



TIMBER NOTICE OF SALE

SALE NAME: LITTLE LILLY

AGREEMENT NO: 30-106363

AUCTION: October 30, 2024 starting at 10:00 a.m.,
Northwest Region Office, Sedro Woolley, WA

COUNTY: Whatcom

SALE LOCATION: Sale located approximately 22 miles northeast of Sedro-Woolley, WA.

**PRODUCTS SOLD
AND SALE AREA:**

All timber bounded by white timber sale boundary tags and VZ-60 Road, except trees 60 inches or larger measured at diameter at breast height, forest products tagged out by yellow leave tree area tags, trees marked with blue paint on the bole and root collar, and cedar snags, preexisting dead and down cedar trees and cedar logs, in Unit #1.

All timber bounded by white timber sale boundary tags and adjacent young stand and VZ-ML and VZ-59 roads, except trees 60 inches or larger measured at diameter at breast height, forest products tagged out by yellow leave tree area tags, trees marked with blue paint on the bole and root collar, and cedar snags, preexisting dead and down cedar trees and cedar logs, in Unit #2.

All timber bounded by white timber sale boundary tags, except trees 60 inches or larger measured at diameter at breast height, forest products tagged out by yellow leave tree area tags, trees marked with blue paint on the bole and root collar, and cedar snags, preexisting dead and down cedar trees and cedar logs, in Unit #3.

All timber bounded by white timber sale boundary tags and adjacent young stands, except trees 60 inches or larger measured at diameter at breast height, forest products tagged out by yellow leave tree area tags, trees marked with blue paint on the bole and root collar, and cedar snags, preexisting dead and down cedar trees and cedar logs, in Unit #4.

All timber bounded by orange right of way tags.

All forest products above located on part(s) of Sections 10, 14, 15, 22 and 23 all in Township 38 North, Range 5 East, W.M., containing 89 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:

Species	Avg Ring DBH	Ring Count	Total MBF	MBF by Grade								
				1P	2P	3P	SM	1S	2S	3S	4S	UT
Douglas fir	21.2	8	3,070			51	216		2,088	625	60	30
Hemlock	15.8		770						298	420	49	3
Redcedar	16.9		108							87	21	
Red alder	15.4		57						23	13	19	2
Other Conifer												
Other Hardwood												
Sale Total			4,005									

MINIMUM BID: \$0.00

BID METHOD: Sealed Bids



TIMBER NOTICE OF SALE

PERFORMANCE

SECURITY:	\$0.00	SALE TYPE:	Lump Sum
EXPIRATION DATE:	March 31, 2027	ALLOCATION:	Export Restricted

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

HARVEST METHOD: Cable; shovel on sustained slopes 40% or less; tethered or untethered “6-wheeled rubber-tired skidders with over-the-tire tracks spanning both sets of rear tires” (See below for restrictions); self-leveling feller-buncher/harvester for falling on sustained slopes 55% or less; tethered feller-buncher/harvester for falling and yarded by cable (See below for restrictions); also, a feller-buncher may be utilized on sustained slopes 40% or less.

Purchaser must obtain prior written approval from the Contract Administrator for areas as to where to utilize untethered or tethered “6-wheeled rubber-tired skidders with over-the-tire tracks spanning both sets of rear tires”, as well as tethered feller-bunchers/harvesters, prior to use. This includes approved areas to utilize the equipment as well as any additional mitigation measures set forth by the Contract Administrator. If ground disturbance is causing excessive damage, as determined by the Contract Administrator, the equipment will no longer be authorized. Falling and Yarding will not be permitted from November 1 to March 31 unless authorized in writing by the Contract Administrator (THIS PERTAINS TO GROUND-BASED EQUIPMENT ONLY) to reduce soil damage and erosion.

ROADS: 23.40 stations of required construction. 28.21 stations of optional construction. 512.91 stations of required prehaul maintenance. 14.35 stations of abandonment. 28.21 stations of abandonment, if built.

Rock may be obtained from the following source(s) on State land at no charge to the Purchaser: McCoy Pit at station 22+50 of the MM-22 Road. Travelin Light Pit at Station 18+75 of the VZ-5807 Road. Little Lilly Pit at station 4+00 of the VZ-5906 Road.

Development of existing rock source(s) will involve drilling, shooting, and processing rock to generate riprap, shot rock, and 3-inch-minus ballast rock.

An estimated total quantity of rock needed for this proposal: 130 cubic yards of riprap, 2,250 cubic yard of shot rock and 3,025 cubic yards of 3-inch minus ballast rock.

Road work and the hauling of rock will not be permitted from November 1 to March 31 unless authorized in writing by the Contract Administrator to reduce soil damage and siltation. The hauling of forest products will not be permitted from November 1 to March 31 unless authorized in writing by the Contract Administrator to reduce soil damage and siltation.

ACREAGE DETERMINATION

CRUISE METHOD: Acres determined by GPS/ArcGIS traverse for units and for right-of-way. Cruise was conducted via variable plot sample type, as well as fixed plot for right-of-way. See Cruise Narrative for further details. Shapefiles of units are available upon request, and on the DNR website after the BNR meeting in which the sale is presented.

FEES: \$68,085.00 is due on day of sale. \$9.00 per MBF is due upon removal. These are in addition to the bid price.



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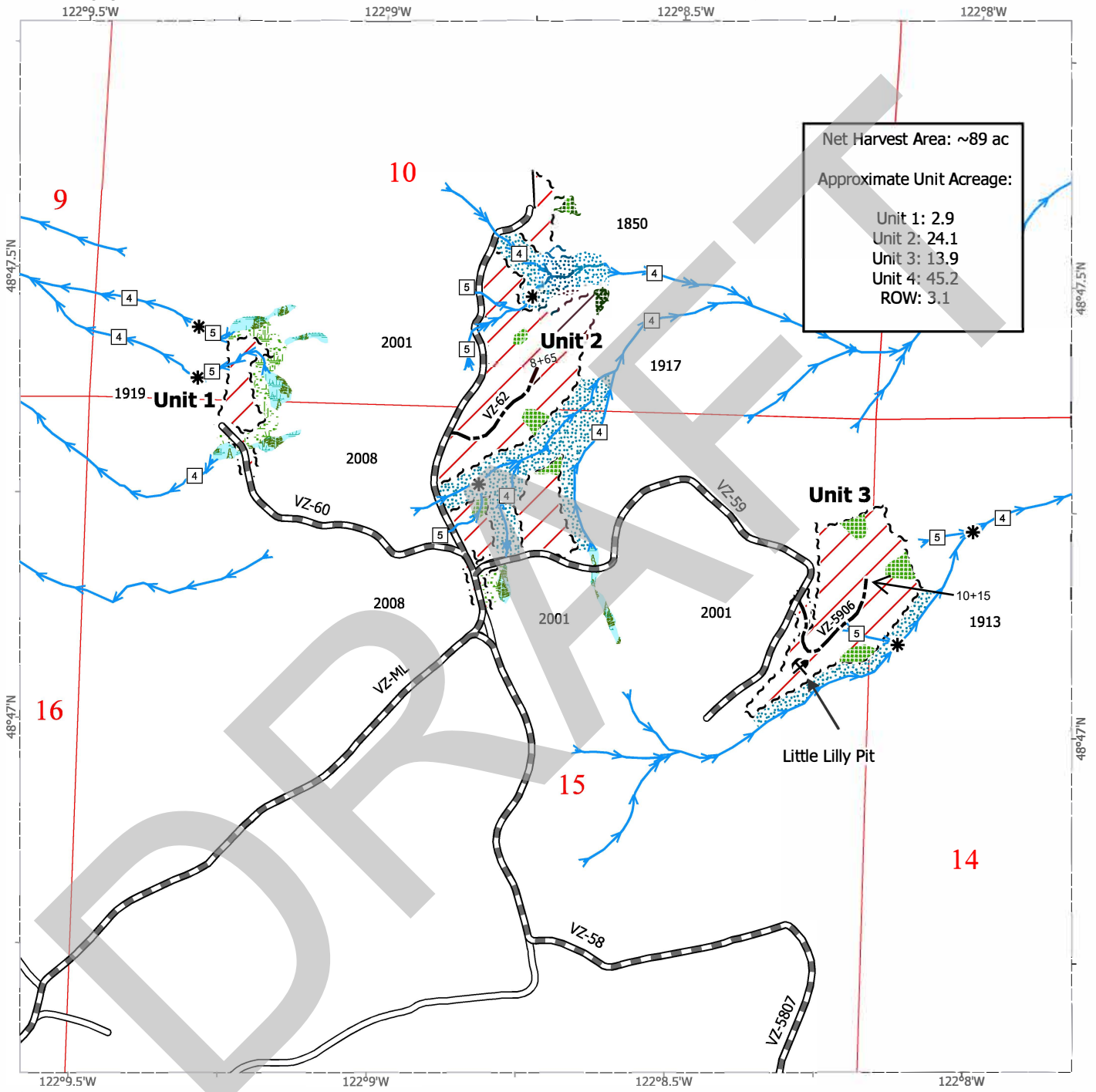
- SPECIAL REMARKS:**
1. A portion of the road work, VA-3804 road, is on abandoned grade.
 2. HQ DF and DF pole quality timber noted within the sale area. See cruise for further details.
 3. All trees 60 inches or larger measured at diameter at breast height are excluded from the products sold.

DRAFT

TIMBER SALE MAP

SALE NAME: LITTLE LILLY
AGREEMENT #: 30-106363
TOWNSHIP(S): T38R5E
TRUST(S): Common School and Indemnity (3), Scientific School (10), State Forest Transfer (1)

REGION: Northwest Region
COUNTY(S): Whatcom
ELEVATION RGE: 1600-2120



Net Harvest Area: ~89 ac
 Approximate Unit Acreage:
 Unit 1: 2.9
 Unit 2: 24.1
 Unit 3: 13.9
 Unit 4: 45.2
 ROW: 3.1

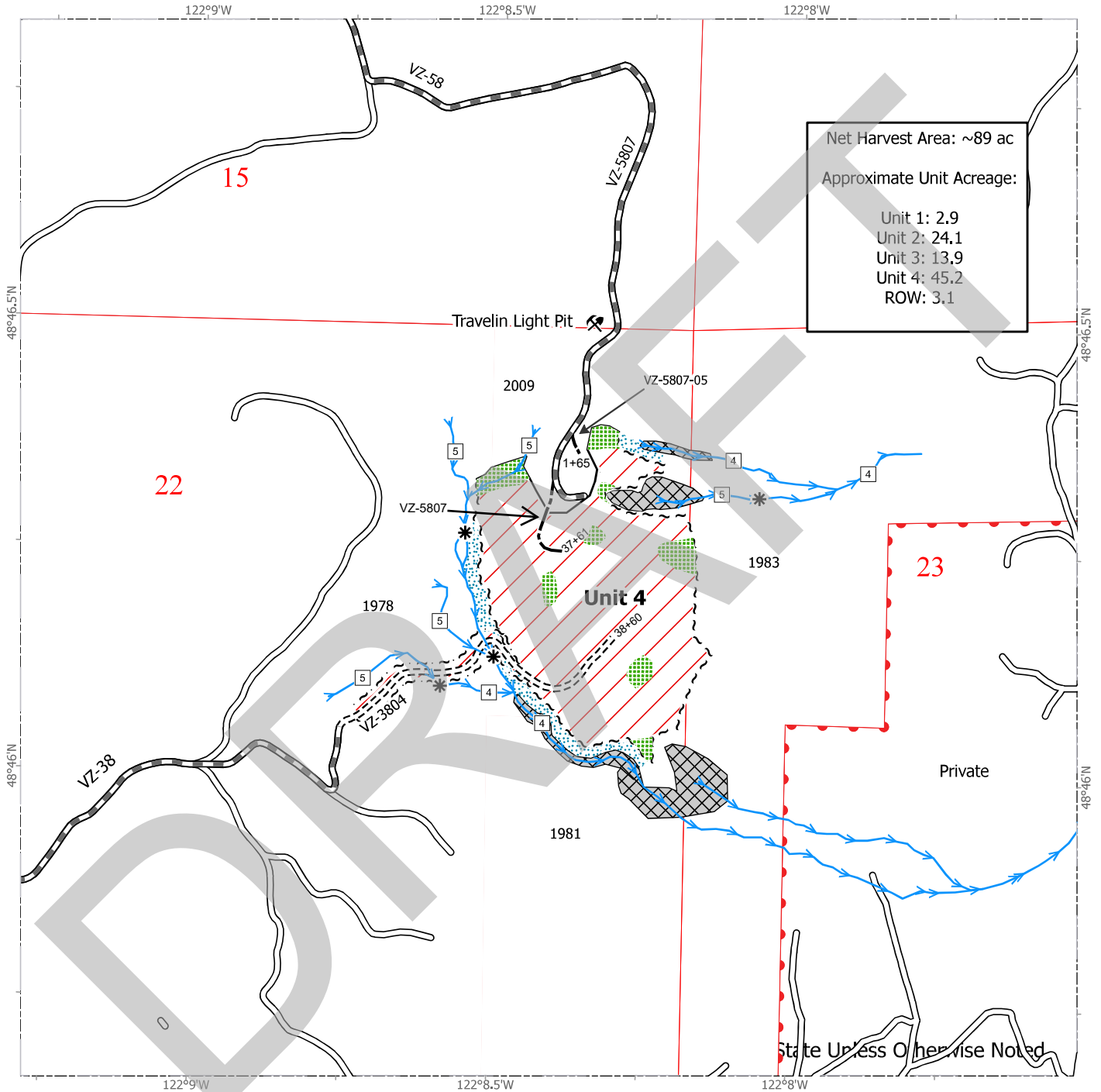
Sale Area	Sale Boundary Tags	Streams
Leave Tree Area	Right of Way Tags	Stream Type
Non-Tradeable Leave Clump	Timber Type Change	Stream Break
Riparian Mgt Zone	Existing Roads	Rock Pit
Forested Wetland	Required Pre-Haul Maintenance	
Wetland Mgt Zone	Optional Construction	



