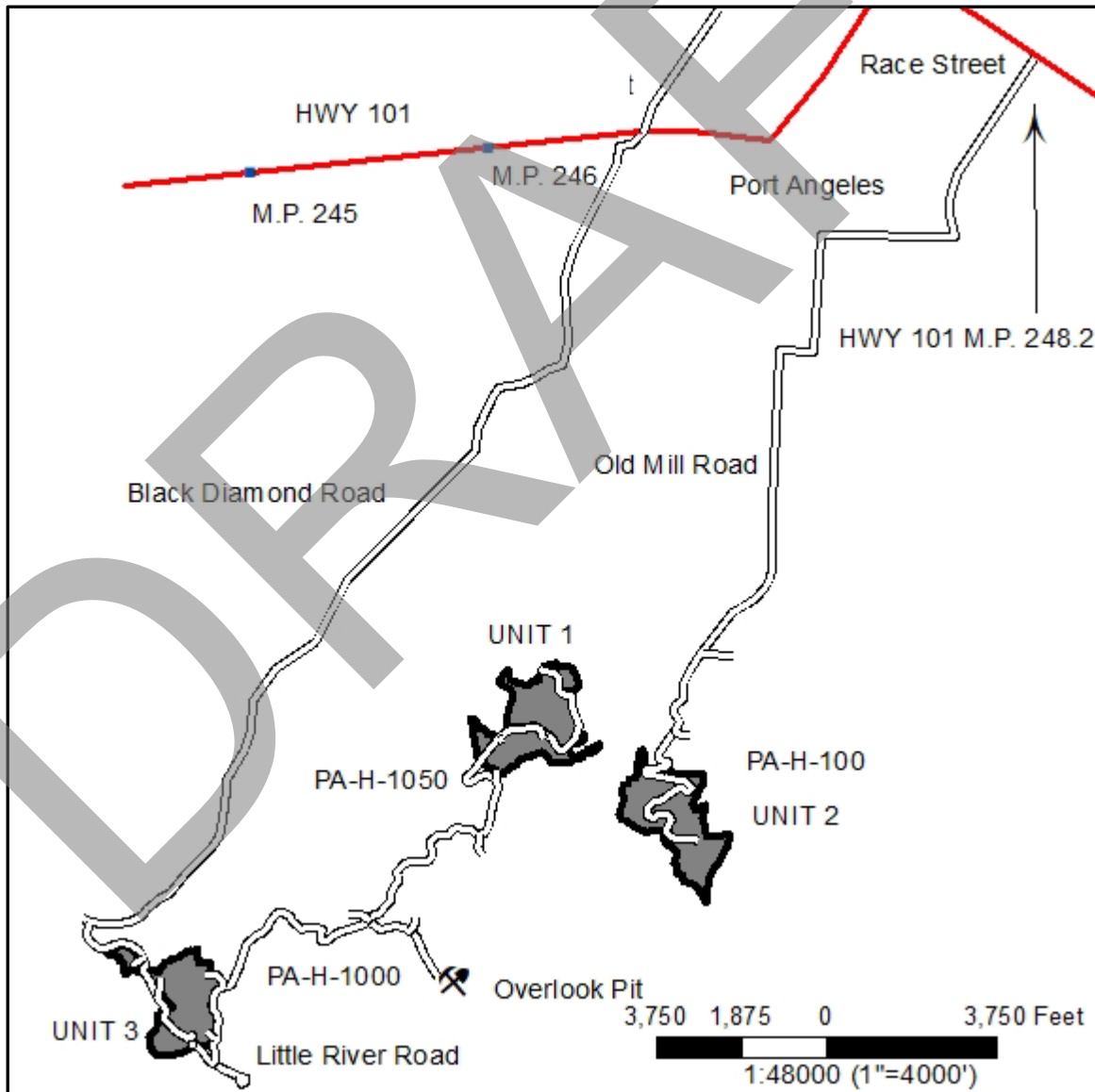
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DISTRICT ENGINEER: GREG ELLIS

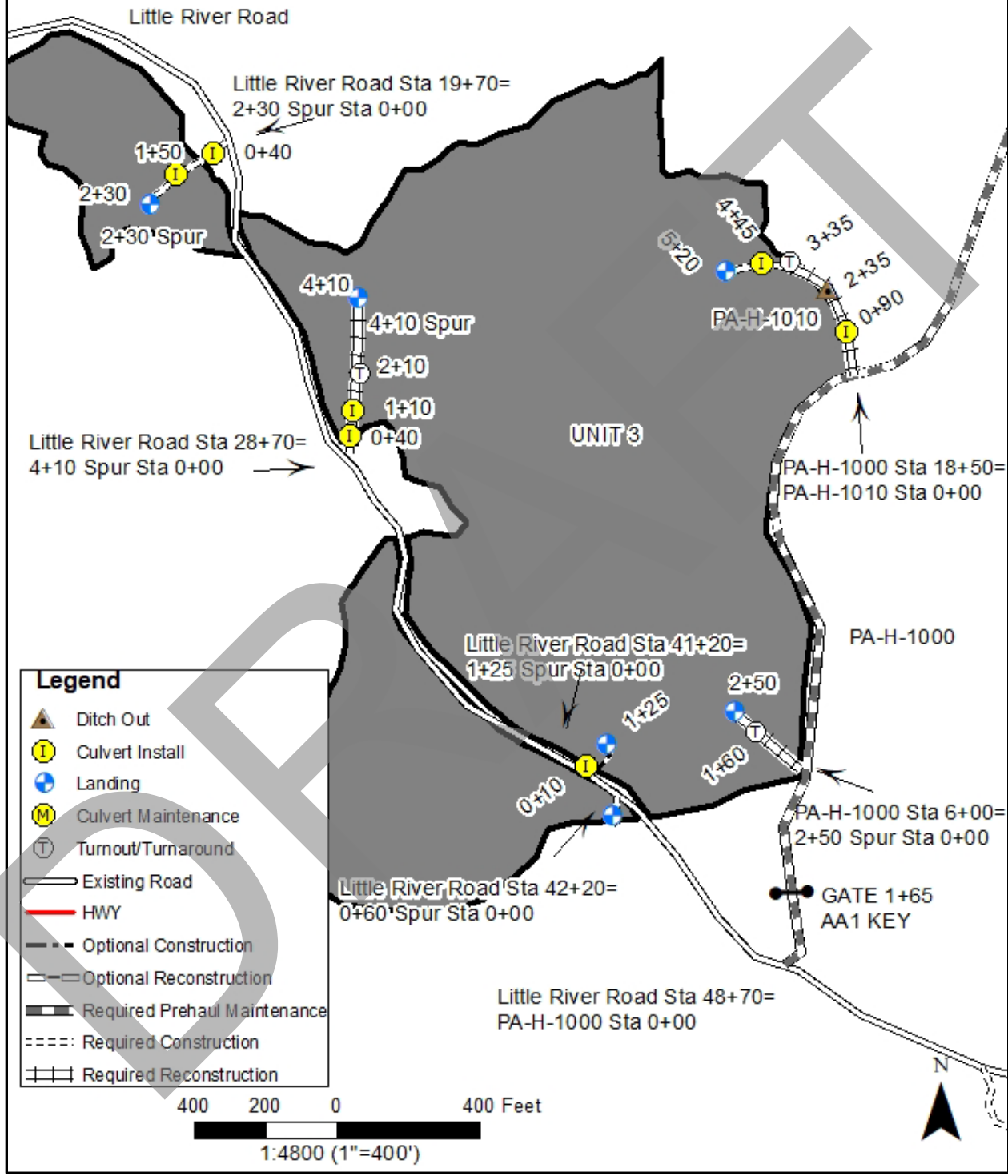
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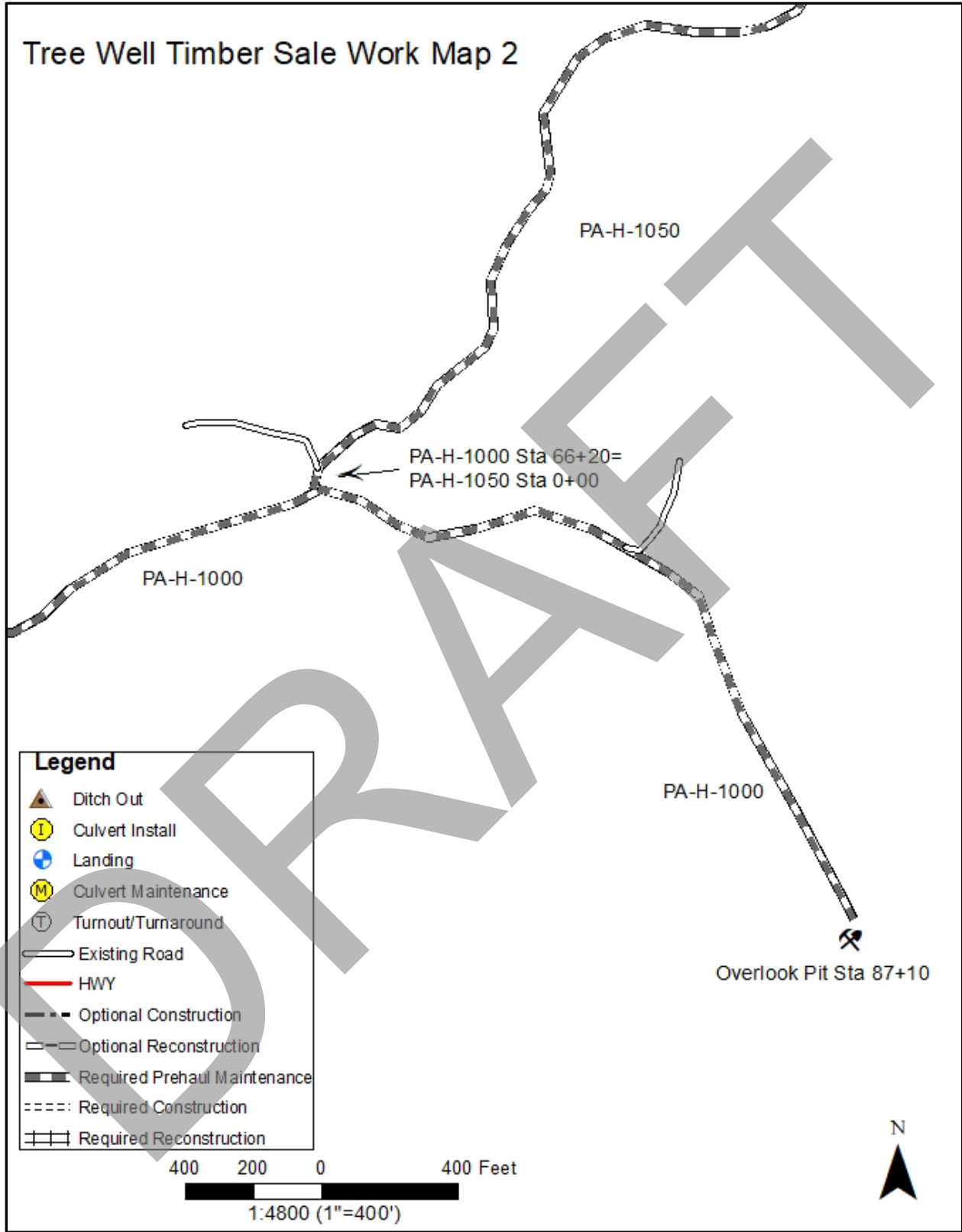
SECTION 0 – SCOPE OF PROJECT

