



TIMBER NOTICE OF SALE

SALE NAME: ELLENS ROCK

AGREEMENT NO: 30-104809

AUCTION: October 30, 2024 starting at 10:00 a.m., Olympic Region Office, Forks, WA

COUNTY: Clallam

SALE LOCATION: Sale located approximately 13 miles northwest of Forks, WA

PRODUCTS SOLD AND SALE AREA:

All timber, excluding any downed red cedar, trees marked with a band of blue paint or bounded out by leave tree area tags, timber type change in Units 1 and Unit 3; bounded by timber sale boundary tags, in Units 2 and Unit 4.

All forest products above located on part(s) of Sections 2, 10 and 11 all in Township 28 North, Range 15 West, Sections 16 all in Township 28 North, Range 14 West, W.M., containing 244 acres, more or less.

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

ESTIMATED SALE VOLUMES AND QUALITY:

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

MINIMUM BID: \$0.00

BID METHOD: Sealed Bids

PERFORMANCE SECURITY: \$0.00

SALE TYPE: Lump Sum

EXPIRATION DATE: October 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: 87% Ground 13% Cable. Forest products sold under this contract shall be harvested and removed using cable, cable-tethered, and ground based equipment. Cable-tethered equipment is limited to sustained slopes of 75 percent and less. Ground based equipment is limited to tracked equipment on sustained slopes that are 45 percent and less. Rubber tired skidders, shovel logging and cable assist/tethered logging must meet rutting and skidding requirements and a harvest plan must be submitted and approved by the Contract Administrator. Authority to use other equipment or to operate outside the equipment specifications detailed above must be approved in writing by the State.

30' Equipment Limitations Zone (ELZ) on all typed water.

ROADS: 10.35 stations of optional construction. 3.75 stations of optional reconstruction. 459.10 stations of optional prehaul maintenance.

ACREAGE DETERMINATION



TIMBER NOTICE OF SALE

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

FEES: \$68,697.00 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 is a locked gate on Mora Pit - contact Olympic Region Dispatch Center at 360-374-2811 to obtain a AA-1 key.

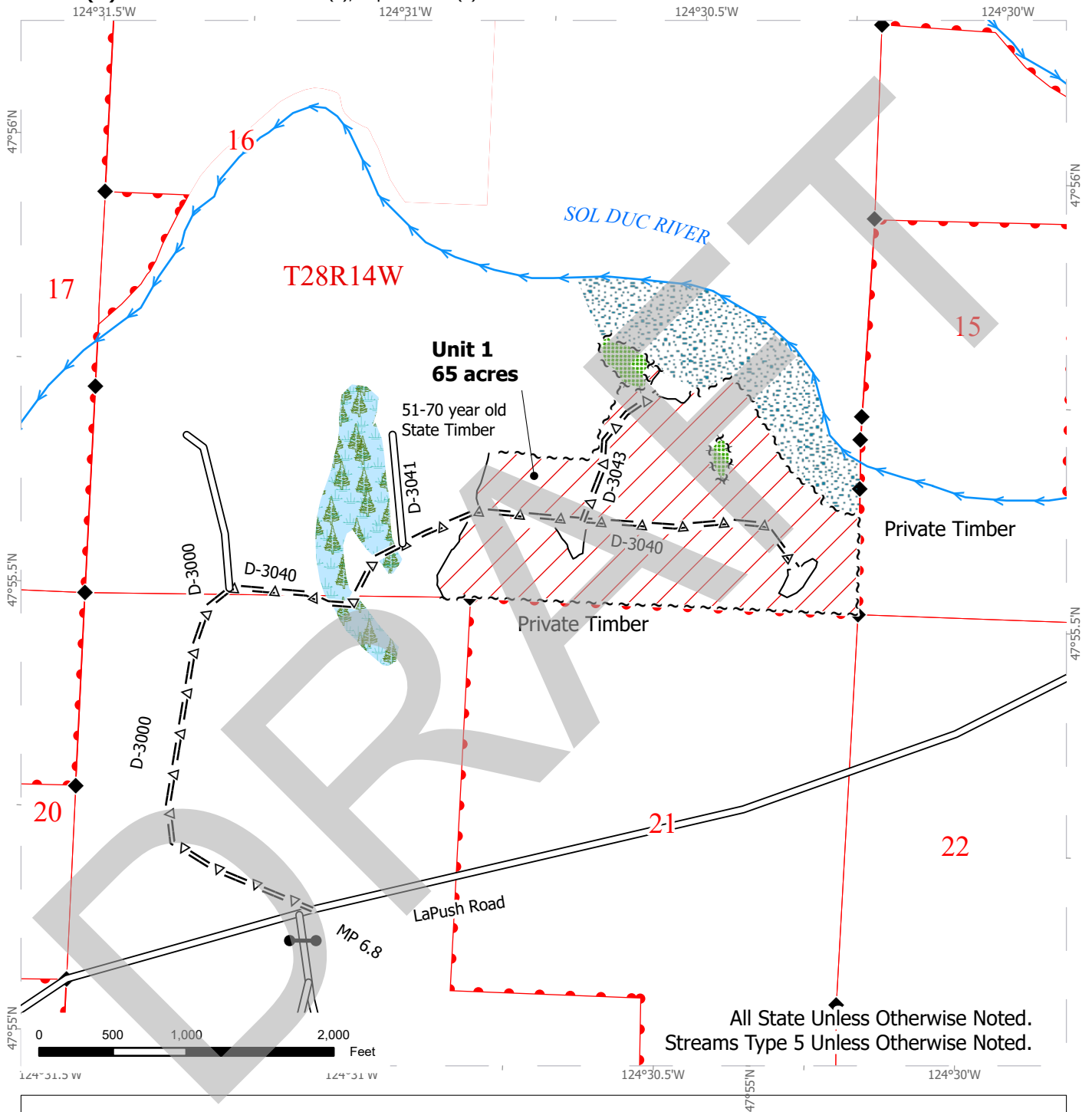
Purchaser shall develop rock source, Mora Pit, and manufacture approximately 5,000 cy of 1 1/2" minus rock. Refer to Road Plan.