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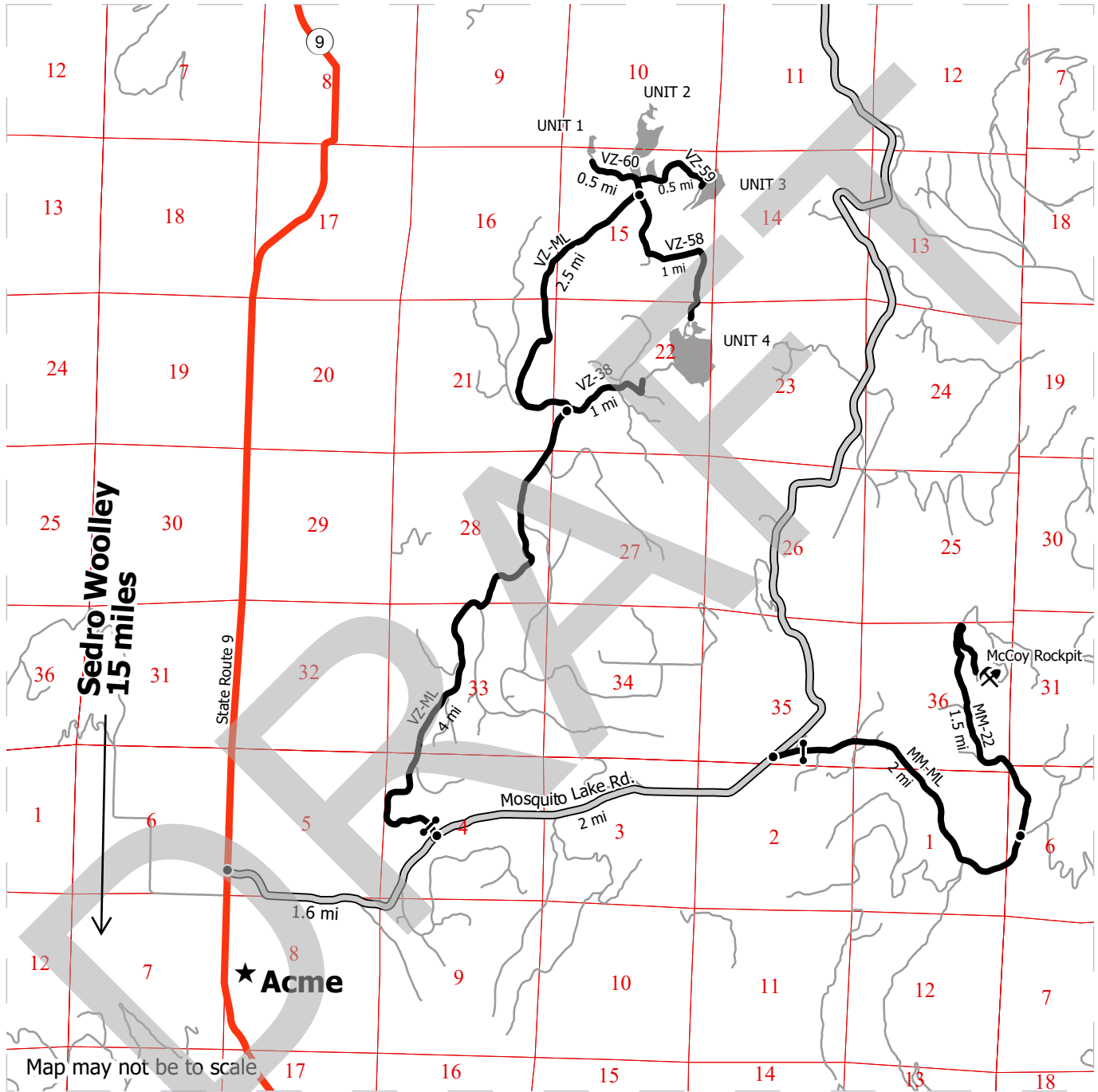
Sale Area	Sale Boundary Tags	Streams
Leave Tree Area	Right of Way Tags	Stream Type
Non-Tradeable Leave Clump	Timber Type Change	Stream Break
Riparian Mgt Zone	Existing Roads	Rock Pit
Forested Wetland	Required Pre-Haul Maintenance	No Entry Zone
Wetland Mgt Zone	Required Construction	
	Optional Construction	



DRIVING MAP

SALE NAME: LITTLE LILLY
AGREEMENT #: 30-106363
TOWNSHIP(S): T38R5E
TRUST(S): Common School and Indemnity (3), Scientific School (10), State Forest Transfer (1)

REGION: Northwest Region
COUNTY(S): Whatcom
ELEVATION RGE: 1600-2120



Map may not be to scale

- Harvest Unit
- Highway
- Haul Route
- Other Route
- County Road
- Distance Indicator
- Gate
- Rock Pit

DRIVING DIRECTIONS:

From Sedro Woolley, travel 15 miles north on State Route 9 and turn right onto Mosquito Lake Rd. Continue 1.6 miles, then turn left onto the VZ-ML (F 1-3 required). Continue 4 miles to the VZ-38 junction. Continue straight on the VZ-38 road for 1 mile to access lower portion of Unit 4 or stay left on the VZ-ML for another 2.5 miles to the VZ-58 junction. Turn right on the VZ-58 road for 1 mile to access upper portion of Unit 4 or stay straight on VZ-ML for another 500 feet to access Unit 2. From there either turn right on the VZ-59 road and travel 0.5 miles to Unit 3 or turn left on the VZ-60 road and travel 0.5 miles to Unit 1.

To access the McCoy Rock Pit, continue 2 miles beyond the VZ-ML junction on Mosquito Lake Road and turn right onto the MM-ML (F 1-3 key required). Continue 2 miles and bare left onto MM-22 for another 1.5 miles to access the McCoy Rockpit.



Timber Sale Cruise Report Little Lilly - NW

Sale Name: LITTLE LILLY

Sale Type: LUMP SUM

Region: NORTHWEST

District: BAKER

Lead Cruiser: Matt Llobet

Cruise Narrative:

All timber was graded in variable log lengths with the Scaling Bureaus Westside/Northwest log rules. The utility wood was given a board ft. volume. For this cruise different basal area factors were selected based on stoking levels, tree sizes, topography, and understory conditions. The smallest merchantable tree cruised throughout the sale had a DBH of 7.0 inches and 5.0 inches at 16 feet. My plots were generated in GIS and located in the field using Avenza Maps. Trees were segmented into preferred west-side log lengths while taking into account location of defect within each tree cruised.

- Conifer log lengths were cruised in 2 foot multiples - maximizing 32-40 ft. lengths.
- Hardwood log lengths were cruised in 10 foot multiples - no longer than 30 feet.

Observed throughout all four units was mild to flat topography, making for productive operator ground. Little Lilly has a dominant Douglas fir component (77%), with a scattered component of western hemlock (19%), western red cedar, and hardwoods. Douglas fir logs meeting HQ grades were cruised throughout the sale, amounting to 714 MBF. Also observed throughout the sale was 300 MBF of pole quality Douglas fir. The poles observed throughout the sale were primarily second cut pieces, with a scattered component of naturals. Defect observed includes: forked or multiple tops, spike knots, root-rot pockets, and sweep.

HQA - Logs meeting the following criteria:

Surface characteristics for a high quality A sort will have sound tight knots not to exceed 1.5" in diameter, numbering not more than an average of one knot per foot of log length. May include logs with not more than two larger knots. Knots and knot indicators .5" in diameter and smaller shall not be a determining factor. Logs will have a growth ring count of 6 or more rings per inch in the outer third top end of the log.

HQB - Logs meeting the following criteria:

Surface characteristics for a B sort will have sound tight knots not to exceed 1.5" in diameter. May include logs with not more than two larger knots up to 2" in diameter. Logs will have a growth ring count of 6 or more rings per inch in the outer third to end of the Log. (Min dia 8".)

POLE - Logs meeting pole specifications.

Timber Sale Notice Volume (MBF)

Sp	DBH	Rings/In	Age	MBF Volume by Grade						
				All	Peeler	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	21.2	8.0		3,070	51	216	2,088	625	60	31
WH	15.8			770			298	420	49	2
RC	16.9			108				87	20	
RA	15.4			57			23	13	19	3
ALL	19.1	8.0		4,005	51	216	2,409	1,145	148	36

Timber Sale Notice Weight (tons)

Sp	Tons by Grade						
	All	Peeler	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	19,882	274	1,262	12,753	4,883	547	163
WH	6,535			2,302	3,739	468	26
RC	1,014				817	197	
RA	462			153	108	173	27
ALL	27,894	274	1,262	15,209	9,548	1,385	217

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 (%)
258.7	5.3	170.6	2.2	44,900	5.7

Timber Sale Unit Cruise Design

Unit	Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
LITTLE LILLY U1	B2: VR, 2 BAF (62.5, 40 for some species) Measure All, Sighting Ht = 4.5 ft	2.9	2.9	2	2	0
LITTLE LILLY U2	B2C: VR, 2 BAF (62.5, 40 for some species) Measure/Count Plots, Sighting Ht = 4.5 ft	24.1	25.7	19	19	0
LITTLE LILLY U3	B2: VR, 2 BAF (62.5, 40 for some species) Measure All, Sighting Ht = 4.5 ft	13.9	15.2	10	10	1
LITTLE LILLY U4	B2: VR, 2 BAF (54.44, 40 for some species) Measure All, Sighting Ht = 4.5 ft	45.2	50.0	27	27	0
LITTLE LILLY ROW	FX: FR plots (20 tree / acre expansion)	3.1	3.7	9	9	0
All		89.2	97.4	67	67	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	16.8	38	16,300	16,041	1.6	8,611.8	1,430.9
DF	LIVE	2 SAW	HQ-A	14.3	40	845	845	0.0	515.0	75.3
DF	LIVE	2 SAW	HQ-B	16.6	38	4,215	4,175	1.0	2,251.3	372.4
DF	LIVE	2 SAW	Pole	14.6	40	2,348	2,348	0.0	1,374.9	209.5
DF	LIVE	3 PEELER	Domestic	26.9	40	569	569	0.0	273.5	50.8
DF	LIVE	3 SAW	Domestic	8.6	35	6,065	6,041	0.4	4,235.2	538.8
DF	LIVE	3 SAW	Pole	9.8	36	963	963	0.0	648.2	85.9

Sp	Status	Grade	Sort	Dia	Len	BF Gross	BF Net	Defect %	Tons	MBF Net
DF	LIVE	4 SAW	Domestic	6.4	26	674	673	0.1	547.2	60.0
DF	LIVE	CULL	Cull	23.2	12	162	0	100.0	0.0	0.0
DF	LIVE	SPECIAL MILL	HQ-A	19.8	38	2,432	2,420	0.5	1,261.8	215.9
DF	LIVE	UTILITY	Pulp	18.6	20	348	348	0.0	162.9	31.0
RA	LIVE	2 SAW	Domestic	14.3	28	276	258	6.5	153.3	23.0
RA	LIVE	3 SAW	Domestic	10.9	30	157	145	7.7	108.5	13.0
RA	LIVE	4 SAW	Domestic	8.7	28	224	208	7.0	173.1	18.6
RA	LIVE	CULL	Cull	5.4	24	20	0	100.0	0.0	0.0
RA	LIVE	UTILITY	Pulp	6.6	23	33	33	0.0	27.5	2.9
RC	LIVE	3 SAW	Domestic	9.1	36	745	735	1.4	601.5	65.5
RC	LIVE	3 SAW	Pole	9.1	40	245	245	0.0	215.4	21.8
RC	LIVE	4 SAW	Domestic	5.7	29	197	196	0.3	177.3	17.5
RC	LIVE	4 SAW	Pole	6.9	21	29	29	0.0	20.0	2.6
RC	LIVE	CULL	Cull	20.8	17	153	0	100.0	0.0	0.0
WH	LIVE	2 SAW	Domestic	14.8	39	3,388	3,343	1.3	2,302.4	298.2
WH	LIVE	3 SAW	Domestic	8.9	35	4,766	4,712	1.1	3,738.7	420.3
WH	LIVE	4 SAW	Domestic	5.6	26	549	549	0.0	467.6	49.0
WH	LIVE	CULL	Cull	17.1	10	54	0	100.0	0.0	0.0
WH	LIVE	UTILITY	Pulp	5.1	28	23	23	0.0	26.4	2.1

Timber Sale Log Sort x Diameter Bin Summary

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	5 - 7	LIVE	Pulp	5.5	16	1	0.0	1.0	0.1
DF	5 - 7	LIVE	Domestic	6.6	31	2,021	0.5	1,527.5	180.3
DF	8 - 11	LIVE	Pole	9.6	36	890	0.0	610.9	79.4
DF	8 - 11	LIVE	Domestic	9.7	34	4,692	0.3	3,254.8	418.6
DF	12 - 15	LIVE	Domestic	13.6	37	5,557	0.4	3,387.3	495.7
DF	12 - 15	LIVE	HQ-B	13.7	38	870	2.8	550.2	77.6
DF	12 - 15	LIVE	HQ-A	13.8	40	698	0.0	437.4	62.3
DF	12 - 15	LIVE	Pole	14.2	40	1,886	0.0	1,122.8	168.2
DF	12 - 15	LIVE	Pulp	15.0	21	149	0.0	78.5	13.3
DF	16 - 19	LIVE	Pole	16.6	40	535	0.0	289.4	47.7
DF	16 - 19	LIVE	HQ-B	17.6	40	2,184	0.7	1,159.0	194.8
DF	16 - 19	LIVE	Domestic	17.8	39	4,789	0.9	2,475.5	427.2
DF	16 - 19	LIVE	HQ-A	18.0	38	1,113	0.0	598.4	99.3
DF	16 - 19	LIVE	Cull	19.5	14	0	100.0	0.0	0.0
DF	20+	LIVE	HQ-A	21.5	38	1,453	0.8	741.0	129.6