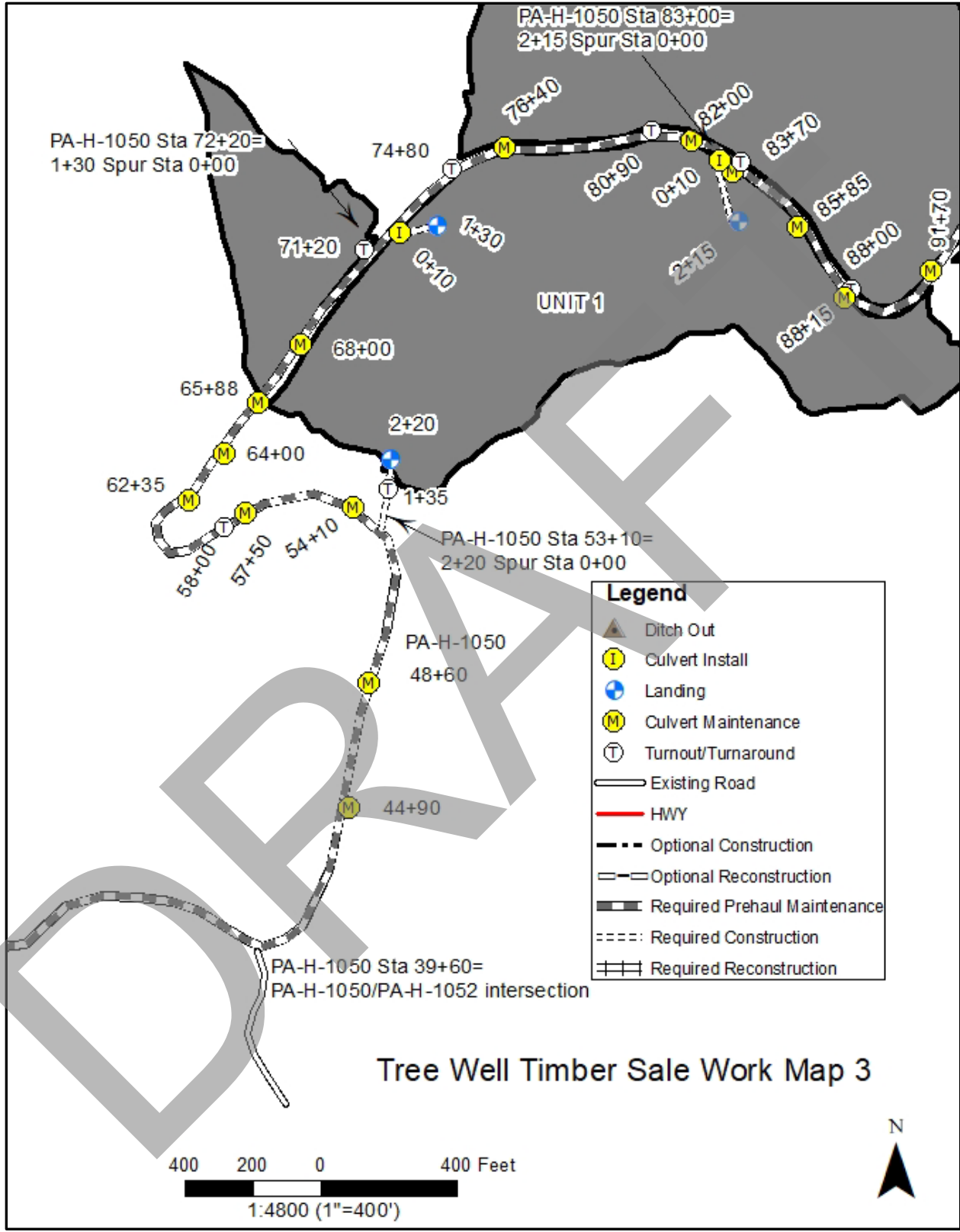


Tree Well Timber Sale Work Map 1

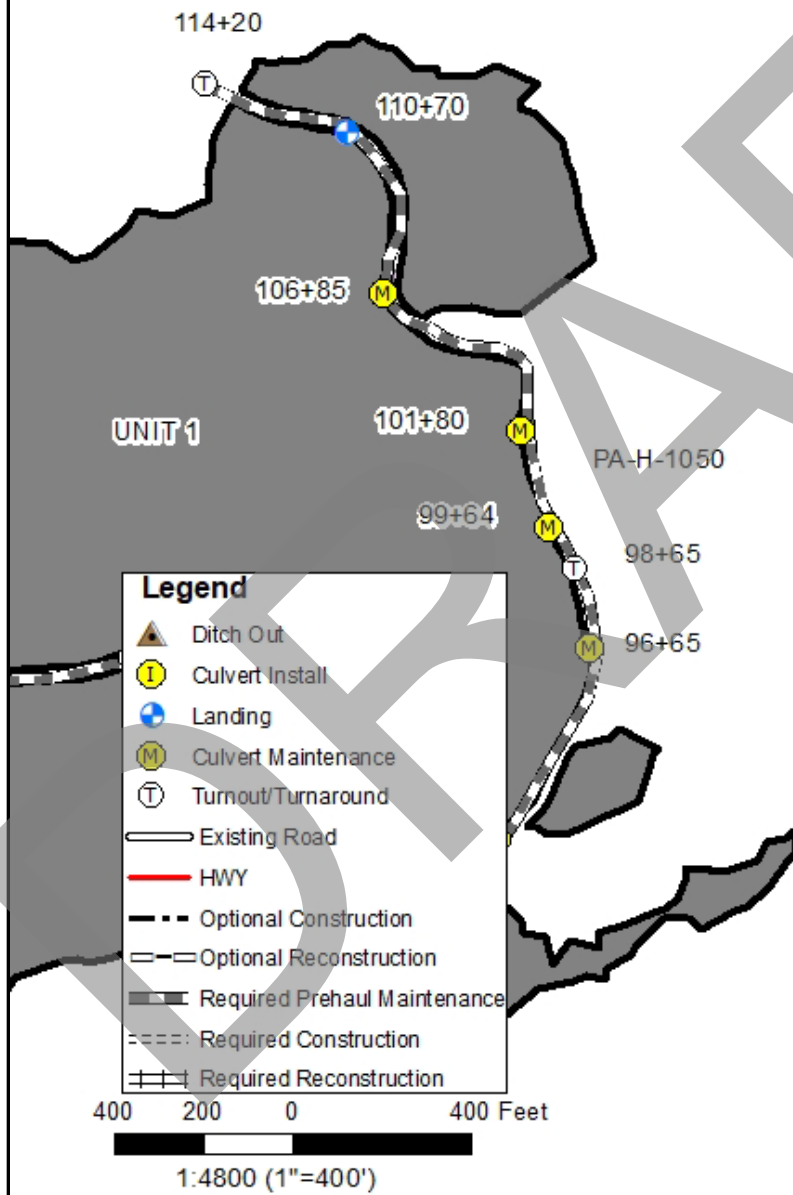


Tree Well Timber Sale Work Map 2

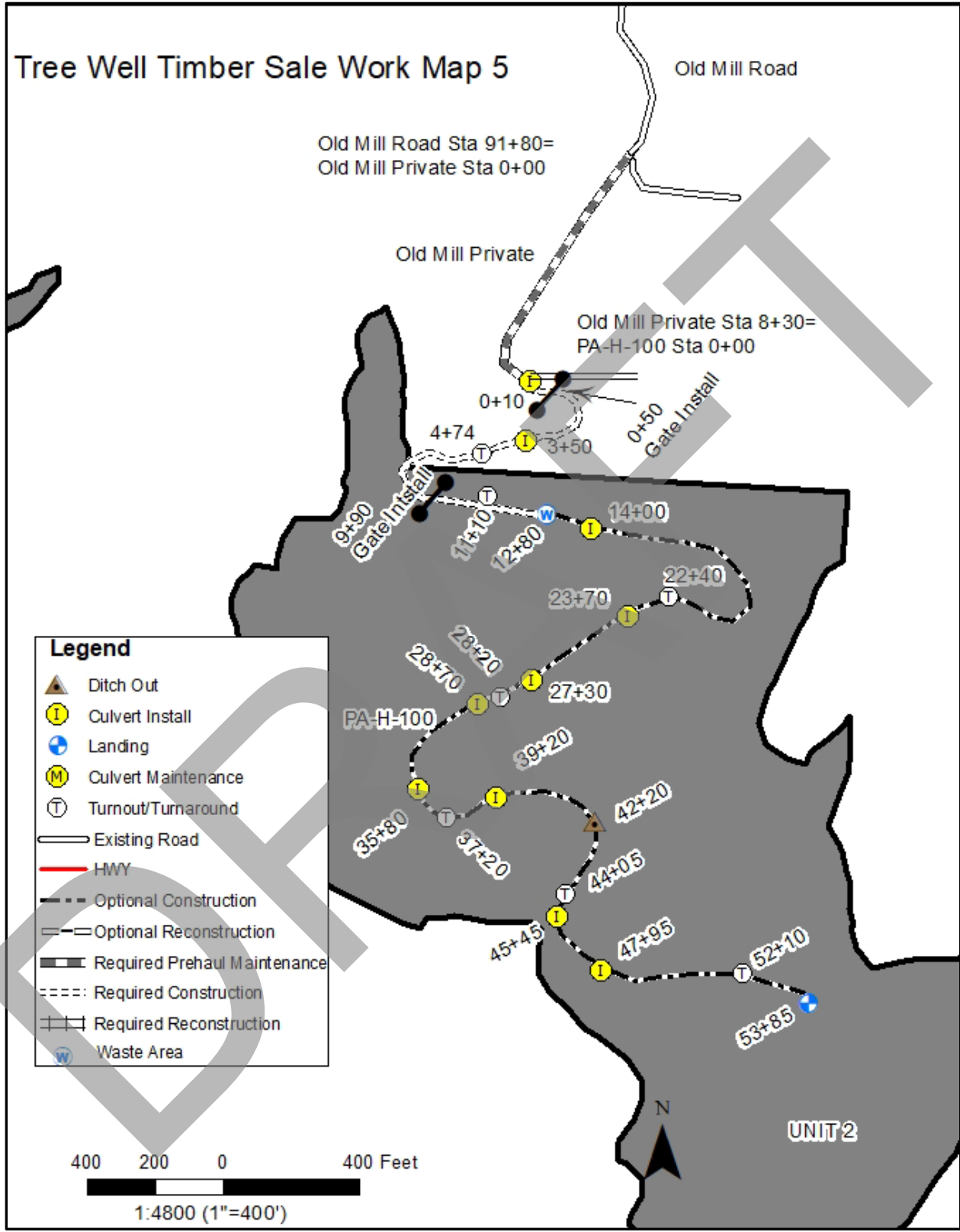




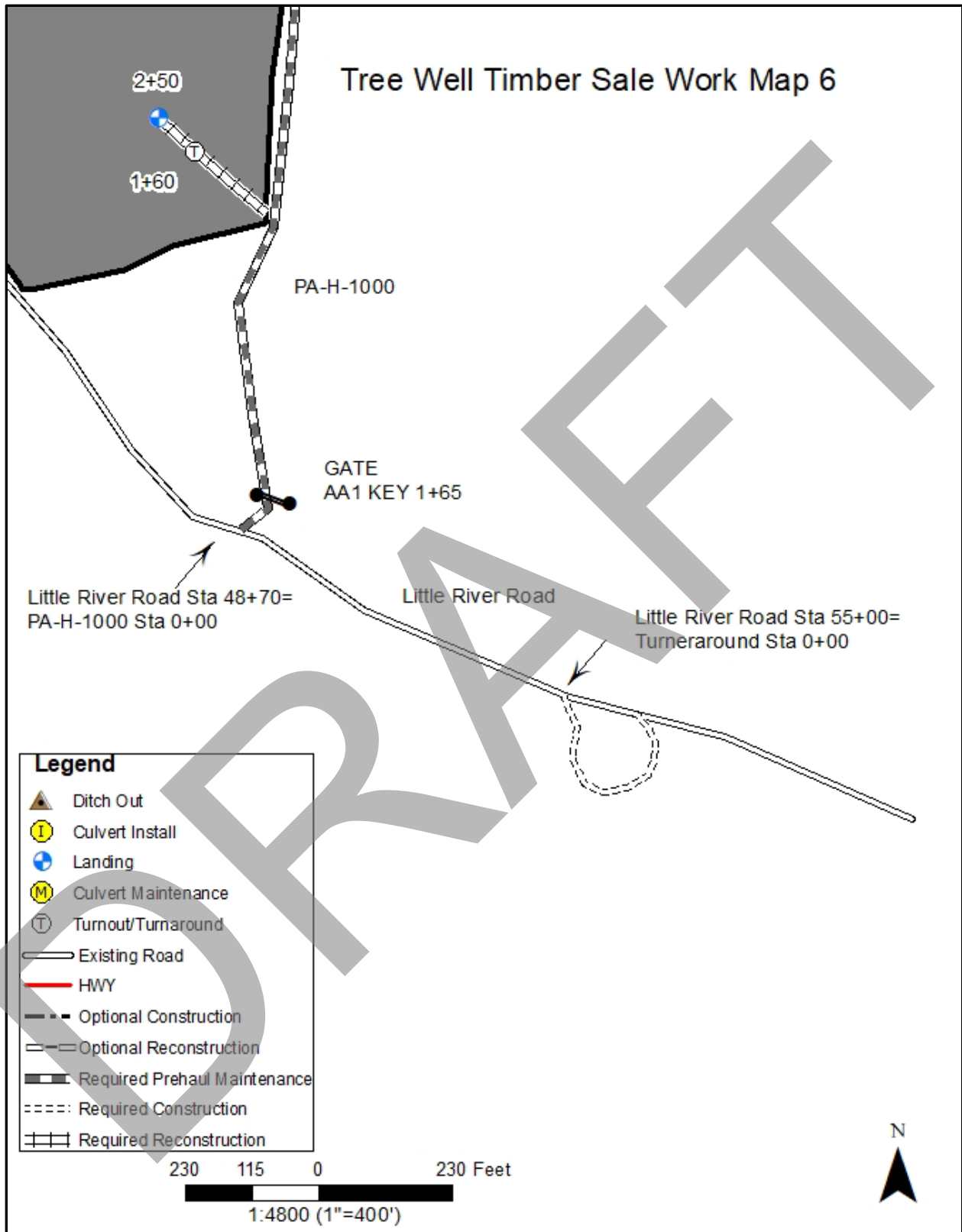
Tree Well Timber Sale Work Map 4



Tree Well Timber Sale Work Map 5



Tree Well Timber Sale Work Map 6



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>
2+30 Spur	0+00 to 2+30	Construction
4+10 Spur	0+00 to 4+10	Reconstruction
0+60 Spur	0+00 to 0+60	Construction
PA-H-1000	0+00 to 87+10	Prehaul Maintenance
TurnerAround	0+00 to 3+50	Construction
2+50 Spur	0+00 to 2+50	Reconstruction
PA-H-1010	0+00 to 3+35	Reconstruction
PA-H-1010	3+35 to 5+20	Construction
PA-H-1050	0+00 to 114+20	Prehaul Maintenance
2+20 Spur	0+00 to 2+20	Construction
1+30 Spur	0+00 to 1+30	Construction
2+15 Spur	0+00 to 2+15	Construction
Old Mill Private	0+00 to 8+30	Prehaul Maintenance
PA-H-100	0+00 to 12+80	Construction

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>
1+25 Spur	0+00 to 1+25	Construction
PA-H-100	12+80 to 53+85	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>
2+30 Spur	0+00 to 2+30	See Below
0+60 Spur	0+00 to 0+60	
TurnerAround	0+00 to 3+50	
PA-H-1010	3+35 to 5+20	
2+20 Spur	0+00 to 2+20	
1+30 Spur	0+00 to 1+30	
2+15 Spur	0+00 to 2+15	
PA-H-100	0+00 to 53+85	

1+25 Spur	0+00 to 1+25	
Total Stations	69.0 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>
4+10 Spur	0+00 to 4+10	See Below
2+50 Spur	0+00 to 2+50	
PA-H-1010	0+00 to 3+35	
Total Stations	9.95 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-1000	0+00 to 87+10	Grade, shape and compact existing running surface in accordance to Clause 2-5 as directed by contract administrator, apply rock in accordance with Rock list and Brush road in accordance with Clause 3-1.
PA-H-1050	0+00 to 114+20	Grade, shape and compact existing running surface in accordance to Clause 2-5 as directed by contract administrator, apply rock in accordance with Rock list, perform

		culvert maintenance in accordance with Clause 2-6, clean/construct ditch lines in accordance with Clause 2-7 and Brush road in accordance with Clause 3-1.
Old Mill Private	0+00 to 8+30	Grade, shape and compact existing running surface in accordance to Clause 2-5 as directed by contract administrator, apply rock in accordance with Rock list and Brush road in accordance with Clause 3-1.
Total Stations	209.6 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.

0-9 DECOMMISSIONING

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

0-13 STRUCTURES

Purchaser shall provide and install medium gate and farm gate. Requirements for these structures are listed in Section 7 STRUCTURES.

SECTION 1 – GENERAL

1-1 ROAD PLAN CHANGES

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

1-5 DESIGN DATA

PA-H-100 Sta 0+00 to 12+80 design data is available upon request at the Department of Natural Resources Straits District Office in Port Angeles, WA.

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.

1-13 LOG LOADING

At no time shall the loading of logs occur on the Old Mill Private road or Little River Road. In addition, no debris from harvesting operations shall be allowed on this road.

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 calendar days before work begins.

<u>Road</u>	<u>Stations</u>
Old Mill Private	ALL
PA-H-100	ALL

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
Old Mill Road, Old Mill Private & PA-H-100	ALL	ALL	8:00 PM -6:00 AM unless approved by the Contract Administrator.

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-H-1050	28+60 to 39+60
PA-H-1050	57+50 to 65+85

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 6 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.

1-31 SPEED LIMITS

On the following road(s), speeds are limited to 10 mph.

<u>Road</u>	<u>Stations</u>
Old Mill Private	ALL

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>
Old Mill Road
Little River Road

1-41 REQUIREMENTS FOR PAVED ROAD APPROACHES

Requirements for the paved road approaches:
Purchaser shall build up approaches to allow a smooth grade transition between the rock surfaced road and paved roads. The top of the rock road surfacing must be kept level with the surface of the paved road at all times.

1-43 ROAD WORK AROUND UTILITIES