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	20+	LIVE	HQ-B	22.9	38	1,121	0.0	542.1	100.0
DF	20+	LIVE	Domestic	23.7	40	6,264	3.0	3,022.5	558.8
DF	20+	LIVE	Pulp	23.8	20	198	0.0	83.5	17.6
DF	20+	LIVE	Cull	24.1	11	0	100.0	0.0	0.0
RA	5+	LIVE	Cull	5.4	24	0	100.0	0.0	0.0
RA	5+	LIVE	Pulp	6.8	25	33	0.0	27.5	2.9
RA	5+	LIVE	Domestic	9.6	29	612	7.0	434.9	54.6
RC	5+	LIVE	Domestic	7.5	33	931	1.2	778.9	83.1
RC	5+	LIVE	Pole	8.8	34	274	0.0	235.4	24.5
RC	5+	LIVE	Cull	20.8	17	0	100.0	0.0	0.0
WH	5 - 7	LIVE	Pulp	5.1	28	23	0.0	26.4	2.1
WH	5 - 7	LIVE	Domestic	6.2	29	1,466	0.1	1,250.7	130.7
WH	8 - 11	LIVE	Domestic	9.8	35	3,795	1.3	2,955.6	338.5
WH	12 - 15	LIVE	Domestic	13.6	39	1,721	0.9	1,258.0	153.5
WH	16 - 19	LIVE	Cull	17.1	10	0	100.0	0.0	0.0
WH	16 - 19	LIVE	Domestic	17.1	40	1,493	1.2	964.3	133.2
WH	20+	LIVE	Domestic	21.6	40	129	7.9	80.1	11.5

Cruise Unit Report LITTLE LILLY U1

Unit Sale Notice Volume (MBF): LITTLE LILLY U1

Sp	DBH	Rings/In	Age	MBF Volume by Grade			
				All	2 Saw	3 Saw	4 Saw
DF	19.8			133	90	43	1
ALL	19.8			133	90	43	1

Unit Cruise Design: LITTLE LILLY U1

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2: VR, 2 BAF (62.5, 40 for some species) Measure All, Sighting Ht = 4.5 ft	2.9	2.9	2	2	0

Unit Cruise Summary: LITTLE LILLY U1

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

Unit Cruise Statistics: LITTLE LILLY 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	281.3	15.7	11.1	163.3	9.1	3.0	45,915	18.2	11.5
ALL	281.3	15.7	11.1	163.3	9.1	3.0	45,915	18.2	11.5

Unit Summary: LITTLE LILLY U1

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	9	ALL	19.8	90	114	46,003	45,915	0.2	131.5	281.3	63.2	133.2
ALL	LIVE	CUT	9	ALL	19.8	90	114	46,003	45,915	0.2	131.5	281.3	63.2	133.2
ALL	ALL	CUT	9	ALL	19.8	90	114	46,003	45,915	0.2	131.5	281.3	63.2	133.2

Cruise Unit Report LITTLE LILLY U2

Unit Sale Notice Volume (MBF): LITTLE LILLY U2

Sp	DBH	Rings/In	Age	MBF Volume by Grade						
				All	Peeler	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	23.9			1,151	13	45	896	183	8	6
WH	15.6			223			82	126	15	
RC	20.8			16				14	2	
RA	17.7			12			5	4	2	2
ALL	20.9			1,403	13	45	983	327	27	7

Unit Cruise Design: LITTLE LILLY 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	24.1	25.7	19	19	0

Unit Cruise Summary: LITTLE LILLY U2

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	66	66	3.5	0
WH	19	19	1.0	0
RC	3	3	0.2	0
RA	2	2	0.1	0
ALL	90	90	4.7	0

Unit Cruise Statistics: LITTLE LILLY 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	61.7	14.2	219.9	23.6	2.9	47,747	66.1	14.5
WH	62.5	110.6	25.4	148.3	28.8	6.6	9,270	114.3	26.2
RC	6.3	237.3	54.4	106.2	10.0	5.8	670	237.5	54.7
RA	4.2	435.9	100.0	120.7	15.3	10.8	508	436.2	100.6
ALL	290.1	39.0	8.9	200.6	30.1	3.2	58,196	49.2	9.5

Unit Summary: LITTLE LILLY U2

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	66	ALL	23.9	102	132	48,809	47,747	2.2	69.7	217.1	44.4	1,150.7
RA	LIVE	CUT	2	ALL	17.7	75	92	536	508	5.2	2.5	4.2	1.0	12.2
RC	LIVE	CUT	3	ALL	20.8	79	104	670	670	0.0	2.7	6.3	1.4	16.2
WH	LIVE	CUT	19	ALL	15.6	73	94	9,501	9,270	2.4	47.1	62.5	15.8	223.4
ALL	LIVE	CUT	90	ALL	20.9	90	116	59,516	58,196	2.2	122.0	290.1	62.6	1,402.5
ALL	ALL	CUT	90	ALL	20.9	90	116	59,516	58,196	2.2	122.0	290.1	62.6	1,402.5

Cruise Unit Report LITTLE LILLY U3

Unit Sale Notice Volume (MBF): LITTLE LILLY U3

Sp	DBH	Rings/In	Age	MBF Volume by Grade					
				All	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	20.0			796	22	529	216	22	8
WH	14.1			33		13	19	1	
ALL	19.4			829	22	541	235	24	8

Unit Cruise Design: LITTLE LILLY U3

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2: VR, 2 BAF (62.5, 40 for some species) Measure All, Sighting Ht = 4.5 ft	13.9	15.2	10	10	1

Unit Cruise Summary: LITTLE LILLY U3

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	48	48	4.8	0
WH	3	3	0.3	0
ALL	51	51	5.1	0

Unit Cruise Statistics: LITTLE LILLY 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	300.0	48.9	15.5	190.8	23.7	3.4	57,244	54.3	15.8
WH	18.8	316.2	100.0	127.2	42.0	24.2	2,384	319.0	102.9
ALL	318.8	44.8	14.2	187.1	25.4	3.6	59,628	51.5	14.6

Unit Summary: LITTLE LILLY U3

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	48	ALL	20.0	90	117	57,459	57,244	0.4	137.5	300.0	67.1	795.7
WH	LIVE	CUT	3	ALL	14.1	60	73	2,384	2,384	0.0	17.3	18.8	5.0	33.1
ALL	LIVE	CUT	51	ALL	19.4	87	112	59,843	59,628	0.4	154.8	318.8	72.1	828.8
ALL	ALL	CUT	51	ALL	19.4	87	112	59,843	59,628	0.4	154.8	318.8	72.1	828.8

Cruise Unit Report LITTLE LILLY U4

Unit Sale Notice Volume (MBF): LITTLE LILLY U4

Sp	DBH	Rings/In	Age	MBF Volume by Grade						
				All	Peeler	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	19.2	8.0		931	30	141	547	172	25	18
WH	16.1			508			203	271	31	2
RC	16.2			91				73	18	
RA	15.0			42			18	8	15	1
ALL	17.3	8.0		1,573	30	141	768	523	90	21

Unit Cruise Design: LITTLE LILLY U4

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2: VR, 2 BAF (54.44, 40 for some species) Measure All, Sighting Ht = 4.5 ft	45.2	50.0	27	27	0

Unit Cruise Summary: LITTLE LILLY U4

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	54	54	2.0	1
WH	40	40	1.5	0
RC	20	20	0.7	0
RA	7	7	0.3	0
ALL	121	121	4.5	1

Unit Cruise Statistics: LITTLE LILLY U4

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
DF	108.9	76.0	14.6	189.2	37.5	5.1	20,601	84.7	15.5
WH	80.7	82.4	15.9	139.4	21.1	3.3	11,247	85.0	16.2
RC	29.6	138.0	26.6	67.9	20.4	4.6	2,011	139.5	27.0
RA	10.4	253.0	48.7	89.8	34.8	13.1	932	255.4	50.4
ALL	229.5	41.2	7.9	151.6	44.9	4.1	34,791	60.9	8.9

Unit Summary: LITTLE LILLY U4

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	54	ALL	19.2	75	95	20,931	20,601	1.6	54.2	108.9	24.8	931.2
RA	LIVE	CUT	7	ALL	15.0	59	75	1,046	932	10.9	8.5	10.4	2.7	42.1
RC	LIVE	CUT	20	ALL	16.2	55	70	2,336	2,011	13.9	20.7	29.6	7.4	90.9
WH	LIVE	CUT	40	ALL	16.1	71	89	11,425	11,247	1.6	57.0	80.7	20.1	508.3
ALL	LIVE	CUT	121	ALL	17.3	70	88	35,738	34,791	2.7	140.4	229.5	55.0	1,572.5
ALL	ALL	CUT	121	ALL	17.3	70	88	35,738	34,791	2.7	140.4	229.5	55.0	1,572.5

Cruise Unit Report LITTLE LILLY ROW

Unit Sale Notice Volume (MBF): LITTLE LILLY ROW

Sp	DBH	Rings/In	Age	MBF Volume by Grade						
				All	Peeler	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	18.6			60	9	8	28	11	4	0
WH	13.0			5				4	1	
RA	11.7			3				1	2	
RC	14.2			0				0		
ALL	16.9			68	9	8	28	17	6	0

Unit Cruise Design: LITTLE LILLY ROW

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
FX: FR plots (20 tree / acre expansion)	3.1	3.6	9	9	0

Unit Cruise Summary: LITTLE LILLY ROW

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	29	29	3.2	0
WH	7	7	0.8	0
RA	4	6	0.7	0
RC	1	1	0.1	0
ALL	41	43	4.8	0

Unit Cruise Statistics: LITTLE LILLY ROW

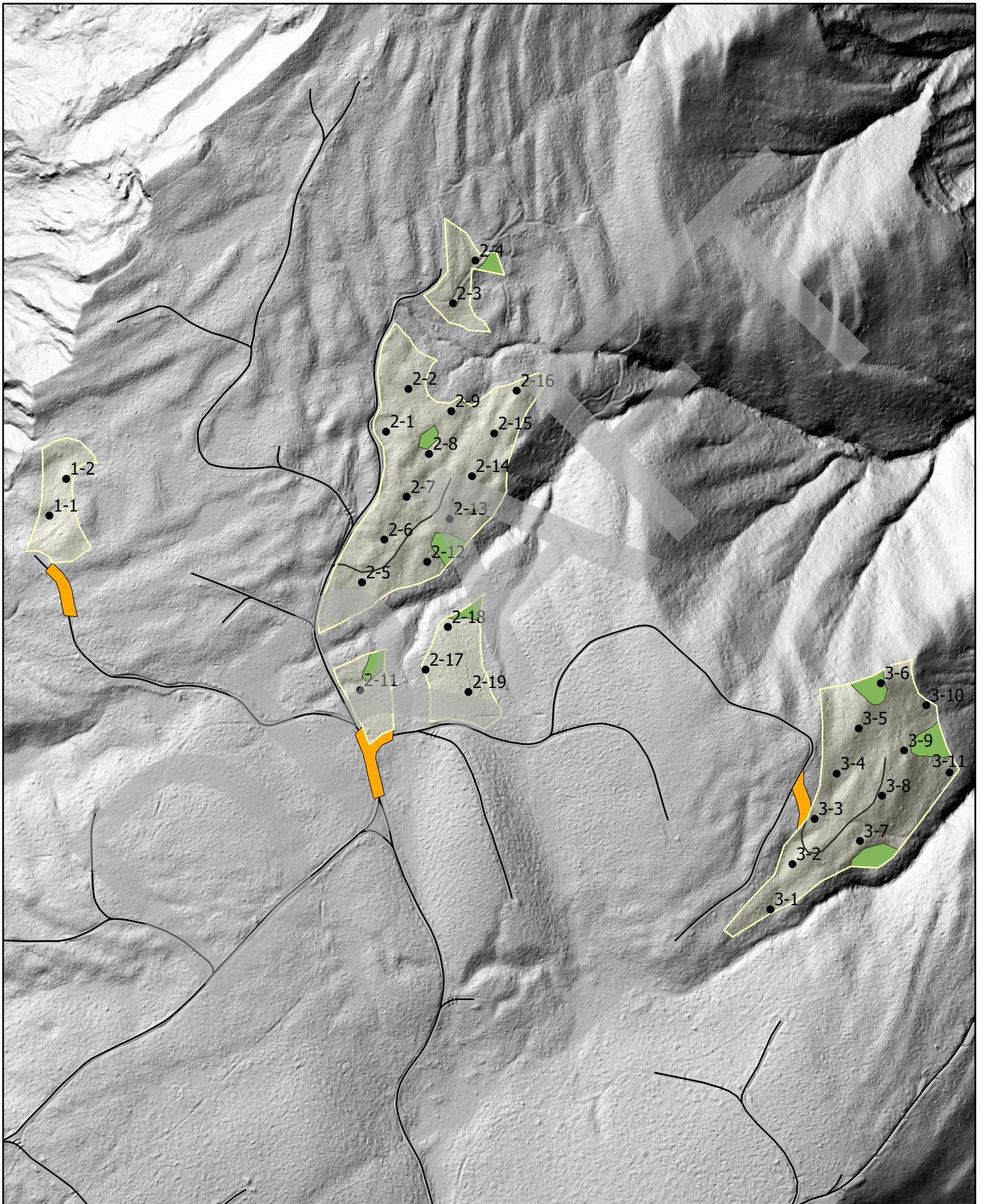
Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
DF	121.9	89.3	29.8	158.1	31.9	5.9	19,276	94.9	30.4
WH	14.4	123.2	41.1	104.4	31.0	11.7	1,507	127.0	42.7
RA	10.0	214.3	71.4	100.9	26.5	13.3	1,009	216.0	72.7
RC	2.4	300.0	100.0	59.1	0.0	0.0	144	300.0	100.0
ALL	148.8	70.9	23.6	147.4	31.8	5.0	21,936	77.7	24.1