Purchaser shall work in accordance with all applicable laws or rules concerning utilities. Purchaser is responsible for all notification, including “call before you dig”, and liabilities associated with the utilities and their rights-of-way.

SECTION 2 – MAINTENANCE

2-1 GENERAL ROAD MAINTENANCE

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

2-2 ROAD MAINTENANCE – PURCHASER MAINTENANCE

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

2-3 ROAD MAINTENANCE – DESIGNATED MAINTAINER

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

2-4 PASSAGE OF LIGHT VEHICLES

Purchaser shall maintain **all** road(s) in a condition that will allow the passage of light administrative vehicles. Old Mill Private must be passable by low clearance passenger vehicles. If, in the opinion of the contract administrator, Old Mill Private is unpassable, work must be completed to fix road passability problems.

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-1000	0+00 to 87+10	Grade, shape, compact and remove shoulder vegetation as required by contract administrator
PA-H-1050	0+00 to 114+20	Grade, shape, compact and remove shoulder vegetation as required by contract administrator
Old Mill Private	0+00 to 8+30	Grade, shape, compact and remove shoulder vegetation as required by contract administrator

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-1050	44+90, 48+60, 54+10, 57+50, 62+35, 64+00, 65+88, 68+00, 76+40, 82+00, 83+70, 85+85, 88+15, 91+70, 96+65, 99+64, 101+80, 106+85

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>Comments</u>
PA-H-1050	39+60 to 114+20	Clean out brushed material and other material blocking water flow.

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-1000	0+00 to 87+10
PA-H-1050	0+00 to 114+20
Old Mill Private	0+00 to 8+30

3-2 BRUSHING RESTRICTION

On the following road(s), 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.

<u>Road</u>	<u>Stations</u>
PA-H-1000	0+00 to 87+10
PA-H-1050	0+00 to 114+20
Old Mill Private	0+00 to 8+30

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. Tops and limbs from Studley road construction shall be moved to Department of Natural Resources land.

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. No tress on existing private road shall be cut without permission from the Contract Administrator.

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

In the following waste area(s), Purchaser is not required to remove stumps within waste areas if they are cut flush with the ground.

Road	Waste Area
PA-H-100	12+80

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.

3-22 DESIGNATED WASTE AREA FOR ORGANIC DEBRIS

Waste areas for organic debris are located as listed below.

<u>Road</u>	<u>Stations</u>	<u>Disposal Location</u>	<u>Requirements</u>
PA-H-100	0+00 to 7+00	12+80	All stumps, road building debris must be moved to waste area before timber haul

3-23 PROHIBITED DISPOSAL AREAS

Purchaser shall not place organic debris in the following areas:

- Within 50 feet of a cross drain culvert.
- Within 100 feet of a live stream, or wetland, unless used to comply with the specifications detailed in the Riparian Strategy, 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 the following road(s), and on slopes greater than 45%, Purchaser shall end haul or push organic debris to the designated waste areas specified in Clause 3-22 DESIGNATED WASTE AREA FOR ORGANIC DEBRIS, or to a waste area located by the Contract Administrator.

<u>Road</u>	<u>Stations</u>
PA-H-100	0+00 to 7+00

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 18 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 14%.
- Maximum transition grades entering and leaving switchbacks is a 5% grade change.
- Transition grades required to meet switchback grade limitations must be constructed on the tangents preceding and departing from the switchbacks.

4-5 CUT SLOPE RATIO

Purchaser shall construct excavation slopes no steeper than shown on the following table, 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. Embankment widening is modified as follows:

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.

4-27 DITCH WORK – MATERIAL USE PROHIBITED

Purchaser shall not pull ditch material across the road or mix in with the road surface.