Unit Summary: LITTLE LILLY ROW

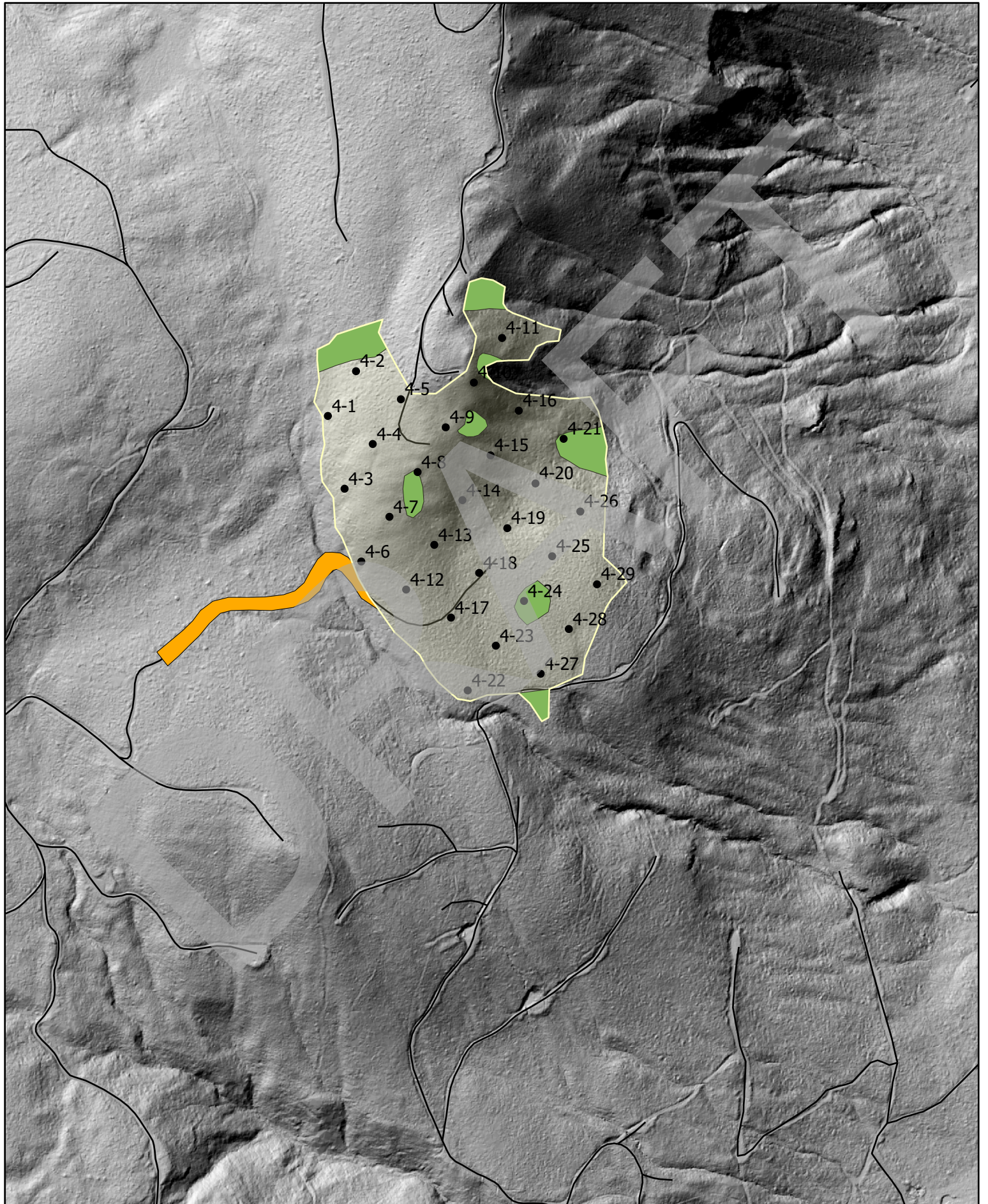
Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	29	ALL	18.6	67	89	19,487	19,276	1.1	64.6	121.9	28.3	59.8
RA	LIVE	CUT	4	ALL	11.7	57	69	1,009	1,009	0.0	13.4	10.0	2.9	3.1
RC	LIVE	CUT	1	ALL	14.2	50	62	144	144	0.0	2.2	2.4	0.6	0.4
WH	LIVE	CUT	7	ALL	13.0	55	70	1,507	1,507	0.0	15.7	14.4	4.0	4.7
ALL	LIVE	CUT	41	ALL	16.9	63	82	22,147	21,936	1.0	95.9	148.8	35.8	68.0
ALL	ALL	CUT	41	ALL	16.9	63	82	22,147	21,936	1.0	95.9	148.8	35.8	68.0

DRAFT

Little Lilly Sample Point Map Units 1-3

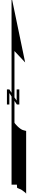


Little Lilly Sample Point Map Unit 4

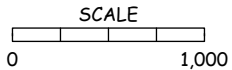




ROAD PLAN AND SPECIFICATIONS #30-104692 LITTLE LILLY



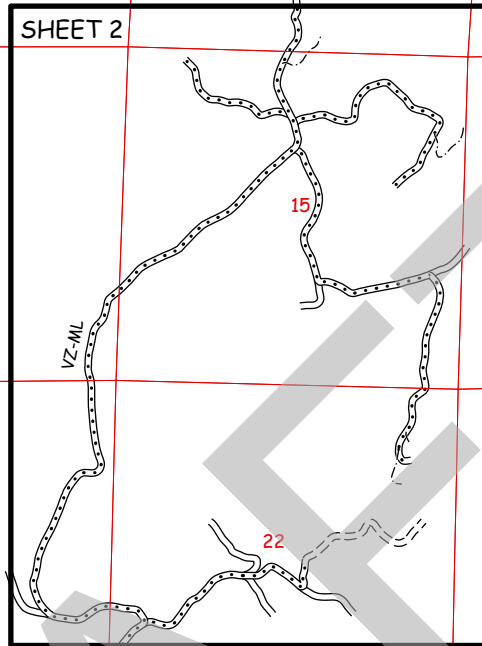
17



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SHEET 2



LEGEND

PRE-HAUL MAINTENANCE	---
REQUIRED CONSTRUCTION	----
OPTIONAL CONSTRUCTION	- - - -
REQUIRED RECONSTRUCTION	====
OPTIONAL RECONSTRUCTION	- - - -

T38R05E

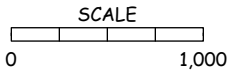
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MOSQUITO LK. RD.
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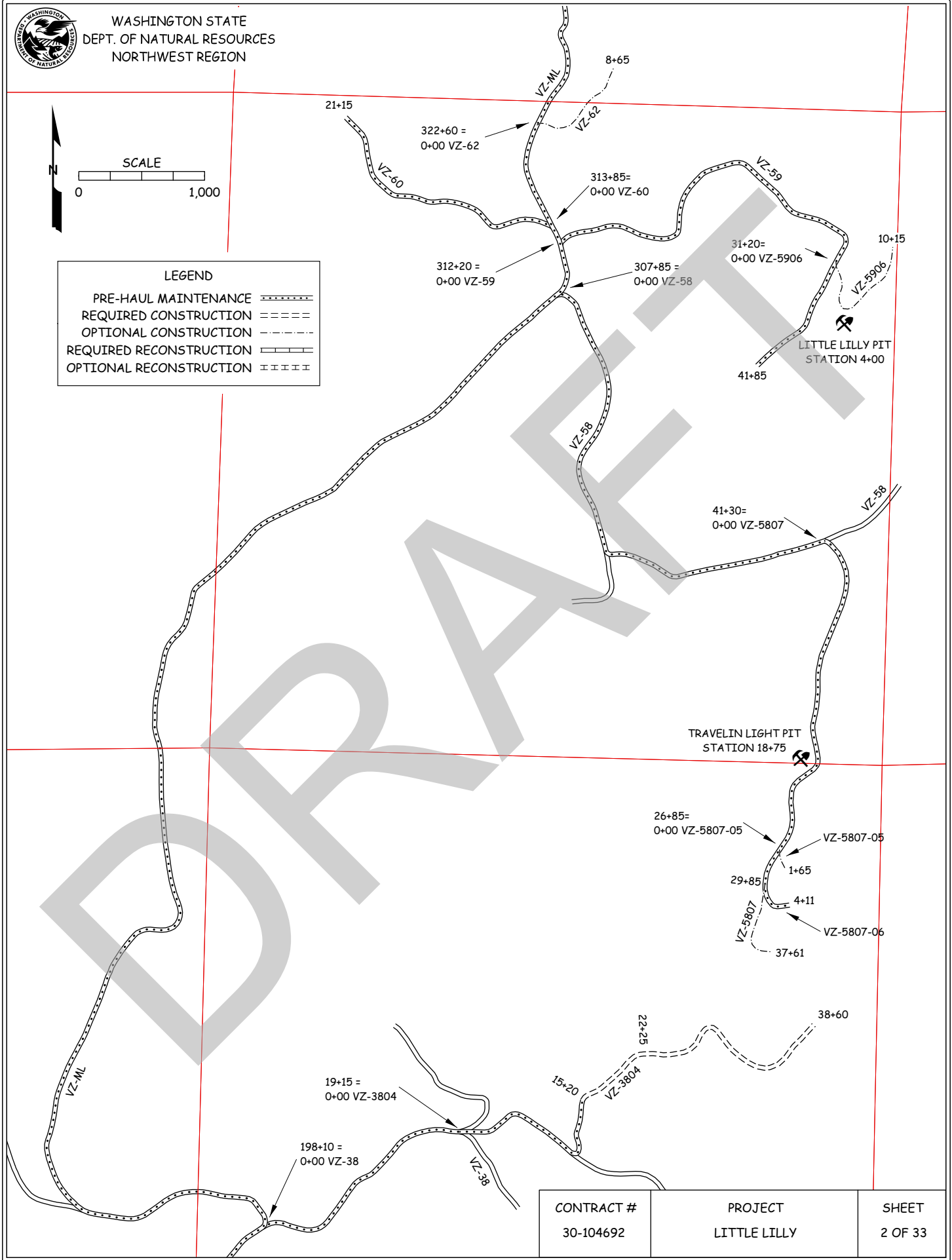
GATE
MP 1.8 =
0+00 VZ-ML

MP 4.1 =
0+00 MM-ML

DESIGNED BY	REVIEWED BY	APPROVED BY	PLAN DATE	SHEET
CARLSON	ZYLSTRA 2/13/2024	ZYLSTRA 2/13/2024	01/02/2024	1 OF 33



LEGEND	
PRE-HAUL MAINTENANCE	=====
REQUIRED CONSTRUCTION	-----
OPTIONAL CONSTRUCTION	-----
REQUIRED RECONSTRUCTION	=====
OPTIONAL RECONSTRUCTION	=====



CONTRACT #
30-104692

PROJECT
LITTLE LILLY

SHEET
2 OF 33

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

LITTLE LILLY TIMBER SALE ROAD PLAN
WHATCOM COUNTY
BAKER DISTRICT
NORTHWEST REGION

AGREEMENT NO.: 30-106363

STAFF ENGINEER: CARLSON

DATE: JANUARY 2, 2024

SECTION 0 – SCOPE OF PROJECT

0-1 ROAD PLAN SCOPE

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

0-2 REQUIRED ROADS

The specified work on the following roads is required.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
VZ-ML	0+00 to 340+30	Pre-haul Maintenance
VZ-38	0+00 to 19+15	Pre-haul Maintenance
VZ-3804	0+00 to 15+20	Pre-haul Maintenance
VZ-3804*	15+20 to 38+60	Construction
VZ-58	0+00 to 41+30	Pre-haul Maintenance
VZ-5807	0+00 to 29+85	Pre-haul Maintenance
VZ-5807-06	0+00 to 4+11	Pre-haul Maintenance
VZ-59	0+00 to 41+85	Pre-haul Maintenance
VZ-60	0+00 to 21+15	Pre-haul Maintenance

*Construction from 15+20 to 22+25 is on an abandoned grade

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>
VZ-5807	29+85 to 37+61	Construction
VZ-5807-05	0+00 to 1+65	Construction
VZ-5906	0+00 to 10+15	Construction
VZ-62	0+00 to 8+65	Construction

0-4 CONSTRUCTION

Construction includes, but is not limited to clearing, grubbing, excavation and embankment to sub-grade, landing and turnout construction, culvert installation, application of shot rock subgrade ballast, and application of 3-inch-minus ballast rock.

0-6 PRE-HAUL MAINTENANCE

All pre-haul maintenance includes, but is not limited to the following items:

- Brushing
- Blading, shaping, and ditching the road prism to the dimensions shown in the TYPICAL SECTION

Specific pre-haul maintenance specifications include:

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
VZ-5807	29+85	Culvert inlet/outlet cleanout.

0-7 POST-HAUL MAINTENANCE

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

0-10 ABANDONMENT

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

0-12 DEVELOP ROCK SOURCE

Purchaser may develop existing rock sources. Rock source development will involve drilling, shooting, and processing rock to generate riprap, 3-inch-minus ballast rock, and shot rock subgrade ballast. Work for developing rock sources is listed in Section 6 ROCK AND SURFACING.

SECTION 1 – GENERAL

1-1 ROAD PLAN CHANGES

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

1-2 UNFORESEEN CONDITIONS

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

1-3 ROAD DIMENSIONS

Purchaser shall perform road work in accordance with the dimensions shown on the TYPICAL SECTION SHEET and the specifications within this road plan, unless controlled by construction stakes.

1-4 ROAD TOLERANCES

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

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

1-6 ORDER OF PRECEDENCE

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

1. Addenda.
2. Road Plan Clauses.
3. Typical Section Sheet.
4. Standard Lists.
5. Standard Details.

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

1-8 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.

1-18 REFERENCE POINT DAMAGE

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

1-21 HAUL APPROVAL

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

1-23 ROAD WORK PHASE APPROVAL

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

- Right-of-way
 - Falling/decking
 - Clearing/grubbing
- Subgrade Construction
 - Excavation and embankment to subgrade
 - Culvert installation
 - Ditch construction
 - Subgrade compaction
- Rock application
 - Rock compaction
 - Rock depth
- Erosion and sediment control
- Revegetation
- Abandonment

1-25 ACTIVITY TIMING RESTRICTION

The specified activities are not allowed during the listed closure periods unless authorized in writing by the Contract Administrator.

Activity	Closure Period
All Activities	November 1 to March 31

1-26 OPERATING DURING CLOSURE PERIOD

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

1-29 SEDIMENT RESTRICTION

Purchaser shall not allow silt-bearing runoff to enter any streams.

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

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

1-33 SNOW PLOWING RESTRICTION

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

1-40 ROAD APPROACHES TO COUNTY ROADS AND STATE HIGHWAYS

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

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

SECTION 2 – MAINTENANCE

2-1 GENERAL ROAD MAINTENANCE

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

2-2 ROAD MAINTENANCE – PURCHASER MAINTENANCE

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

2-3 ROAD MAINTENANCE – DESIGNATED MAINTAINER

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

2-5 MAINTENANCE GRADING – EXISTING ROAD

On the following roads, Purchaser shall use a grader to shape the existing surface before any hauling. Purchaser shall accomplish all grading using a motor grader with a minimum of 175 horsepower.

<u>Road</u>	<u>Stations</u>
All Pre-haul Maintenance roads	All stations

SECTION 3 – CLEARING, GRUBBING, AND DISPOSAL

3-1 BRUSHING

On the following road, Purchaser shall cut vegetative material up to 6 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>
VZ-ML	0+00 to 340+30
VZ-38	0+00 to 19+15
VZ-3804	0+00 to 15+20
VZ-58	0+00 to 41+30
VZ-5807	0+00 to 29+85
VZ-5807-06	0+00 to 4+11
VZ-59	0+00 to 41+85
VZ-60	0+00 to 21+15

3-5 CLEARING

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

3-8 PROHIBITED DECKING AREAS

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

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

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. Grubbing must be completed before starting excavation and embankment.

3-20 ORGANIC DEBRIS DEFINITION

Organic debris is defined as all vegetative material not eligible for removal by Contract Clause G-010 PRODUCTS SOLD AND SALE AREA or G-011 RIGHT TO REMOVE FOREST PRODUCTS AND CONTRACT AREA, that is larger than one cubic foot in volume within the clearing 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 within the cleared right-of-way or in natural openings as designated at areas approved in writing by the Contract Administrator.

3-23 PROHIBITED DISPOSAL AREAS

Purchaser shall not place organic debris in the following areas:

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

3-24 BURYING ORGANIC DEBRIS RESTRICTED

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

3-25 SCATTERING ORGANIC DEBRIS

Purchaser shall scatter organic debris outside of the clearing limits in natural openings unless otherwise detailed in this road plan.

SECTION 4 – EXCAVATION

4-1 EXCAVATOR CONSTRUCTION

Purchaser shall use a track mounted hydraulic excavator for construction work, unless 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 500 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 prior to embankment.

4-3 ROAD GRADE AND ALIGNMENT STANDARDS

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

- Grade and alignment must have smooth continuity, without abrupt changes in direction.
- Maximum grades may not exceed 18 percent favorable and 12 percent adverse.
- Minimum curve radius is 50 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 12%.
- 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
Fractured or loose rock	½:1	200
Hardpan or solid rock	¼:1	400

4-6 EMBANKMENT SLOPE RATIO

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

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

4-7 SHAPING CUT AND FILL SLOPE

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

4-8 CURVE WIDENING

The minimum widening placed on the inside of curves is:

- 6 feet for curves of 50 to 79 feet radius.
- 4 feet for curves of 80 to 100 feet radius.

4-9 EMBANKMENT WIDENING

The minimum embankment widening is:

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

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

4-21 TURNOUTS

Purchaser shall construct turnouts 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 are subject to written approval by the Contract Administrator. Minimum dimensions are shown on the TYPICAL SECTION SHEET.

4-22 TURNAROUNDS

At the end of all roads exceeding five stations, purchaser shall construct turnarounds as shown on the TURNAROUND DETAIL. Turnaround type and location are subject to written approval by the Contract Administrator.

4-25 DITCH CONSTRUCTION

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

4-28 DITCH DRAINAGE

Ditches must drain to cross-drain culverts or ditchouts.

4-29 DITCHOUTS

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

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 50% if the waste material is compacted and free of organic debris. On side slopes greater than 50%, 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 areas identified or approved by the Contract Administrator. The amount of material allowed in a waste area is at the discretion of the Contract Administrator.

4-38 PROHIBITED WASTE DISPOSAL AREAS

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

- Within 50 feet of a cross drain culvert.
- Within 100 feet of a live stream or wetland.
- In locations that interfere with the construction of the road prism.
- In locations that impede drainage.
- Against standing timber.
- Outside the clearing limits.

4-55 ROAD SHAPING

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

4-60 FILL COMPACTION

Purchaser shall compact all embankment and waste material by routing equipment over the entire width of each lift.

4-61 SUBGRADE COMPACTION

Purchaser shall compact constructed and reconstructed subgrades by routing equipment over the entire width.

SECTION 5 – DRAINAGE

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 MATERIALS LIST. Culvert, downspout, and flume lengths may be adjusted to fit as-built conditions and may not terminate directly on unprotected soil. Culverts may be new or used material (if specified in Clause 5-7) and must meet the specifications in Clauses 10-15 through 10-24.

5-7 USED CULVERT MATERIAL

On the following roads, Purchaser may install used culverts. All other roads must have new culverts installed. Purchaser shall obtain approval from the Contract Administrator for the quality of the used culverts before installation.

<u>Road</u>
VZ-5807
VZ-5807-05
VZ-5906
VZ-62

5-12 UNUSED MATERIALS STATE PROPERTY

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

5-15 CULVERT INSTALLATION

Culvert installation must be in accordance with the CULVERT AND DRAINAGE SPECIFICATION DETAIL and the National Corrugated Metal Pipe Association’s "Installation Manual for Corrugated Steel Drainage Structures" 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.

5-16 APPROVAL FOR LARGER CULVERT INSTALLATION

Purchaser shall obtain written approval from the Contract Administrator for the installation of culverts 30 inches in diameter and 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 1 foot of compacted subgrade over the top of the culvert at the shallowest point. Stream crossing culverts must be installed with a depth of cover recommended by the culvert manufacturer for the type and size of the pipe.

5-20 ENERGY DISSIPATERS

Purchaser shall install energy dissipaters in accordance with the CULVERT AND DRAINAGE SPECIFICATION DETAIL at all cross drain culverts, Energy dissipater installation is subject to approval by the Contract Administrator.

Rock used for energy dissipaters must be light/loose riprap. 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. Rock must be set in place by machine. Placement must be by zero-drop-height method only. No placement by end dumping or dropping of rock is allowed. Rock type shall meet the specifications in Clause 6-50 LIGHT LOOSE RIP RAP.

5-25 CATCH BASINS

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

5-26 HEADWALLS FOR CROSS DRAIN CULVERTS

Purchaser shall construct headwalls in accordance with the CULVERT AND DRAINAGE SPECIFICATION DETAIL at all cross drain culverts. Rock used for headwalls must weigh at least 50 pounds. Rock must be placed on shoulders, slopes, and around culvert inlets and outlets. Rock may not restrict the flow of water into culvert inlets or catch basins. No placement by end dumping or dropping of rock is allowed.

5-27 ARMORING FOR STREAM CROSSING CULVERTS

At stream crossing culverts, Purchaser shall place riprap in conjunction with construction of the embankment. Rock must be placed on shoulders, slopes, and around culvert inlets and outlets as designated on the MATERIALS LIST or as directed by the Contract Administrator. Rock may not restrict the flow of water into culvert inlets or catch basins. Placement must be by zero-drop-height method only. No placement by end dumping or dropping of rock is allowed.

SECTION 6 – ROCK AND SURFACING

6-2 ROCK SOURCE ON STATE LAND

Rock used in accordance with the quantities on the TYPICAL SECTION and MATERIALS LIST may be obtained from the following sources on state land at no charge to the Purchaser. Purchaser shall obtain written approval from the Contract Administrator for the use of material from any other source. If other operators are using, or desire to use the rock sources, a joint operating plan must be developed. All parties shall follow this plan.

<u>Source</u>	<u>Location</u>	<u>Rock Type</u>
McCoy Pit	Sta. 22+50 of the MM-22	3-inch minus ballast rock
Travelin Light Pit	Sta. 18+75 of the VZ-5807	shot rock, riprap
Little Lilly Pit	Sta. 4+00 of the VZ-5906	shot rock, riprap

6-5 ROCK FROM COMMERCIAL SOURCE

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

6-11 ROCK SOURCE DEVELOPMENT PLAN BY PURCHASER

Purchaser shall conduct rock source development and use at the following sources, in accordance with a written ROCK SOURCE DEVELOPMENT PLAN to be prepared by the Purchaser. The plan is subject to written approval by the Contract Administrator before any rock source operations. Upon completion of operations, the rock source must be left in the condition specified in the ROCK SOURCE DEVELOPMENT PLAN, and approved in writing by the Contract Administrator.

<u>Source</u>
McCoy Pit
Travelin Light Pit
Little Lilly Pit

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

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

6-12 ROCK SOURCE SPECIFICATIONS

Rock sources must be in accordance with the following:

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

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

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

6-23 ROCK GRADATION TYPES

Purchaser shall provide rock in accordance with the types and amounts listed in the TYPICAL SECTION and MATERIALS LIST. Rock must meet the following specifications for gradation and uniform quality when placed in hauling vehicles or during manufacture and placement into a stockpile. The exact point of evaluation for conformance to specifications will be determined by the Contract Administrator.

6-34 3-INCH MINUS BALLAST ROCK

Ballast rock must be 100% equal to, or smaller than, 3 inches in at least one dimension.

Rock may contain no more than 5 percent organic debris, dirt, and trash. All percentages are by weight.

6-42 SHOT ROCK

No more than 50 percent of the rock may be less than 6 inches in any dimension and no rock may be larger than 24 inches in any dimension. Shot rock may not contain more than 5 percent by weight of organic debris, dirt, and trash. Rock may require processing to meet this specification.

6-50 LIGHT LOOSE RIP RAP

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

<u>At Least/Not More Than</u>	<u>Weight Range</u>
20% / 90%	300 lbs. to 1 ton
80% / --	50 lbs. to ½ ton
10% / 20%	50 lbs. max

6-51 HEAVY LOOSE RIP RAP

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

<u>At Least/Not More Than</u>	<u>Weight Range</u>	<u>Size Range</u>
30% / 90%	1 ton to 3 ton	36" - 54"
70% / 90%	500 lbs. to 1 ½ ton	24" - 42"
10% / 30%	50 lbs. max	3" - 8"

6-55 ROCK APPLICATION MEASURED BY COMPACTED DEPTH

Measurement of specified rock depths, are defined as the compacted depths using the compaction methods required in this road plan. Estimated quantities specified in the TYPICAL SECTION are loose 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.

6-70 APPROVAL BEFORE ROCK APPLICATION

Purchaser shall obtain written approval from the Contract Administrator for culvert installation, ditch construction, ditch reconstruction, headwall construction, and headwall reconstruction before rock application.

6-71 ROCK APPLICATION

Purchaser shall apply rock in accordance with the specifications and quantities shown on the TYPICAL SECTION. Rock must be spread, shaped, and compacted full width concurrent with rock hauling operations. Road surfaces must be compacted in accordance with the TYPICAL SECTION by routing equipment over the entire width.

6-73 ROCK FOR WIDENED PORTIONS

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

6-75 OPTIONAL ROCK EXCEPTION

On the following road, Purchaser may place less rock than shown on the TYPICAL SECTION, when approved in writing by the Contract Administrator.

<u>Road</u>	<u>Stations</u>	<u>Options</u>
VZ-5807	29+85 to 37+61	In areas of competent bedrock subgrade, 3-inch minus ballast rock depths may be reduced to a 6" lift.
VZ-5807-05	0+00 to 1+65	
VZ-5906	0+00 to 10+15	
VZ-62	0+00 to 8+65	

SECTION 8 – EROSION CONTROL

8-2 PROTECTION FOR EXPOSED SOIL

Purchaser shall provide and evenly spread a 4-inch layer of straw to all exposed soils within 50 feet of a stream or wetland. Soils must be covered before the first anticipated storm event.

8-15 REVEGETATION

Purchaser shall spread seed and fertilizer on all exposed soils within the grubbing limits resulting from road work activities. Cover all exposed soils using manual dispersal of grass seed and fertilizer. Other methods of covering must be approved in writing by the Contract Administrator.

8-16 REVEGETATION SUPPLY

The Purchaser shall provide the required grass seed and fertilizer.

8-17 REVEGETATION TIMING

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

8-18 PROTECTION FOR SEED

Purchaser shall provide a protective cover for seed if revegetation occurs between July 1 and March 31. The protective cover may consist of dispersed straw, jute matting, or clear plastic sheets. The protective cover requirement may be waived in writing by the Contract Administrator if Purchaser is able to demonstrate a revegetation plan that will result in the establishment of a uniform dense crop (at least 50% coverage) of 3-inch tall grass by October 31.