4-28 DITCH DRAINAGE

Ditches must drain to cross-drain culverts or ditchouts.

4-29 DITCHOUTS

Purchaser shall construct ditchouts as identified in the table below and as needed to fit as built conditions. Ditchouts must be constructed in a manner that diverts ditch water onto the forest floor and must have excavation backslopes no steeper than a 1:1 ratio. L or R denotes ditchout left or ditchout right.

<u>Road</u>	<u>Stations</u>	<u>L or R</u>
PA-H-100	42+20	L
PA-H-1010	2+35	L

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>
PA-H-100 Sta 12+80	PA-H-100	0+00 to 7+00	2000 cubic yards

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

4-47 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.

5-4 PUNCHEON RESTRICTED

At no time shall puncheon be used in the subgrade, unless approved by the Contract Administrator.

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 10-15 through 10-24.

5-6 CULVERT TYPE

Purchaser may install culverts made of steel or plastic in accordance with Clauses 10-15 through 10-24.

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" 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.

5-22 ABOVE GROUND CULVERT ENERGY DISSIPATORS

At the end of the culvert, approximately 1 yd³ of oversize material shall be placed. The extents of placement shall be in accordance with TYPICAL CULVERT INSTALLATION DETAIL SHEET.

5-23 STAKING ABOVE GROUND CULVERTS

Culverts shall be staked on both the outlet and inlet. In addition, no more than 10ft of culvert shall be allowed without being staked. Staking shall consist of driving two heavy duty steel fence posts, or 1 1/2" X 3/16" angle iron, at least 2 feet into the ground at each point, and attaching them to the culvert using No.10 or larger galvanized smooth wire.

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.

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

6-3 ROCK SOURCE STATE LAND, EXISTING STOCKPILE

Rock used in accordance with the quantities on the ROCK LIST may be obtained from the following existing stockpile(s) on state land at no charge to the Purchaser. Purchaser shall not remove more than 3230 cubic yards of 4"jaw run rock. Purchaser shall not remove additional yardage without prior written approval from the Contract Administrator. Other stockpiles may not be used without prior written approval from the Contract Administrator. If the 4"jaw run rock stockpile is exhausted before all of the rock called for has been removed, then the remaining rock shall come from a commercial source at no cost to the state. Onsite rock may be approved by Contract Administrator for portions of the PA-H-100.

<u>Source</u>	<u>Location</u>	<u>Rock Type</u>	<u>Quantity</u>
Overlook Pit	T30R06W Sec 32	4 inch jaw run	3230 yd ³

6-5 ROCK FROM COMMERCIAL SOURCE

All rock used in accordance with the quantities on the ROCK LIST may be obtained from any commercial source at the Purchaser's expense and for some roads (including the PA-H-100) shall be obtained from commercial sources. 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.

SUBSECTION ROCK TOTAL QUANTITIES

6-23 ROCK GRADATION TYPES

Purchaser shall provide rock in accordance with the types and amounts listed below. Rock must meet the following specifications for gradation and uniform quality. Purchaser shall provide a sieve analysis upon request from the Contract Administrator.

<u>Rock Type</u>	<u>Amount</u>
4" jaw run rock	6130 cubic yards
1 ¼" minus crushed rock	430 cubic yards
2" minus crushed rock	1010 cubic yards

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.

6-28 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.

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

6-37 4-INCH JAW RUN ROCK

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

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

6-50 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")

6-52 OVERSIZE

% Passing 8" square sieve	100%
% Passing 4" square sieve	0%

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

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. Unless otherwise stated in Clause 6-75 OPTIONAL ROCK EXCEPTION.

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>	<u>Amount</u>
PA-H-1000	0+00 to 87+10	2" minus crushed rock	100 cubic yards
PA-H-1050	0+00 to 114+20	2" minus crushed rock	100 cubic yards
Old Mill Private	0+00 to 8+30	1 ¼" minus crushed rock	170 cubic yards
PA-H-100	0+00 to 9+90	1 ¼" minus crushed rock	50 cubic yards

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.

SECTION 7 – STRUCTURES

SUBSECTION GATE CLOSURE

7-70 GATE CLOSURE

On the following road(s), 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.

<u>Road</u>	<u>Station</u>
Old Mill	0+20
Private	

7-71 GATE CLOSURE DURING HAUL

On the following road(s), Purchaser shall keep gates closed and locked except for passing vehicles.

<u>Road</u>	<u>Station</u>
Old Mill	0+20
Private	

SUBSECTION GATES AND FENCES

7-76 GATE INSTALLATION

Purchaser shall install the listed gate(s). Gate installations must be completed within 30 days of road construction completion, unless approved by Contract Administrator.

<u>Road</u>	<u>Station</u>	<u>Type*</u>	<u>Provided by</u>
PA-H-100	0+50	Farm Gate	Purchaser
PA-H-100	9+90	Farm Gate	Purchaser

Tubular gate installation(s) must be in accordance with the MEDIUM GATE DETAIL. Farm gate installation(s) must be in accordance with the FARM GATE DETAIL.

The gate and lock box must be installed plumb and aligned to ensure all mating components match with precision. Each post must be filled with concrete, capped and set in a minimum of 2 cubic yards of poured-in-place concrete. The gate must be installed with a post and locking device to allow the gate to be locked in an open position. The Contract Administrator will provide Purchaser with a padlock.

If Purchaser wishes to install an alternate design, detailed plans for the construction of the gate must be submitted to the Contract Administrator. Purchaser shall obtain written approval for the plans from the Contract Administrator or their designee, before gate installation begins.

The medium gate must be primed and painted yellow in accordance with the Medium Gate Detail.

7-78 GATE SUPPLIED BY PURCHASER

Purchaser shall provide all gates specified for installation in Clause 7-76 GATE INSTALLATION. Purchaser shall obtain written approval for the gates from the Contract Administrator before installation.

SECTION 8 – EROSION CONTROL

8-1 SEDIMENT CONTROL STRUCTURES

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

<u>Road</u>	<u>Station</u>	<u>Left and/or Right</u>	<u>Comments</u>
4+10 Spur	0+00	Right	Silt Fence, 30 feet
2+30 Spur	0+40	Left and Right	Silt Fence, 30 feet
2+30 Spur	0+40	Right	Install sediment traps in ditch

SUBSECTION REVEGETATION

8-15 REVEGETATION

On the following road(s) and other roads as directed by Contract Administrator, Purchaser shall spread grass seed and straw and/or hay mulch on all exposed soils including, but not limited to, stream culverts, waste areas, sidecast 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.

<u>Road</u>	<u>Station</u>
PA-H-100	0+00 to 9+90
PA-J-100	12+30 waste area

8-16 REVEGETATION SUPPLY

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

8-17 REVEGETATION TIMING

Contractor shall revegetate during the first available opportunity. Soils may not be allowed to sit exposed for longer than one month without receiving revegetation treatment unless otherwise approved in writing by the Contract Administrator. Soils shall not be allowed to sit exposed during any rain event

8-18 PROTECTION FOR SEED

Contractor shall provide a protective cover over the revegetated area. The protective cover may consist of but not be limited to, such items as dispersed straw and/or hay mulch 3” thick or jute matting. Seed must be covered before the first anticipated storm event

8-19 ASSURANCE FOR SEEDED AREA

Contractor shall ensure the growth of a uniform and dense crop (at least 50% coverage) of 3-inch tall grass. Contractor 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 the grass seed and/or straw and/or hay mulch 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 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 STRUCTURES

9-1 EARTHEN BARRICADES

Purchaser shall construct barricades in accordance with the EARTHEN BARRICADE DETAIL.

<u>Road</u>	<u>Stations</u>
2+30 Spur	0+20
4+10 Spur	0+20
0+60 Spur	0+20
1+25 Spur	0+20

9-3 CULVERT MATERIAL REMOVED FROM STATE LAND

Culverts removed from roads become the property of the Purchaser and must be removed from state land. If required by the Contract Administrator, designated culverts must be salvaged and delivered to Port Angeles Work Center.

9-4 INTENTIONALLY SKIPPED NUMBER

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-1000	0+00 to 87+10	Apply post haul rock per Clause 6-72.
PA-H-1050	0+00 to 114+20	Apply post haul rock per Clause 6-72.
Old Mill Private	0+00 to 8+30	Apply post haul rock per Clause 6-72.
PA-H-100	0+00 to 9+90	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.

SUBSECTION DECOMMISSIONING AND ABANDONMENT

9-20 ROAD DECOMMISSIONING

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

<u>Road</u>	<u>Stations</u>	<u>Type</u>
PA-H-100	12+80 to 53+85	LIGHT DECOMMISSIONING
2+30 Spur	0+00 to 2+30	LIGHT DECOMMISSIONING
4+10 Spur	0+00 to 4+10	LIGHT DECOMMISSIONING
0+60 Spur	0+00 to 0+60	LIGHT DECOMMISSIONING
1+25 Spur	0+00 to 1+25	LIGHT DECOMMISSIONING
Turneraround	0+00 to 3+50	LIGHT DECOMMISSIONING

9-22 LIGHT DECOMMISSIONING

- Remove road shoulder berms except as directed.
- Construct non-drivable waterbars according to the attached DRIVABLE WATERBAR DETAIL at a maximum spacing that will produce a vertical drop of no more than 10 feet between waterbars or between natural drainage paths and with a maximum spacing of 100 feet, or as marked in the field.
- Skew waterbars at least 30 degrees from perpendicular to the road centerline on roads in excess of 3 percent grade.
- Key waterbars into the cut-slope to intercept the ditch. Waterbars must be outsloped to provide positive drainage. Outlets must be on stable locations.
- Block roads with earthen barricades in accordance with the attached EARTHEN BARRICADE DETAIL.
- Remove culverts.
- Remove ditch cross drain culverts and leave the resulting trench open.
- Slope all trench walls and approach embankments no steeper than 1.5:1.

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

10-15 CORRUGATED STEEL CULVERT

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

10-16 CORRUGATED ALUMINUM CULVERT

Aluminum culverts must meet AASHTO M-196 (ASTM A-745) specifications.

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.

10-21 METAL BAND

Metal coupling and end bands must meet the AASHTO specification designated for the culvert and must have matching corrugations. Culverts 24 inches and smaller must have bands with a minimum width of 12 inches. Culverts over 24 inches must have bands with a minimum width of 24 inches.

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.

10-23 RUBBER CULVERT GASKETS

Rubber gaskets must be continuous closed cell, synthetic expanded rubber gaskets conforming to the requirements of ASTM D 1056. Rubber gaskets must be used with all corrugated metal pipe coupling bands.

10-24 GAUGE AND CORRUGATION

Unless otherwise stated in the engineer's design, metal culverts must conform to the following specifications for gage and corrugation as a function of diameter.