8-19 ASSURANCE FOR SEEDED AREA

Purchaser shall ensure the growth of a uniform and dense crop (at least 50% coverage) of 3-inch tall grass. Purchaser shall reapply the grass seed and fertilizer 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 seed and fertilizer at no addition cost to the state.

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 50 pounds per acre of exposed soil. Grass seed must meet the following specifications:

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

<u>Kind and Variety of Seed in Mixture</u>	<u>% by Weight</u>
Creeping Red Fescue	50
Elf Perennial Rye Grass	25
Highland Colonial Bentgrass	15
White Clover	10
Inert and Other Crop	0.5

8-27 FERTILIZER

Purchaser shall evenly spread the fertilizer listed below on all exposed soil inside the grubbing limits at a rate of 200 pounds per acre of exposed soil. Fertilizer must meet the following specifications:

<u>Chemical Component</u>	<u>% by Weight</u>
Nitrogen	16
Phosphorous	16
Potassium	16
Sulphur	3
Inerts	49

SECTION 9 – POST-HAUL ROAD WORK

9-3 CULVERT MATERIAL REMOVED FROM STATE LAND

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

9-5 POST-HAUL MAINTENANCE

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

9-10 LANDING DRAINAGE

Purchaser shall provide for drainage of the landing surface.

9-12 LANDING EMBANKMENT REMOVAL

Purchaser shall reduce or relocate the landing embankment. Place excavated material in a waste area approved in writing by the Contract Administrator.

9-21 ROAD ABANDONMENT

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

<u>Road</u>	<u>Stations</u>
VZ-5807	18+75 to 37+61
VZ-5807-05	0+00 to 1+65
VZ-5807-06	0+00 to 3+25
VZ-5906	0+00 to 10+15
VZ-62	0+00 to 8+65

9-22 ABANDONMENT

- Remove all ditch relief culverts. The resulting slopes must be 1:1 or flatter. Place and compact the removed fill material in a location that will not erode into any Type 1 through 5 waters or wetlands.
- Remove all culverts in natural drainages. The resulting slopes must be 1½ :1 or flatter. Strive to match the existing native stream bank gradient. The natural streambed width must be re-established. Place and compact the removed fill material in a location that will not erode into any Type 1 through 5 waters or wetlands.
- Transport all removed culverts off site. All removed culverts are the property of the Purchaser.
- Construct non-drivable waterbars at natural drainage points and at a spacing that will produce a vertical drop of no more than 20 feet between waterbars and with a maximum horizontal spacing of 400 feet.
- 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.
- Inslope or outslope the road as appropriate.
- Remove bridges and other structures.
- Pull back unstable fill that has potential of failing and entering any Type 1 through 5 waters or wetlands. Place and compact removed material in a stable location.
- Remove berms except as designed.
- Block the road by constructing an aggressive barrier of dense interlocked large woody debris (logs, stumps, root wads, etc.) so that four wheel highway vehicles cannot pass the point of abandonment. Typical barrier dimensions are 10 feet high by 20 feet deep, spanning the entire road prism from top of cutslope to toe of fillslope. Long term effectiveness is the primary objective. If necessary construct a vehicular turn-around near the point of abandonment.
- Apply grass seed to all exposed soils resulting from the abandonment work and in accordance with Section 8 EROSION CONTROL.

SECTION 10 MATERIALS

10-15 CORRUGATED STEEL CULVERT

Metallic coated steel culverts must meet AASHTO M-36 (ASTM A-760) specifications. Culverts must be galvanized (zinc coated meeting AASHTO M-218).

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.

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.

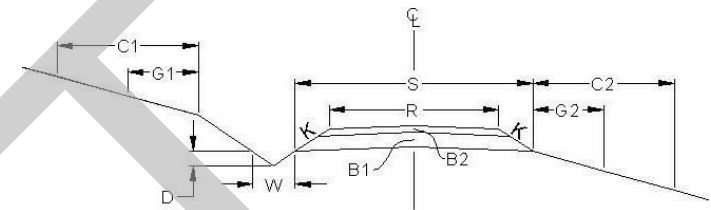
10-24 GAUGE AND CORRUGATION

Metal culverts must conform to the following specifications for gage and corrugation as a function of diameter.

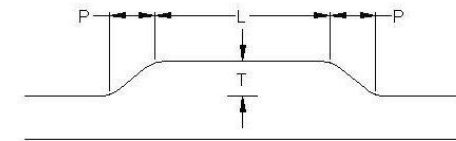
<u>Diameter</u>	<u>Gage</u>	<u>Corrugation</u>
18"	16 (0.064")	2 2/3" X 1/2"
24" to 48"	14 (0.079")	2 2/3" X 1/2"
54" to 96"	14 (0.079")	3" X 1"

ROAD #		VZ-ML	VZ-38	VZ-3804	VZ-3804*
REQUIRED / OPTIONAL		REQUIRED	REQUIRED	REQUIRED	REQUIRED
CONSTRUCT / RECONSTRUCT		PRE-HAUL	PRE-HAUL	PRE-HAUL	CONSTRUCT
TOLERANCE CLASS (A/B/C)		A	A	A	A
STATION / MP TO		0+00	0+00	0+00	15+20
STATION / MP		340+30	19+15	15+20	22+25
ROAD WIDTH	R	12	12	12	12
CROWN (INCHES @ C/L)		3	3	3	3
DITCH WIDTH	W	3	3	3	3
DITCH DEPTH	D	1	1	1	1
TURNOUT LENGTH	L	50	50	50	50
TURNOUT WIDTH	T	10	10	10	10
TURNOUT TAPER	P	25	25	25	25
GRUBBING	G1	--	--	--	5
	G2	--	--	--	5
CLEARING	C1	--	--	--	10
	C2	--	--	--	10
ROCK FILLSLOPE	K:1	--	--	--	1½
❖ BALLAST DEPTH	B1	--	--	--	--
CUBIC YARDS / STATION		--	--	--	--
➤ TOTAL CY BALLAST		--	--	--	--
❖ SURFACING DEPTH	B2	--	--	--	12
CUBIC YARDS / STATION		--	--	--	72
➤ TOTAL CY SURFACING		--	--	--	510 B
➤ TOTAL CUBIC YARDS		--	--	--	510
SUBGRADE WIDTH	S	--	--	--	--
BRUSHCUT (Y/N)		Y	Y	Y	N
BLADE, SHAPE, & DITCH (Y/N)		Y	Y	Y	N

TYPICAL SECTION



TURNOUT DETAIL (PLAN VIEW)



SYMBOL NOTES

- ❖ Specified Rock Depth is FINISHED COMPACTED DEPTH in inches.
- Specified Rock Quantity is LOOSE MEASURE (Truck Cubic Yards) needed to accomplish specified FINISHED COMPACTED DEPTH. Rock quantities include volume for turnouts, curve widening and landings.

*CONSTRUCTION IS ON AN ABANDONED GRADE

A SHOT ROCK FROM LITTLE LILLY OR TRAVELIN LIGHT PIT

B 3-INCH MINUS BALLAST ROCK FROM MCCOY PIT

TOTAL SHOT ROCK = 2250 CY

TOTAL 3-INCH MINUS BALLAST ROCK = 3025 CY

TOTAL RIPRAP = 130 CY

ROAD #		VZ-3804	VZ-58	VZ-5807	VZ-5807	VZ-5807-05	VZ-5807-06	VZ-59	VZ-5906
REQUIRED / OPTIONAL		REQUIRED	REQUIRED	REQUIRED	OPTIONAL	OPTIONAL	REQUIRED	REQUIRED	OPTIONAL
CONSTRUCT / RECONSTRUCT		CONSTRUCT	PRE-HAUL	PRE-HAUL	CONSTRUCT	CONSTRUCT	PRE-HAUL	PRE-HAUL	CONSTRUCT
TOLERANCE CLASS (A/B/C)		C	A	A	C	C	A	A	C
STATION / MP TO		22+25	0+00	0+00	29+85	0+00	0+00	0+00	0+00
STATION / MP		38+60	41+30	29+85	37+61	1+65	4+11	41+85	10+15
ROAD WIDTH	R	12	12	12	12	12	12	12	12
CROWN (INCHES @ C/L)		3	3	3	3	3	3	3	3
DITCH WIDTH	W	3	3	3	3	3	3	3	3
DITCH DEPTH	D	1	1	1	1	1	1	1	1
TURNOUT LENGTH	L	50	50	50	25	25	50	50	25
TURNOUT WIDTH	T	10	10	10	10	10	10	10	10
TURNOUT TAPER	P	25	25	25	25	25	25	25	25
GRUBBING	G1	5	--	--	5	5	--	--	5
	G2	5	--	--	5	5	--	--	5
CLEARING	C1	10	--	--	10	10	--	--	10
	C2	10	--	--	10	10	--	--	10
ROCK FILLSLOPE	K:1	1½	--	--	1½	1½	--	--	1½
❖ BALLAST DEPTH	B1	--	--	--	12	12	--	--	12
CUBIC YARDS / STATION		--	--	--	80	80	--	--	80
➤ TOTAL CY BALLAST		--	--	--	620 A	130 A	--	--	810 A
❖ SURFACING DEPTH	B2	15	--	--	6	6	--	--	6
CUBIC YARDS / STATION		95	--	--	34	34	--	--	34
➤ TOTAL CY SURFACING		1555 B	--	--	265 B	55 B	--	--	345 B
➤ TOTAL CUBIC YARDS		1555	--	--	755	185	--	--	1155
SUBGRADE WIDTH	S	15.75	--	--	16.5	16.5	--	--	16.5
BRUSHCUT (Y/N)		N	Y	Y	N	N	Y	Y	N
BLADE, SHAPE, & DITCH (Y/N)		N	Y	Y	N	N	Y	Y	N

ROAD #		VZ-60	VZ-62						
REQUIRED / OPTIONAL		REQUIRED	OPTIONAL						
CONSTRUCT / RECONSTRUCT		PRE-HAUL	CONSTRUCT						
TOLERANCE CLASS (A/B/C)		A	C						
STATION / MP TO		0+00	0+00						
STATION / MP		21+15	8+65						
ROAD WIDTH	R	12	12						
CROWN (INCHES @ C/L)		3	3						
DITCH WIDTH	W	3	3						
DITCH DEPTH	D	1	1						
TURNOUT LENGTH	L	50	25						
TURNOUT WIDTH	T	10	10						
TURNOUT TAPER	P	25	25						
GRUBBING	G1	--	5						
	G2	--	5						
CLEARING	C1	--	10						
	C2	--	10						
ROCK FILLSLOPE	K:1	--	1½						
❖ BALLAST DEPTH	B1	--	12						
CUBIC YARDS / STATION		--	80						
➤ TOTAL CY BALLAST		--	690 A						
❖ SURFACING DEPTH	B2	--	6						
CUBIC YARDS / STATION		--	34						
➤ TOTAL CY SURFACING		--	295 B						
➤ TOTAL CUBIC YARDS		--	985						
SUBGRADE WIDTH	S	--	16.5						
BRUSHCUT (Y/N)		Y	N						
BLADE, SHAPE, & DITCH (Y/N)		y	N						

MATERIALS LIST

LOCATION		CULVERT			DWNSPT		RIPRAP			FILL TYPE	TOLERANCE	REMARKS		
ROAD #	STATION	DIAMETER	LENGTH	TYPE	LENGTH	TYPE	INLET	OUTLET	TYPE			<u>Note:</u> Galvanized metal culverts shall conform to the following specifications for gage and corrugation as a function of the diameter:		
												Diameter	Gage	Corrugation
												18" 16 2 2/3" x 1/2" 24" – 48" 14 2 2/3" x 1/2" 54" – 96" 14 3" x 1"		
VZ-3804	16+70	18	30	XX			2	3	L	NT	C			
VZ-3804	22+60	24	40	XX			5	10	H/L	NT	C	T5 Stream		
VZ-3804	25+25	18	30	XX			2	3	L	NT	C			
VZ-3804	26+55	24	40	XX			5	10	H/L	NT	C	T5 Stream		
VZ-3804	27+30	48	40	GM			15	20	H/L	NT	c	T4 Stream		
VZ-3804	28+90	18	30	XX			2	3	L	NT	C			
VZ-3804	32+55	18	30	XX			2	3	L	NT	C			
VZ-3804	37+80	18	30	XX			2	3	L	NT	C			
VZ-5807	31+46	18	30	XX			2	3	L	NT	C			
VZ-5807	32+96	18	30	XX			2	3	L	NT	C			
VZ-5807	36+86	18	30	XX			2	3	L	NT	C			
VZ-5807-05	0+25	18	50	XX			2	3	L	NT	C	Install in VZ-5807 ditchline under VZ-5807-05 road		
VZ-5906	3+20	18	30	XX			2	3	L	NT	C			
VZ-5906	6+55	18	30	XX			2	3	L	NT	C			
VZ-5906	9+40	18	30	XX			2	3	L	NT	C			
VZ-62	1+20	18	30	XX			2	3	L	NT	C			

GM – Galvanized Metal PS – Polyethylene Pipe Single Wall PD – Polyethylene Pipe Dual Wall AM – Aluminized Metal C – Concrete XX – PD or GM
 H – Heavy Loose Riprap L – Light Loose Riprap SR – Shot Rock NT – Native (Bank Run) QS – Quarry Spalls

FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS

Cuts and Fills

- Maintain slope lines to a stable gradient compatible with the construction materials. Remove slides 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 and shape 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.

Preventative Maintenance

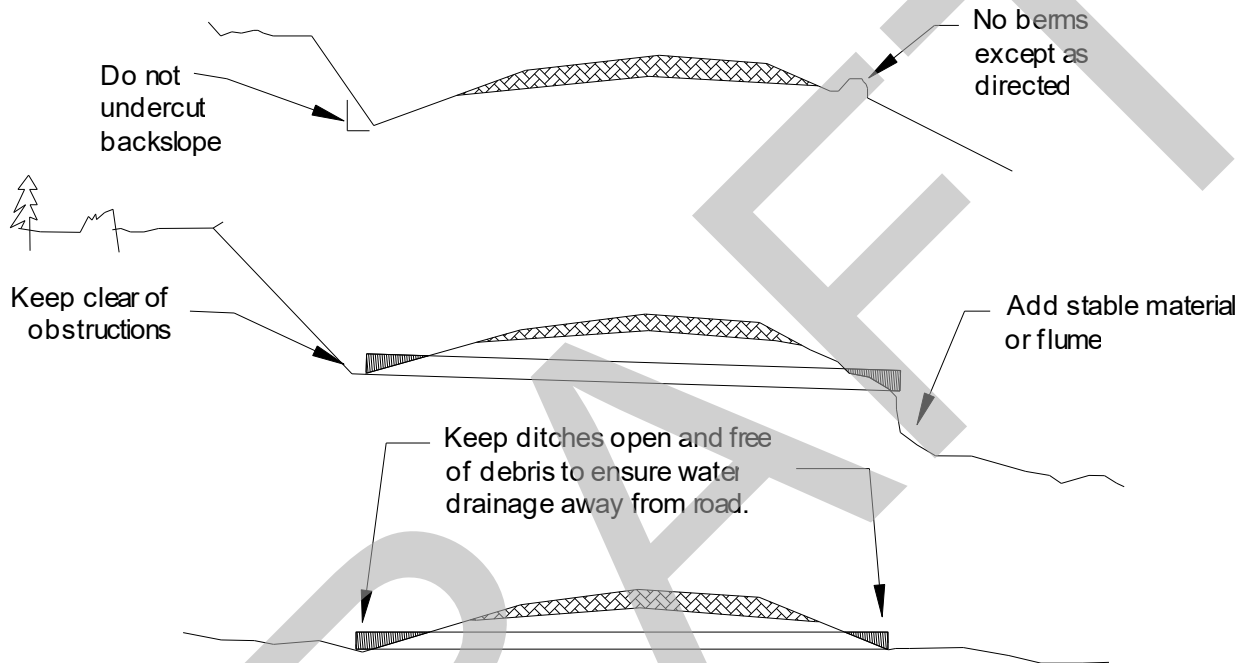
- Perform preventative maintenance work to safeguard against storm damage, such as blading to ensure correct runoff, ditch and culvert cleaning, and waterbar maintenance.

Termination of Use or End of Season

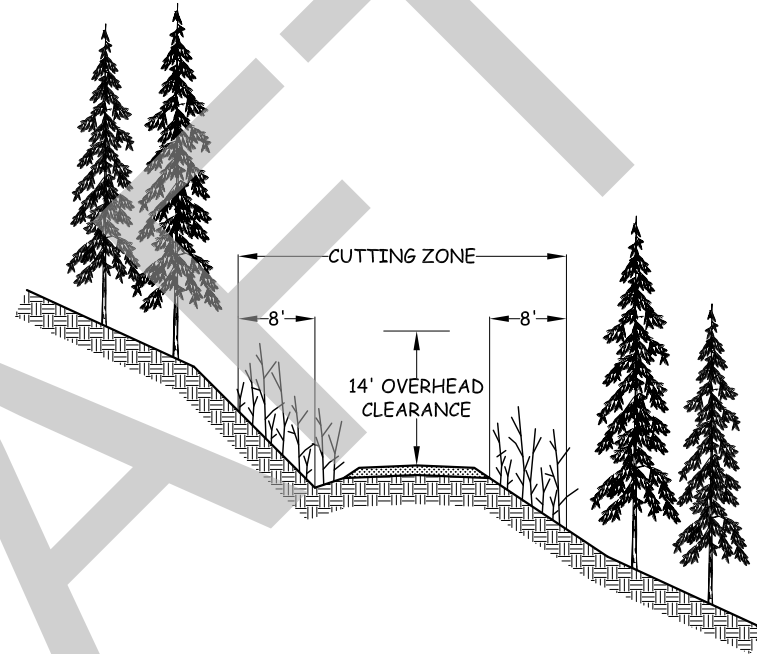
- At the conclusion of logging operations, ensure all conditions of these specifications have been met.

Debris

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



ROAD BRUSHING DETAILS



SPECIFICATIONS

BRUSH SHALL BE CUT ON THE ROAD SURFACE AND 8 ft. BACK FROM ROAD DITCH AND OUTSIDE EDGE OF RUNNING SURFACE.

ON THE INSIDE OF SWITCHBACKS AND TIGHT CURVES, BRUSH SHALL BE CUT BACK 16 ft. FOR VISIBILITY.

ON TRUCK TURNOUTS, BRUSH SHALL BE CUT 8 ft. BACK FROM OUTSIDE EDGE.

BRUSH SHALL BE CUT TO PROVIDE AN OVERHEAD CLEARANCE OF 14 ft. ABOVE THE ROAD RUNNING SURFACE.

BRUSH SHALL BE CUT TO WITHIN 6 in. OF THE GROUND.

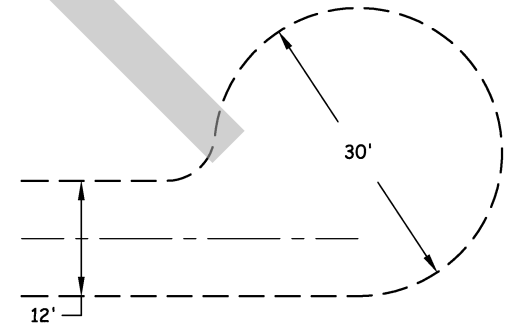
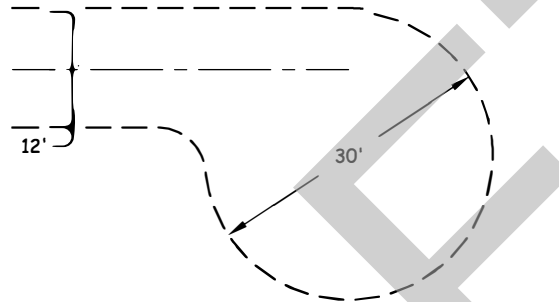
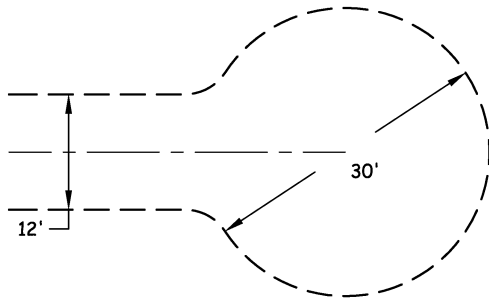
SLASH SHALL BE REMOVED FROM CUT SLOPES ABOVE THE ROAD AND SCATTERED ON EMBANKMENT SLOPES.

DITCHES SHALL BE CLEARED OF WOODY DEBRIS.

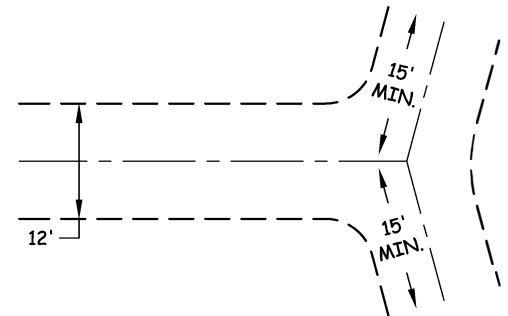
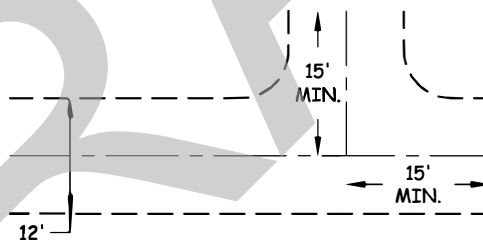
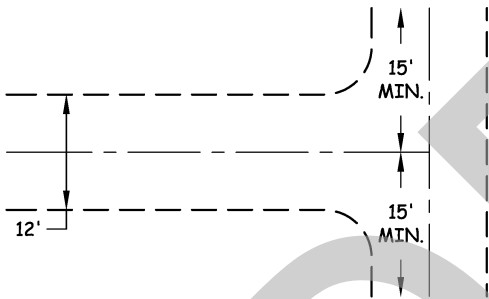
CULVERT INLETS AND OUTLETS SHALL BE CLEANED A MINIMUM DISTANCE OF TWO PIPE DIAMETERS AWAY.

CONTRACT #	PROJECT	SHEET
30-104692	LITTLE LILLY	30 OF 33

TURNAROUND DETAILS



CUL-DE-SAC



HAMMERHEAD

3-POINT SIDE

3-POINT WYE

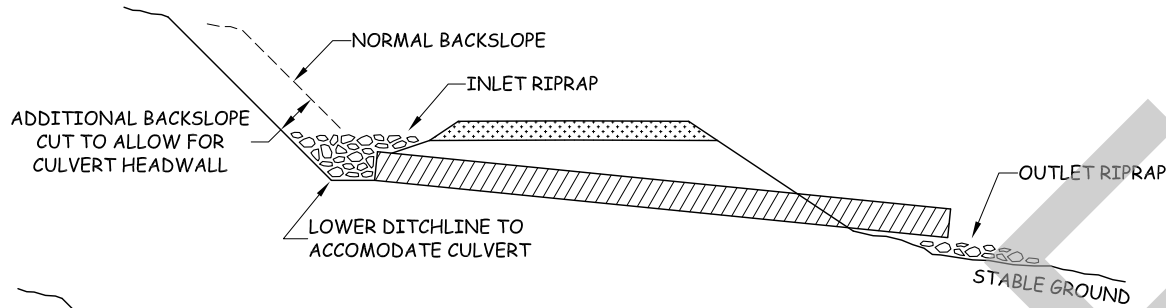
TURNAROUND TYPE AND TURNAROUND LOCATION ARE SUBJECT TO THE APPROVAL OF THE CONTRACT ADMINISTRATOR.

ROCK SHALL BE APPLIED THROUGHOUT THE TURNAROUND TO THE SAME DEPTH AND SPECIFICATIONS AS LISTED IN THE TYPICAL SECTION.

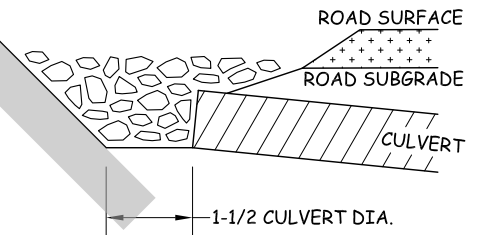
CONTRACT #	PROJECT	SHEET
30-104692	LITTLE LILLY	31 OF 33

CULVERT AND DRAINAGE SPECIFICATIONS

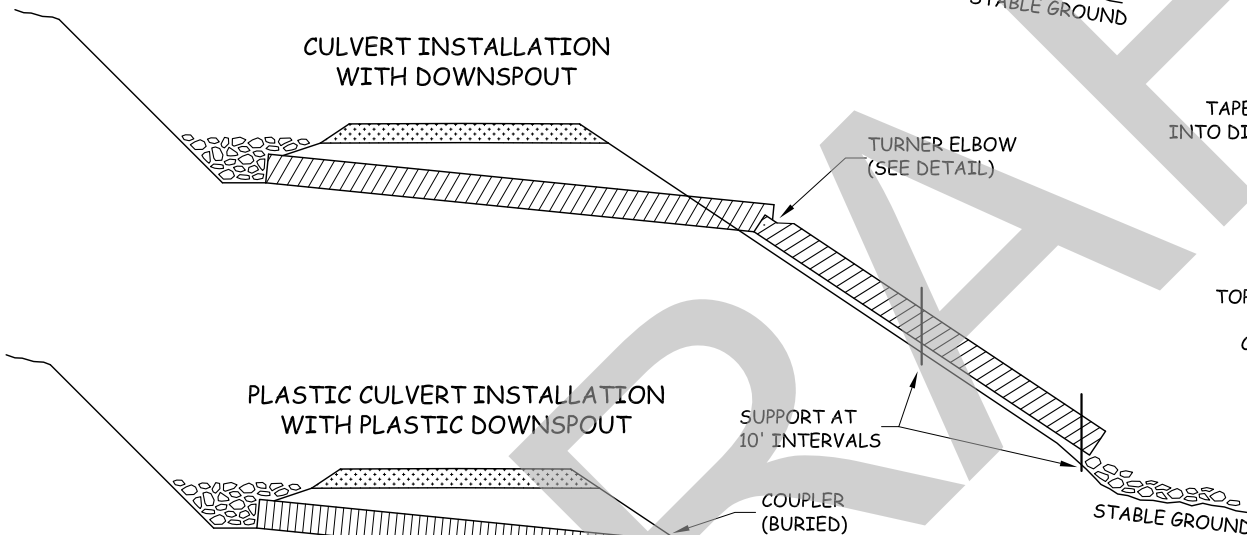
CULVERT INSTALLATION (TYPICAL)