<u>Diameter</u>	<u>Gauge</u>	<u>Corrugation</u>
18"	16 (0.064")	2 2/3" X 1/2"
24" to 48"	14 (0.079")	2 2/3" X 1/2"
54" to 96"	12 (0.109")	3" X 1" or 5" x 1"

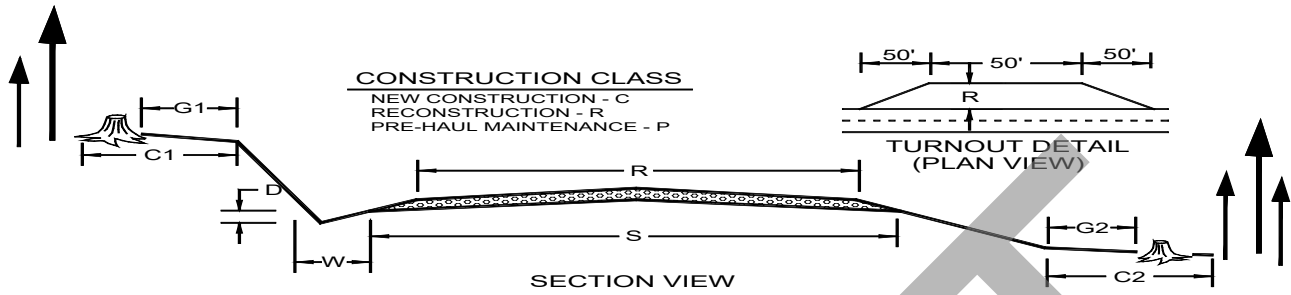
SECTION 11 SPECIAL NOTES

11-7 COUNTY ROAD APPROACH PERMITS

All county road approach permit(s) must be followed. This includes posting, correspondence with the County Public works department and construction requirements.

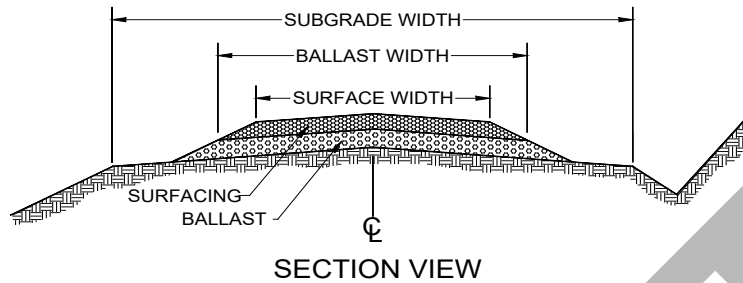
DRAFT

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)
2+30 Spur	0+00	2+30	C	C	17'	12'	3	3	1	5	5	5	5
0+60 Spur	0+00	0+60	C	C	17'	12'	3	3	1	5	5	5	5
TurnerAround	0+00	3+50	C	C	17'	12'	3	3	1	5	5	5	5
PA-H-1010	0+00	3+35	R	C	17'	12'	3	3	1	5	5	5	5
PA-H-1010	3+35	5+20	C	C	17'	12'	3	3	1	5	5	5	5
2+20 Spur	0+00	2+20	C	C	17'	12'	3	3	1	5	5	5	5
1+30 Spur	0+00	1+30	C	C	17'	12'	3	3	1	5	5	5	5
2+15 Spur	0+00	2+15	C	C	17'	12'	3	3	1	5	5	5	5
PA-H-100	0+00	53+85	C	A	17'	12'	3	2	1	5	5	5	5
1+25 Spur	0+00	1+25	C	C	17'	12'	3	3	1	5	5	5	5
4+10 Spur	0+00	4+10	C	C	17'	12'	3	3	1	5	5	5	5
2+50 Spur	0+00	2+50	C	C	17'	12'	3	3	1	5	5	5	5
PA-H-1000	0+00	87+10	P			12'	3	3	1				
PA-H-1050	0+00	114+20	P			12'	3	3	1				
Old Mill Private	0+00	8+30	P			12'	3	3	1				

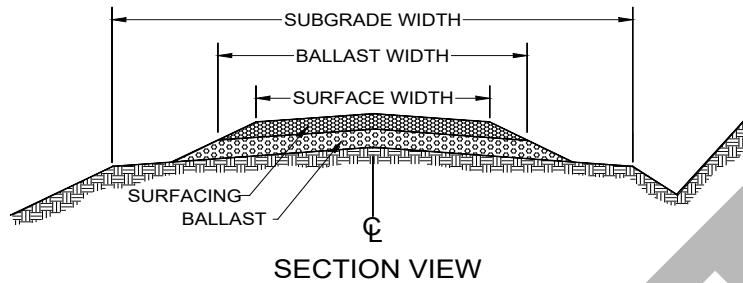
ROCK LIST SHEET



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= A: Overlook Pit or Commercial 4"jaw run rock, B: Commercial 4"jaw run rock, C: Commercial 2"minus rock, D: Commercial 1 ¼ " minus rock

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-1000															
PreHaul Rock									C				100		
Post Haul Rock									C				100		
2+30 Spur															
Lift	0+00	2+30	17	A	12	12	70	160							
Culvert Install	0+40								C				20		
Culvert Install	1+50								C				10		
Landing	2+30			A				10							
0+60 Spur															
Lift	0+00	0+60	17	A	12	12	70	100							
Landing	0+60														
1+25 Spur															
Lift	0+00	1+25	17	A	12	12	70	90							
Culvert Install	0+10								C				20		
Landing	1+25			A				10							
4+10 Spur															
Lift	0+00	4+10	17	A	12	12	70	290							
Culvert Install	0+40								C				10		
Culvert Install	1+10								C				10		
Turnout	2+10			A				20							
Landing	4+10			A				10							
Totals:								A:690					C:270		

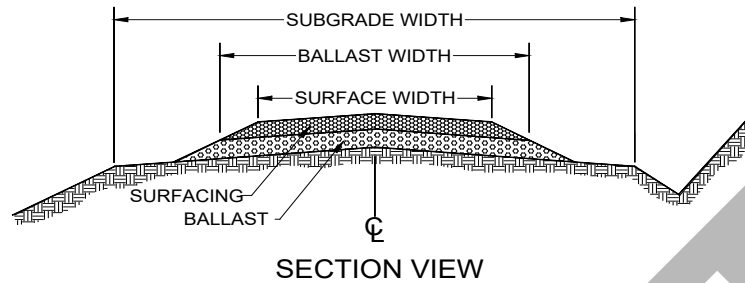
ROCK LIST SHEET CONTINUED



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).
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6. Rock sources= A: Overlook Pit or Commercial 4"jaw run rock, B: Commercial 4"jaw run rock, C: Commercial 2"minus rock, D: Commercial 1 ¼ " minus rock

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)
2+50 Spur															
Lift	0+00	2+50	17	A	12	12	70	180							
Turnout	1+60							30							
Landing	2+50							20							
PA-H-1010															
Lift	0+00	5+20	17	A	12	12	70	370							
Culvert Install	0+90								C				10		
Turnout	3+35			A				30							
Culvert Install	4+45								C				10		
Landing	5+20			A				20							
Turneraround															
Lift	0+00	3+50	17	A	12	12	70	250							
PA-H-1050															
Prehaul rock									C				100		
Post haul rock									C				100		
Lift	65+85	110+70		A	12	4	20	900							
Turnout	58+00							20							
Turnout	71+20							20							
Turnout	74+80							20							
Turnout	80+90							20							
Totals:								A:1880					C:220		

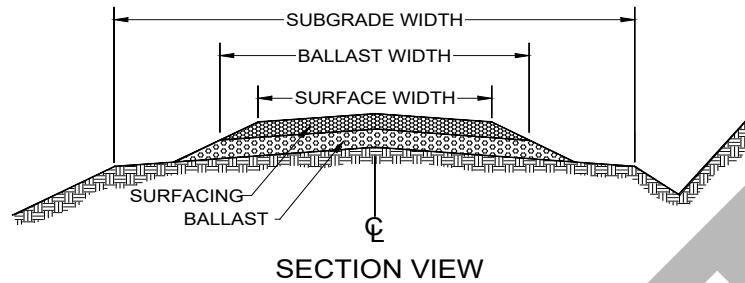
ROCK LIST SHEET CONTINUED



1. Rock quantities, subtotals and totals are "truck measure" estimates. Rock shall be applied to at least the depths listed.
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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-1050															
Turnout	83+70			A			20								
Turnout	88+00			A			20								
Turnout	98+65			A			20								
Landing	110+70			A			20								
Turnaround	114+20			A			20								
2+20 Spur															
Lift	0+00	2+20	17	A	12	12	70	160							
Turnout	1+35						30								
Landing	2+20						30								
1+30 Spur															
Lift	0+00	1+30	17	A	12	12	70	90							
Culvert Install	0+10								C				20		
Landing	1+30						20								
2+15 Spur															
Lift	0+00	2+15	17	A	12	12	70	150							
Culvert Install	0+10								C				20		
Landing	2+15			A			20								
Totals:								A:600					C:40		

ROCK LIST SHEET CONTINUED



1. Rock quantities, subtotals and totals are "truck measure" estimates. Rock shall be applied to at least the depths listed.
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ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd³/sta)	Pitrun SUBTOTAL(yd³)	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd³/sta)	Crushed Subtotal(yd³)	Oversize/ Rip rap Source	Oversize/Rip Rap Quantity(yd³)
Old Mill Private															
Lift	0+00	8+30							D	12	4	20	170		
During Haul Rock									D				40		
Post Haul Lift									D	12	4	20	170		
PA-H-100															
Lift	0+00	12+80	17	B	15	12	70	900	C	12	6	35	450		
Lift	12+80	37+20	17	B	12	12	70	1710							
Misc Rock	37+20	53+85		B				100							
Culvert Install	0+10								C				20		
Culvert Install	3+50								C				10		
Turnout	4+74			B				30							
Turnout	11+10			B				30							
Turnout	22+40			B				30							
Turnout	28+20			B				30							
Turnout	37+20			B				30							
Turnout	44+05			B				30							
Turnout	52+10			B				30							
Landing	53+85			B				40							
Post Haul Lift	0+00	9+90							D				50		
Totals:								B:2960					D:430 C:480		
Grand Totals:								A:3230 B:2960					D:430 C:1010		

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
2+30 Spur	0+40	24	40					CR	Culvert Install
2+30 Spur	1+50	18	30					CR	Culvert Install
1+25 Spur	0+10	18	40					CR	Culvert Install
4+10 Spur	0+40	18	30					CR	Culvert Install
4+10 Spur	1+10	18	30					CR	Culvert Install
PA-H-1010	0+90	18	30					CR	Culvert Install
PA-H-1010	4+45	18	30					CR	Culvert Install
1+30 Spur	0+10	18	40					CR	Culvert Install
2+15 Spur	0+10	18	40					CR	Culvert Install
PA-H-1050	44+90	18							Clean inlet/outlet
PA-H-1050	48+60	18							Clean inlet/outlet
PA-H-1050	54+10	18							Clean inlet/outlet
PA-H-1050	57+50	18							Clean inlet/outlet
PA-H-1050	62+35	18							Clean inlet/outlet
PA-H-1050	64+00	18							Clean inlet/outlet
PA-H-1050	65+88	18							Clean inlet/outlet
PA-H-1050	68+00	18							Clean inlet/outlet
PA-H-1050	76+40	18							Clean inlet/outlet
PA-H-1050	82+00	18							Clean inlet/outlet
PA-H-1050	83+70	18							Clean inlet/outlet
PA-H-1050	85+85	18							Clean inlet/outlet
PA-H-1050	88+15	18							Clean inlet/outlet
PA-H-1050	91+70	18							Clean inlet/outlet
PA-H-1050	96+65	18							Clean inlet/outlet
PA-H-1050	99+64	18							Clean inlet/outlet
PA-H-1050	101+80	18							Clean inlet/outlet
PA-H-1050	106+85	18							Clean inlet/outlet

CULVERT LIST Continued

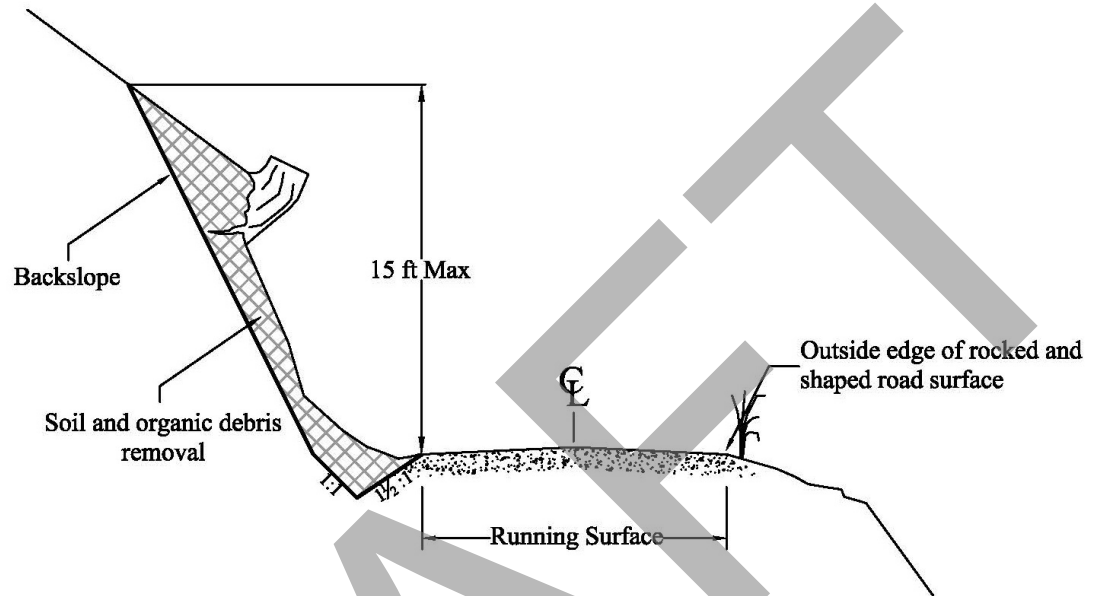
ROAD NAME	STATION	CULVERT DIAMETER (in)	CULVERT LENGTH (ft)	FLUME LENGTH (ft)		RIP RAP - INLET (cy)	RIP RAP - OUTLET (cy)	BACKFILL MATERIAL	NOTES
PA-H-100	0+10	18	40					CR	Culvert Install
PA-H-100	3+50	18	30					CR	Culvert Install
PA-H-100	14+00	18	30					NT	Culvert Install
PA-H-100	23+70	18	30					NT	Culvert Install
PA-H-100	27+30	18	30					NT	Culvert Install
PA-H-100	28+70	18	50					NT	Culvert Install
PA-H-100	35+80	18	30					NT	Culvert Install
PA-H-100	39+20	18	30					NT	Culvert Install
PA-H-100	45+45	18	30					NT	Culvert Install
PA-H-100	47+95	18	30					NT	Culvert Install
Contingency Culvert	CA	18	30						
Contingency Culvert	CA	18	30						

All rip rap shall be Oversize unless specified in the Rock List, or in the field.
 All backfill shall be native material (NT) unless specified otherwise. CR= crushed rock, PR= Pit Run Rock

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

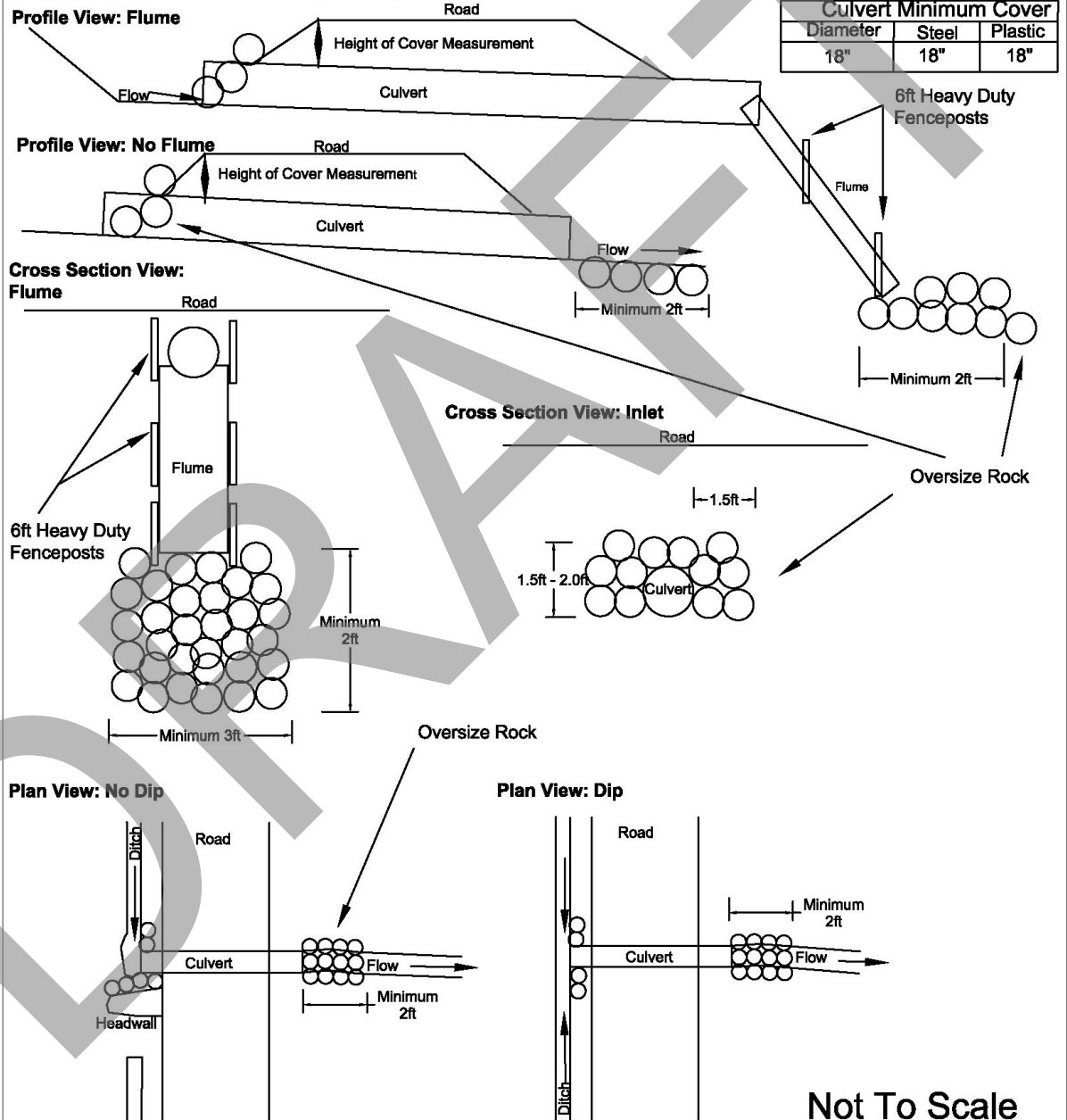
Ditch Cleaning Detail



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.

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..



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%.

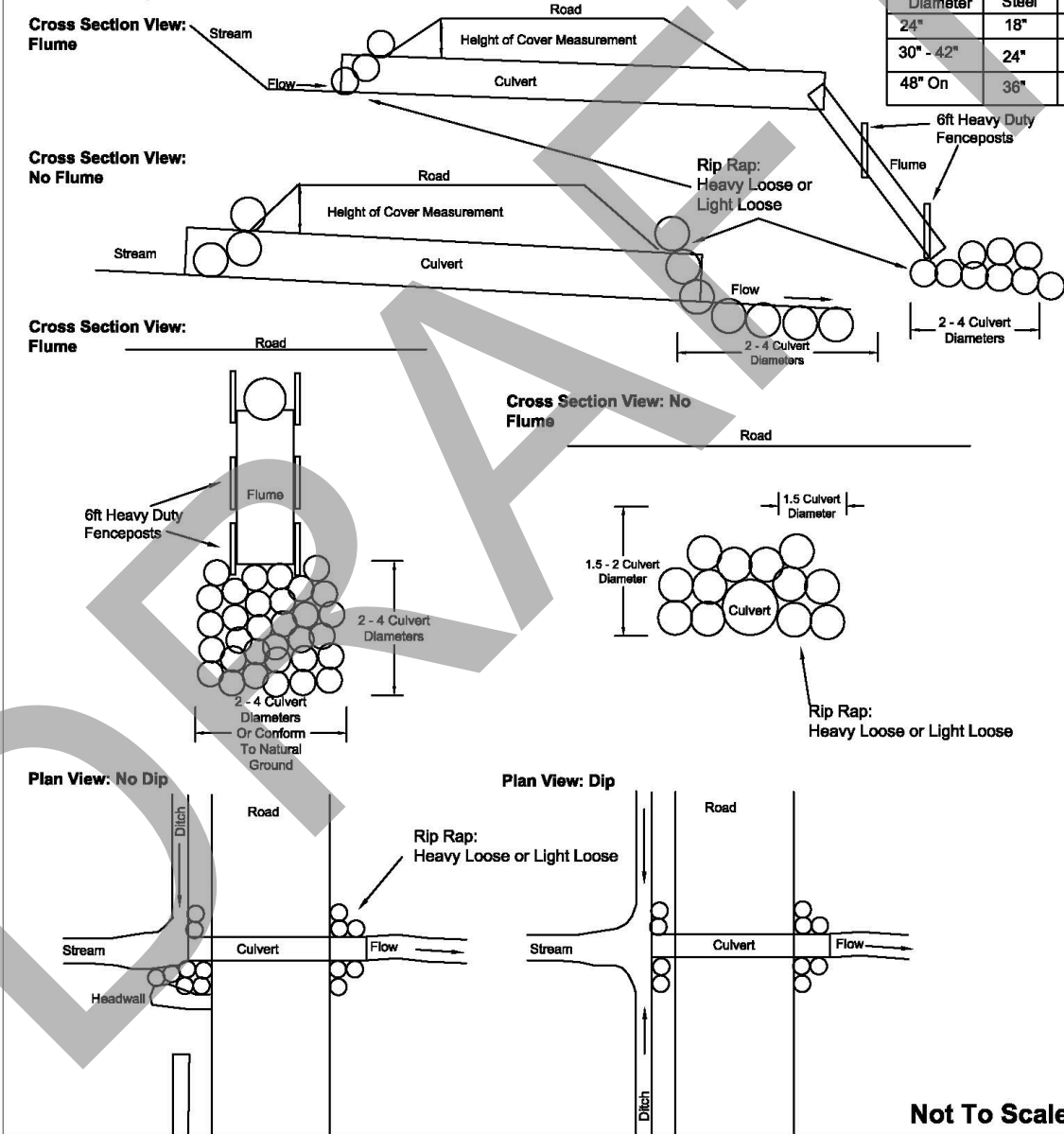
-Flumes longer than 10ft shall be staked on both sides at maximum intervals of 10ft with 6ft heavy duty steel fence posts, and fastened securely to the posts with No. 10 galvanized smooth wire or bolted to the fence posts.