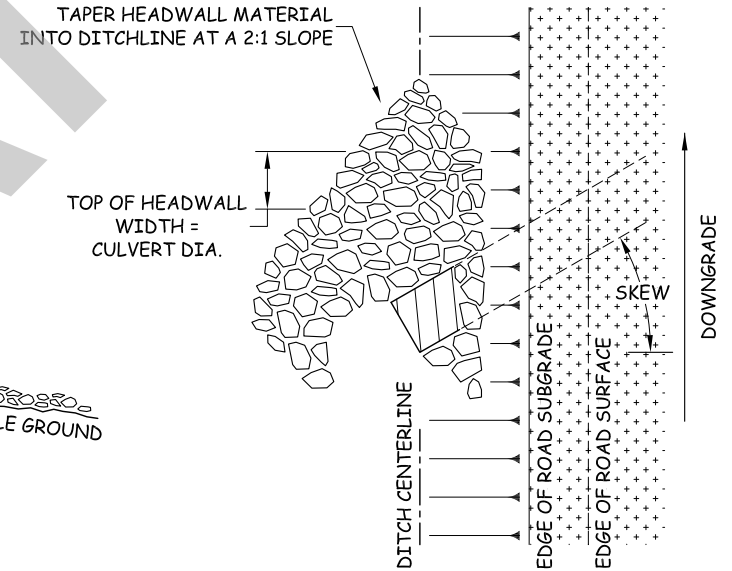
CULVERT HEADWALL - SECTION VIEW



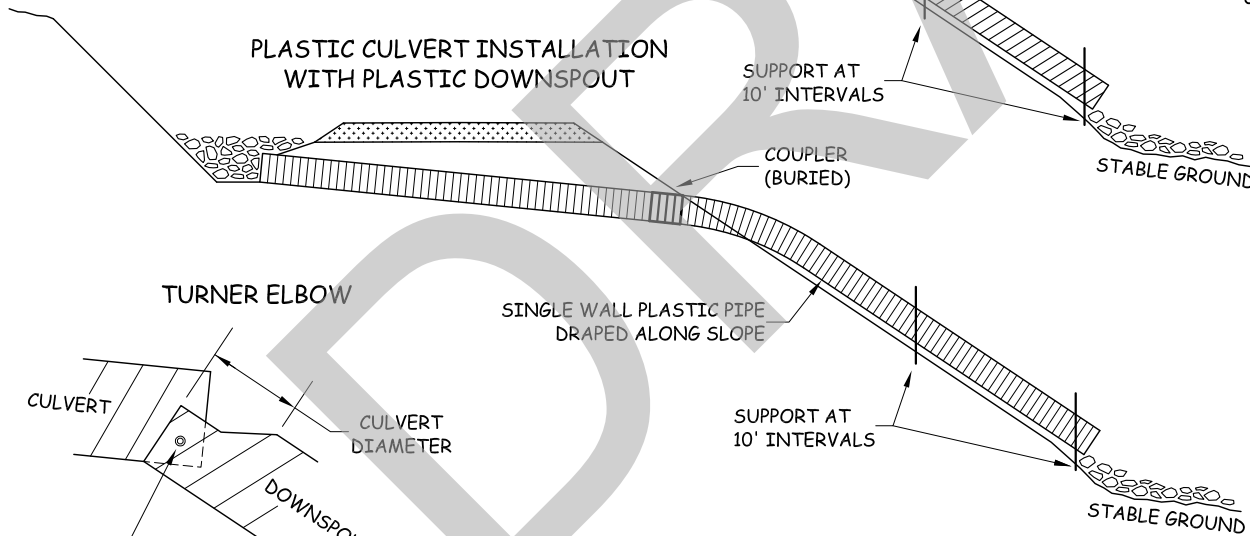
CULVERT INSTALLATION WITH DOWNSPOUT



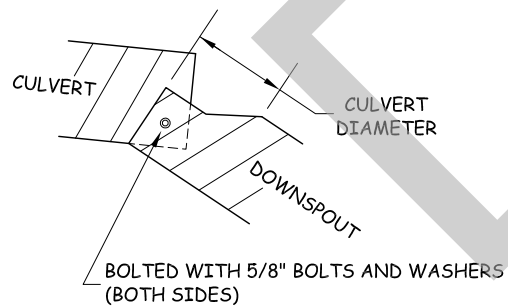
CULVERT HEADWALL - PLAN VIEW



PLASTIC CULVERT INSTALLATION WITH PLASTIC DOWNSPOUT



TURNER ELBOW



HEADWALL NOTE:
 HEADWALL TO BE CONSTRUCTED OF IMPERVIOUS MATERIAL THAT WILL RESIST EROSION AND ARMORED WITH RIPRAP QUANTITY SPECIFIED IN ROAD PLAN.

CONTRACT #	PROJECT	SHEET
30-104692	LITTLE LILLY	32 OF 33

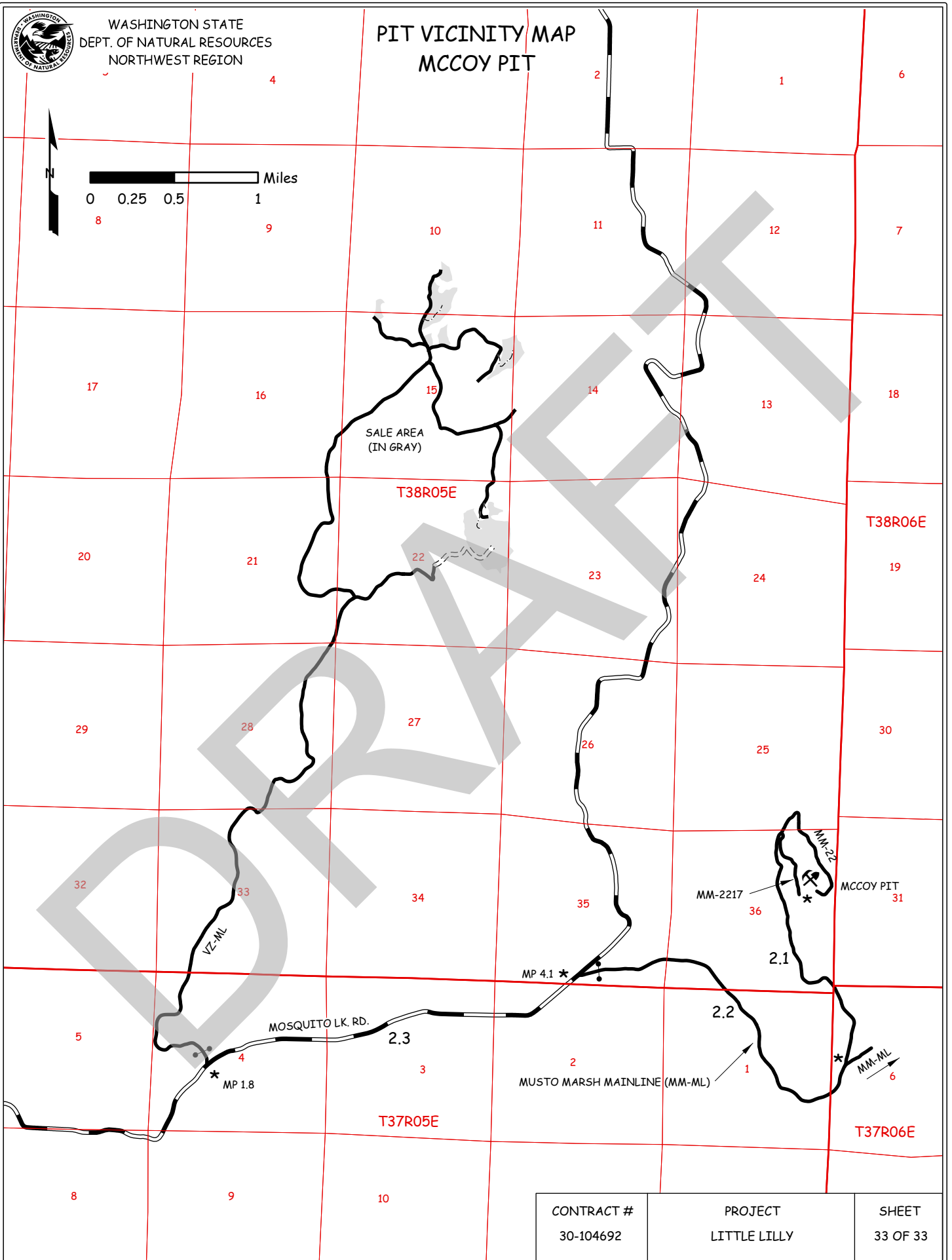


WASHINGTON STATE
DEPT. OF NATURAL RESOURCES
NORTHWEST REGION

PIT VICINITY MAP MCCOY PIT



0 0.25 0.5 1 Miles



CONTRACT # 30-104692	PROJECT LITTLE LILLY	SHEET 33 OF 33
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ROAD COST SUMMARY

FIREFLY CH Timber Sale #30-095714

CONSTRUCTION SUMMARY

ROAD #	STATIONING	TOTAL STATIONS	ROCK PRODUCTION COST	ROCK LOADING COST	ROCK HAUL COST	ROCK SPREADING COST	CONSTRUCTION COST	CULVERT COST	OTHER COST	TOTAL COST	COST/STA
VZ-3804	15+20 to 22+25	7.05	\$4,590	\$1,944	\$11,588	\$2,224	\$2,318	\$455	\$282	\$23,401	\$3,319
VZ-3804	22+25 to 38+60	16.35	\$13,995	\$6,189	\$36,900	\$7,084	\$11,589	\$5,443	\$654	\$81,854	\$5,006
VZ-5807	29+85 to 36+50	6.65	\$5,205	\$4,496	\$8,794	\$1,296	\$4,925	\$1,366	\$266	\$26,348	\$3,962
VZ-5807-05	0+00 to 1+65	1.65	\$1,275	\$1,110	\$2,156	\$317	\$1,159	\$765	\$66	\$6,848	\$4,151
VZ-5906	0+00 to 10+15	10.15	\$7,965	\$6,829	\$13,444	\$1,987	\$6,954	\$1,366	\$406	\$38,949	\$3,837
VZ-62	0+00 to 8+65	8.65	\$6,795	\$5,774	\$14,063	\$1,699	\$5,215	\$455	\$346	\$34,347	\$3,971
									TOTAL	\$211,748	

CONSTRUCTION COSTS include, clearing and grubbing, excavation and embankment, drilling and shooting on grade, and endhaul.

OTHER COSTS include erosion control, grass seeding and fertilizer, and miscellaneous other requirements detailed in the road plan.

PRE-HAUL MAINTENANCE SUMMARY

ROAD #	STATIONING	TOTAL STATIONS	ROCK PRODUCTION COST	ROCK LOADING COST	ROCK HAUL COST	ROCK SPREADING COST	CULVERT COST	OTHER COST	PRE-HAUL GRADING AND BRUSHING	TOTAL COST	COST/STA
VZ-ML	0+00 to 340+30	340.30	\$0	\$0	\$0	\$0	\$0	\$0	\$14,824	\$14,824	\$44
VZ-38	0+00 to 19+15	19.15	\$0	\$0	\$0	\$0	\$0	\$0	\$834	\$834	\$44
VZ-3804	0+00 to 15+20	15.20	\$0	\$0	\$0	\$0	\$0	\$0	\$662	\$662	\$44
VZ-58	0+00 to 41+30	41.30	\$0	\$0	\$0	\$0	\$0	\$0	\$1,799	\$1,799	\$44
VZ-5807	0+00 to 18+75	18.75	\$0	\$0	\$0	\$0	\$0	\$0	\$817	\$817	\$44
VZ-5807	18+75 to 29+85	11.10	\$0	\$0	\$0	\$0	\$0	\$0	\$484	\$484	\$44
VZ-5807-06	0+00 to 3+25	3.25	\$0	\$0	\$0	\$0	\$0	\$0	\$142	\$142	\$44
VZ-59	0+00 to 41+85	41.85	\$0	\$0	\$0	\$0	\$0	\$0	\$1,823	\$1,823	\$44
VZ-60	0+00 to 21+15	21.15	\$0	\$0	\$0	\$0	\$0	\$0	\$921	\$921	\$44
									TOTAL	\$22,305	

OTHER COSTS include cleaning culverts, ditches, headwalls, catch basins, culvert installation, and miscellaneous other requirements detailed in the road plan.

ROAD COST SUMMARY

FIREFLY CH Timber Sale #30-095714

POST-HAUL MAINTENANCE SUMMARY

ROAD #	STATIONING	TOTAL STATIONS	POST-HAUL GRADING COST	OTHER COST	TOTAL COST	COST/STA
VZ-ML	0+00 to 340+30	340.30	\$5,156	\$0	\$5,156	\$15
VZ-38	0+00 to 19+15	19.15	\$290	\$0	\$290	\$15
VZ-3804	0+00 to 15+20	15.20	\$230	\$0	\$230	\$15
VZ-3804	15+20 to 22+25	7.05	\$107	\$0	\$107	\$15
VZ-3804	22+25 to 38+60	16.35	\$248	\$0	\$248	\$15
VZ-58	0+00 to 41+30	41.30	\$626	\$0	\$626	\$15
VZ-5807	0+00 to 18+75	18.75	\$284	\$0	\$284	\$15
VZ-59	0+00 to 41+85	41.85	\$634	\$0	\$634	\$15
VZ-60	0+00 to 21+15	21.15	\$320	\$0	\$320	\$15
TOTAL					\$7,895	

OTHER COSTS include miscellaneous other requirements detailed in the road plan.

ABANDONMENT SUMMARY

ROAD #	STATIONING	TOTAL STATIONS	ABANDONMENT COST	OTHER COST	TOTAL COST	COST/STA
VZ-5807	18+75 to 29+85	11.10	\$473	\$0	\$473	\$43
VZ-5807	29+85 to 36+50	6.65	\$473	\$0	\$473	\$71
VZ-5807-05	0+00 to 1+65	1.65	\$237	\$0	\$237	\$143
VZ-5807-06	0+00 to 3+25	3.25	\$237	\$0	\$237	\$73
VZ-5906	0+00 to 10+15	10.15	\$710	\$0	\$710	\$70
VZ-62	0+00 to 8+65	8.65	\$710	\$0	\$710	\$82
TOTAL					\$2,840	

OTHER COSTS include miscellaneous other requirements detailed in the road plan.

NOTE: ALL MOBILIZATION COSTS HAVE BEEN AMORTIZED IN WITH OTHER COSTS.

TOTAL ROAD COST	\$244,788	
SALE VOLUME (MBF)	3575	PRE-CRUISE ESTIMATED VOLUME
ROAD COST/MBF	\$68	