-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.

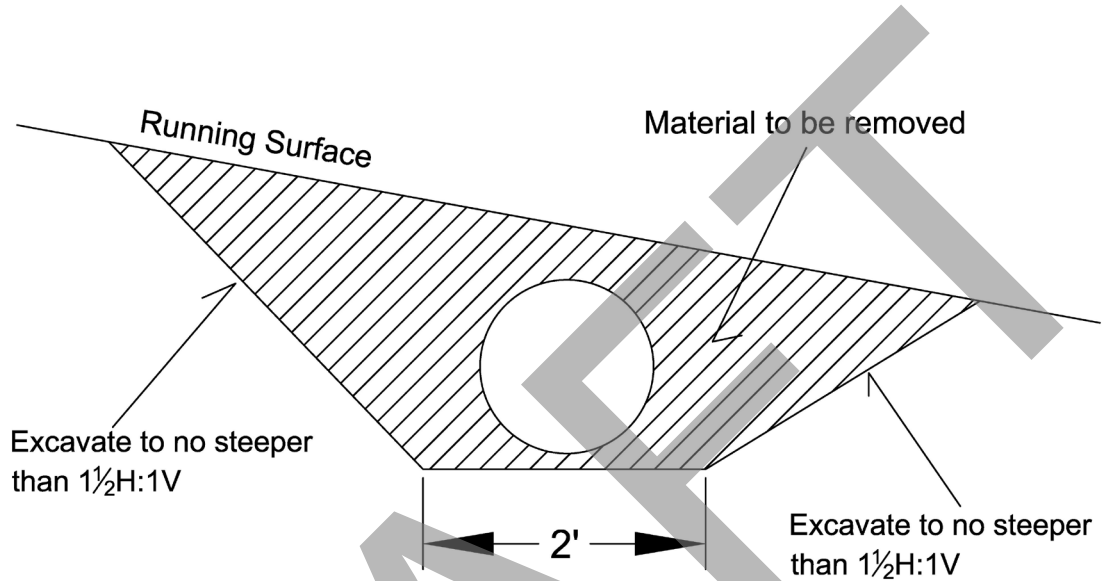
-Backfill compaction shall be achieved using a jumping jack, walk behind vibratory roller, or plate compactor on lifts not to exceed 8in. 3 complete passes per lift is required for compaction. Backfill shall be placed and compacted evenly on both sides of the culvert. Care shall be taken to ensure adequate 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

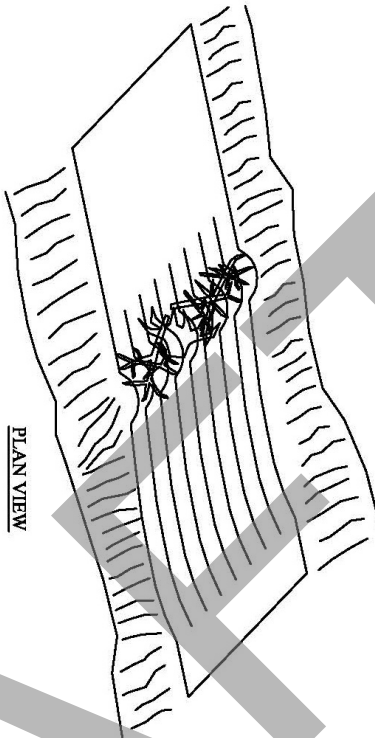
CROSSDRAIN REMOVAL DETAIL



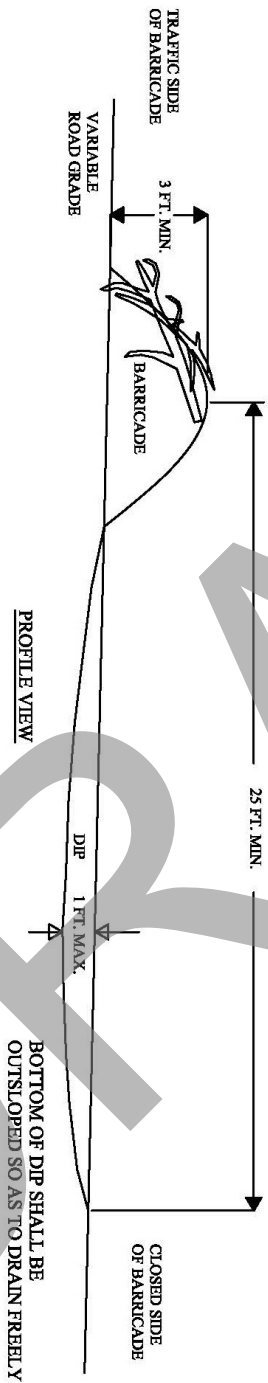
1) Excavated material may be wasted on the road surface on the downhill side of the excavation. Waste material shall be sloped at no steeper than ½ H:1V.

2) Resulting trench shall be keyed into the ditchline and sloped towards the outside edge of the road with a drop of at least 1 foot in 10 feet.

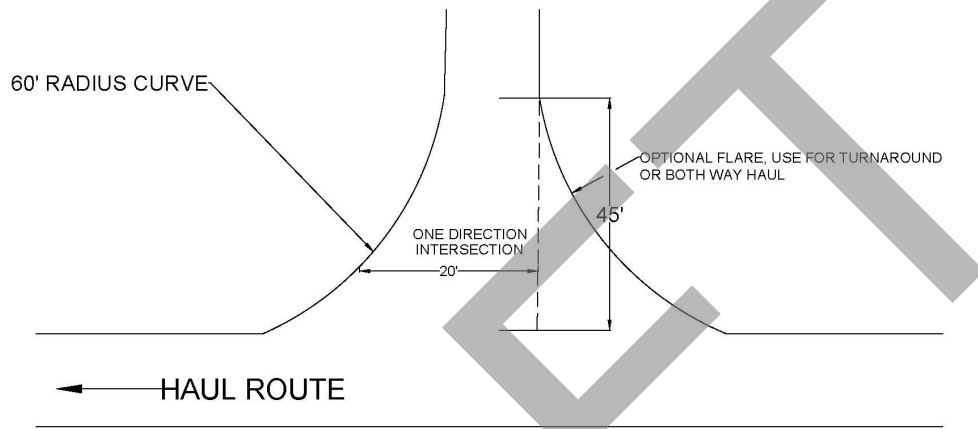
EARTHEN BARRICADE DETAIL



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



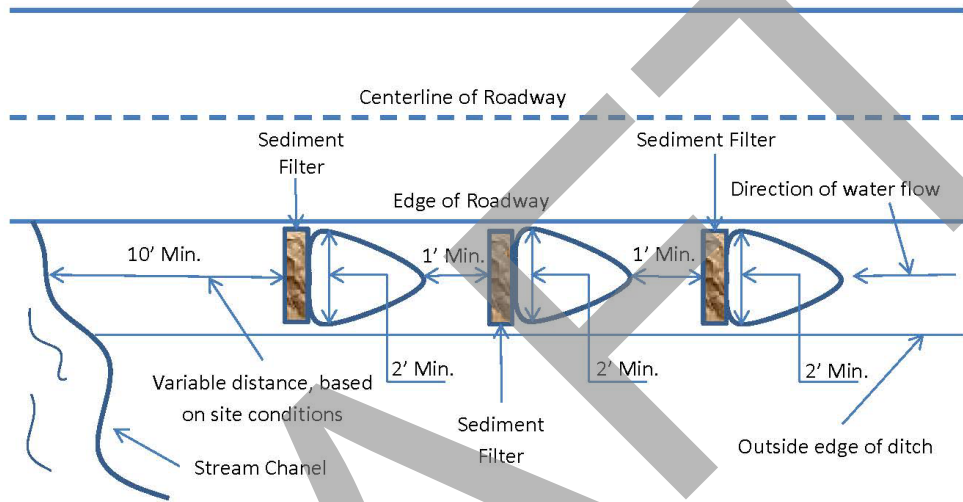
TYPICAL INTERSECTION



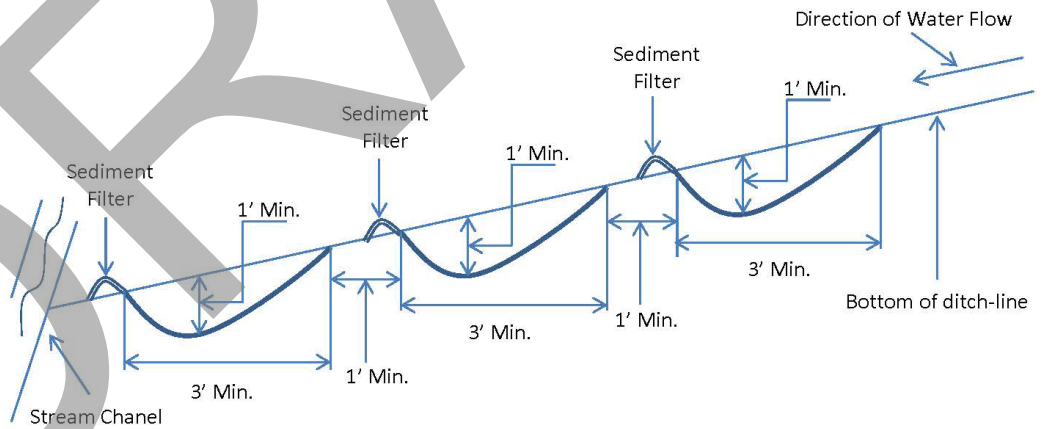
NOT TO SCALE

SEDIMENT TRAP DETAIL

Top View

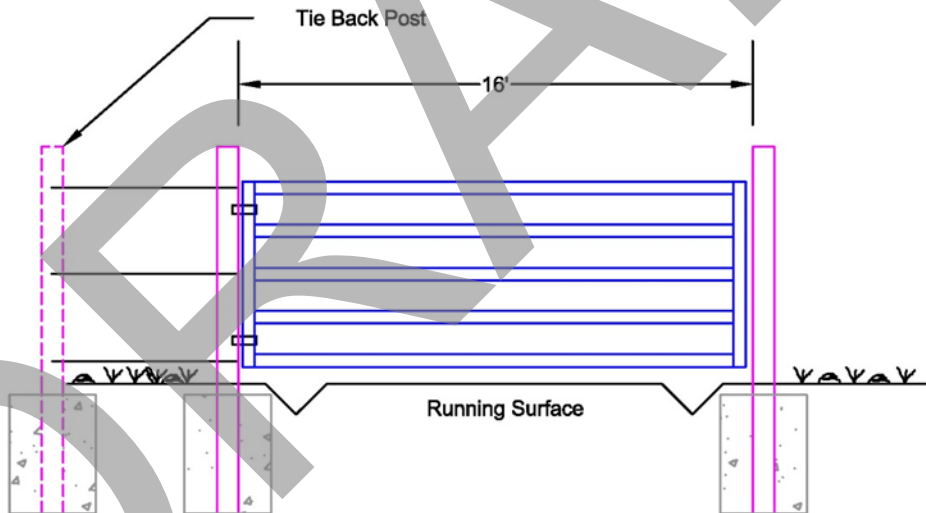


Profile View




Purchaser shall submit to the Contract Administrator a plan for the construction or purchase and installation of a gate similar to the one pictured below. The plan shall be subject to approval, in writing by the Contract Administrator.

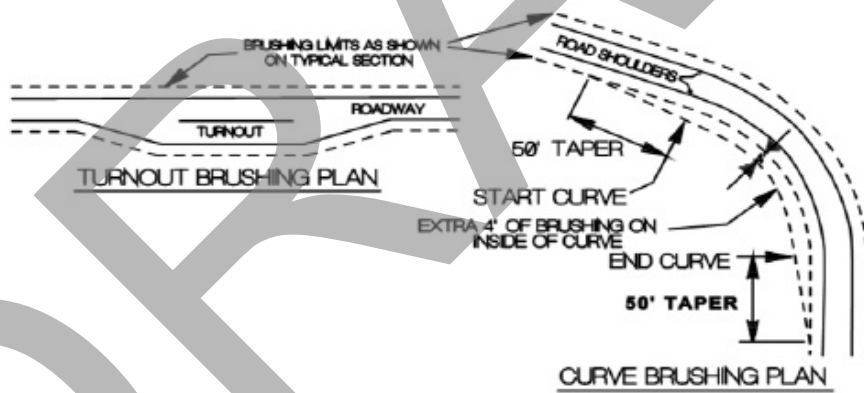
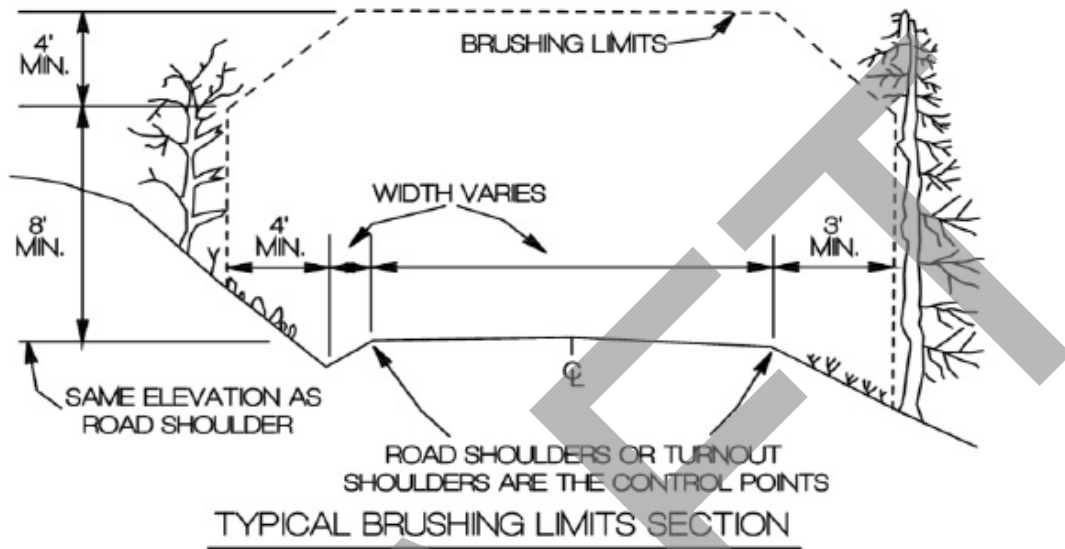
1. Gate posts shall be a minimum of 6" diameter steel pipe with a minimum of 1/4" wall thickness. Gate posts shall be filled with concrete.
2. Tubular steel gate members shall be at least 2" in diameter and of 16 gauge thickness, minimum, spacing of bars shall be adequate to contain livestock.
3. Gate posts shall extend a minimum of 3' into the ground and each post shall be set in a minimum of one and one half cubic yards of concrete.
4. All metal surfaces, shall be galvanized.
5. Gate shall be of a piece, side locking type.
6. Farm gates meeting these specifications may be obtained from commercial sources. Behlen Country 16' Hot-Dipped Galvanized Heavy Duty Gate is a approved Style Gate.
7. Tieback Posts may be required for proper swing movement and to prevent sag.



Drawing not to scale

	Farm Gate Detail
	Farm Gate Detail Designed By: G.Ellis Drawn By: G.Ellis Date: 3/10/20 Sheet 1 of 1

BRUSHING DETAIL



- 1) ALL VEGETATION WITHIN THE BRUSHING LIMITS SHALL BE CUT TO WITHIN 8' OF THE GROUND, UNLESS OTHERWISE DIRECTED BY THE CONTRACT ADMINISTRATOR.
- 2) ALL BRUSH, TREES, LIMBS, ETC. SHALL BE REMOVED FROM THE ROAD SURFACE.
- 3) ALL BRUSH, TREES, LIMBS, ETC. THAT MAY RESTRICT THE FLOW OF WATER SHALL BE REMOVED FROM THE DITCH LINE.
- 4) ALL DEBRIS THAT MAY ROLL OR MIGRATE INTO THE DITCHLINE SHALL BE REMOVED.

SUMMARY - Road Development Costs															
SALE NAME:	Tree Well	CONTRACT#:	0	REASON:	Olympic	DISTRICT:	Strata								
LEGAL DESCRIPTION:	0										TOTAL				
ROAD NAME:	2-30 Spur	0+60 Spur	Turnaround	PA-H-1010	2+20 Spur	1+30 Spur	2+15 Spur	PA-H-100	1+25 Spur	4+10 Spur	2+30 Spur	TOTAL:	SHEET #2		
ROAD TYPE:	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Recon.	Recon.				
NUMBER OF STATIONS:	2.30	0.60	3.30	5.20	2.20	1.30	2.15	53.85	1.25	4.10	2.50	78.95	498.95		
SIDESLOPE:	20%	20%	20%	20%	20%	20%	20%	30%	20%	45%	45%	280%	0%		
CLEARING AND GRUBBING:	\$320	\$195	\$249	\$593	\$306	\$181	\$299	\$13,813	\$125	\$0	\$0	\$16,080	\$0		
ROAD BRUSHING:									\$74	\$74	\$45	\$119	\$3,773		
EXCAVATION AND FILL:	\$520	\$316	\$791	\$1,175	\$497	\$294	\$486	\$23,123	\$283	\$2,548	\$1,534	\$31,886	\$0		
ROAD GRADING:									\$27	\$27	\$16	\$43	\$3,243		
DITCH CLEANING/CONSTRUCTION:									\$160	\$160	\$98	\$257	\$8,580		
ROCK TOTALS (Cu. Yds.)/ROCK COSTS:	6130	6130	170	100	280	420	220	110	170	2660	100	320	230	5050	1080
Ballast:	\$2,246	\$1,142	\$2,953	\$4,355	\$2,413	\$1,406	\$2,220	\$96,011	\$1,167	\$4,387	\$2,167	\$4,387	\$2,167	13,662	780
Surface:	1440	1440	30	0	0	20	0	20	20	530	20	20	0	660	780
Oversize:	\$998	\$0	\$0	\$654	\$0	\$766	\$665	\$19,843	\$626	\$398	\$0	\$398	\$0	20,950	\$0
CULVERTS AND FLOWS:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
STRUCTURES:	\$2,880	\$0	\$0	\$1,848	\$0	\$1,232	\$1,232	\$10,164	\$1,232	\$1848	\$0	\$19,956	\$0	\$0	\$0
MISC. EXPENSES:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
OVERHEAD:	\$13	\$8	\$30	\$30	\$13	\$8	\$13	\$451	\$7	\$24	\$15	\$603	\$3,320	\$0	\$0
TOTAL COSTS:	\$513	\$133	\$321	\$692	\$258	\$311	\$393	\$13,072	\$275	\$967	\$389	\$17,326	\$4,918	\$0	\$0
COST PER STATION:	\$6,931	\$1,794	\$4,334	\$9,348	\$3,488	\$4,196	\$5,308	\$176,476	\$3,714	\$10,632	\$4,283	\$20,505	\$58,427	\$0	\$0
MOBILIZATION:	\$3,014	\$1,282	\$1,238	\$1,798	\$1,585	\$3,228	\$2,469	\$3,277	\$2,971	\$2,993	\$1,713	\$2,920	\$117,100	\$34	\$0
ROAD DEACTIVATION AND ABANDONMENT COSTS ARE PAR OF POSTHAUL															
Per Work															
NOTE: This appraisal has no allowance for profit and risk.															
Sheet 1 of 2															
Plans to be furnished by:															

SUMMARY - Road Development Costs				REGION: Olympic	DISTRICT: Straits
SALE NAME: Tree Well	CONTRACT#: 0				
LEGAL DESCRIPTION: 0					
ROAD NAME:	PA-H-1000	PA-H-1050	Old Mill Private	All Roads	
ROAD TYPE:	Prehaul	Prehaul	Prehaul	Posthaul	
NUMBER OF STATIONS:	87.10	114.20	8.30	289.35	
SIDE SLOPE:	0%	0%	0%	0%	
CLEARING AND GRUBBING:	\$0	\$0	\$0	\$0	
ROAD BRUSHING:	\$1,568	\$2,056	\$149	\$0	
EXCAVATION AND FILL:	\$0	\$0	\$0	\$0	
ROAD GRADING:	\$566	\$742	\$54	\$1,881	
DITCH CLEANING/CONSTRUCTION:	\$0	\$2,925	\$0	\$5,655	
ROCK TOTALS (Cu. Yds.)/ROCK COSTS:					
Ballast:	0	1080	0	0	
	\$0	\$13,662	\$0	\$0	
Surface:	200	200	380	0	
	\$2,760	\$6,816	\$11,354	\$0	
Oversize:	\$0	\$0	\$0	\$0	
	\$0	\$0	\$0	\$0	
CULVERTS AND FLLUMES:	\$0	\$0	\$0	\$0	
STRUCTURES:	\$0	\$0	\$0	\$0	
MISC. EXPENSES:	\$0	\$592	\$0	\$2,729	
OVERHEAD:	\$440	\$2,411	\$1,040	\$1,026	
TOTAL COSTS:	\$5,334	\$29,204	\$12,598	\$11,291	
COST PER STATION:	\$61.24	\$255.73	\$1,517.83	\$39.02	

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 100 cubic yards in volume from ditches and the roadway. Repair fill-failures, in accordance with Clause 4-6 EMBANKMENT SLOPE RATIO, with selected material or material approved by the Contract Administrator. Remove overhanging material from the top of cut slopes.
- Waste material from slides or other sources shall be placed and compacted in stable locations identified in the road plan or approved by the Contract Administrator, so that sediment will not deliver to any streams or wetlands.
- Slide material and debris shall not be mixed into the road surface materials, unless approved by the Contract Administrator.

Surface

- Grade shape compact the road surface, turnouts, and shoulders to the original shape on the TYPICAL SECTION SHEET Inslope or outslope as directed, to provide a smooth, rut-free traveled surface and maintain surface water runoff in an even, unconcentrated manner.
- Blading shall not undercut the backslope or cut into geotextile fabric on the road.
- If required by the Contract Administrator, water shall be applied as necessary to control dust and retain fine surface rock.
- Surface material shall not be bladed off the roadway. Replace surface material when lost or worn away, 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.