DRAFT

TIMBER SALE MAP

SALE NAME: ELLENS ROCK
AGREEMENT #: 30-104809
TOWNSHIP(S): T28R15W, T28R14W
TRUST(S): State Forest Transfer (1), Capitol Grant (7)

REGION: Olympic Region
COUNTY(S): Clallam
ELEVATION RGE: 80'-320'



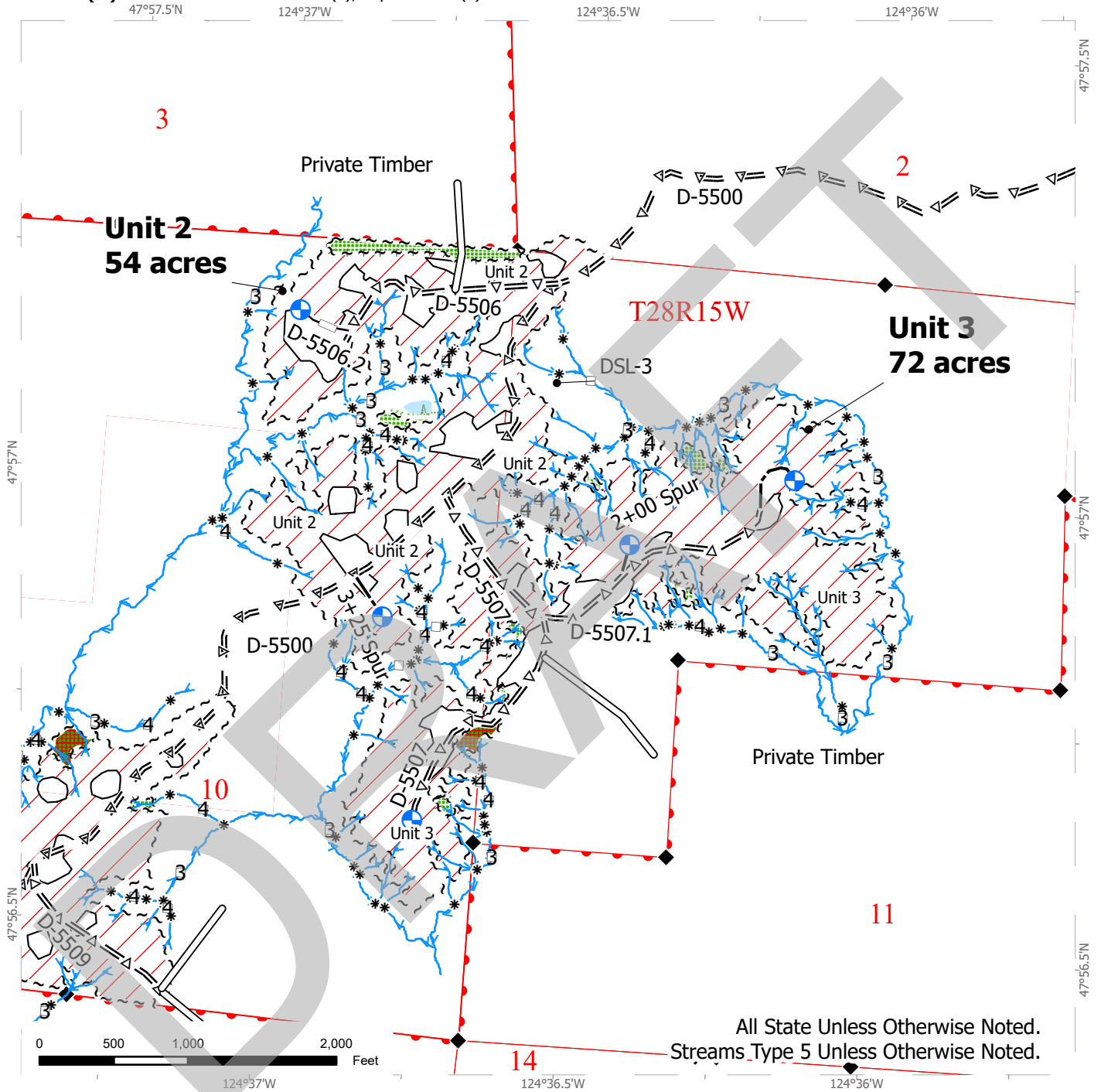
All State Unless Otherwise Noted.
 Streams Type 5 Unless Otherwise Noted.

Variable Retention Harvest	Riparian Mgt Zone	DNR Managed Lands
Sale Boundary Tags	Forested Wetland	Public Land Survey Townships
Leave Tree Tags	Streams	Public Land Survey Sections
Timber Type Change	Existing Road	Gate (AA1)
Leave Tree Area	Optional Pre-Haul Maint.	Survey Monument

TIMBER SALE MAP

SALE NAME: ELLENS ROCK
AGREEMENT #: 30-104809
TOWNSHIP(S): T28R15W, T28R14W
TRUST(S): State Forest Transfer (1), Capitol Grant (7)

REGION: Olympic Region
COUNTY(S): Clallam
ELEVATION RGE: 80'-320'



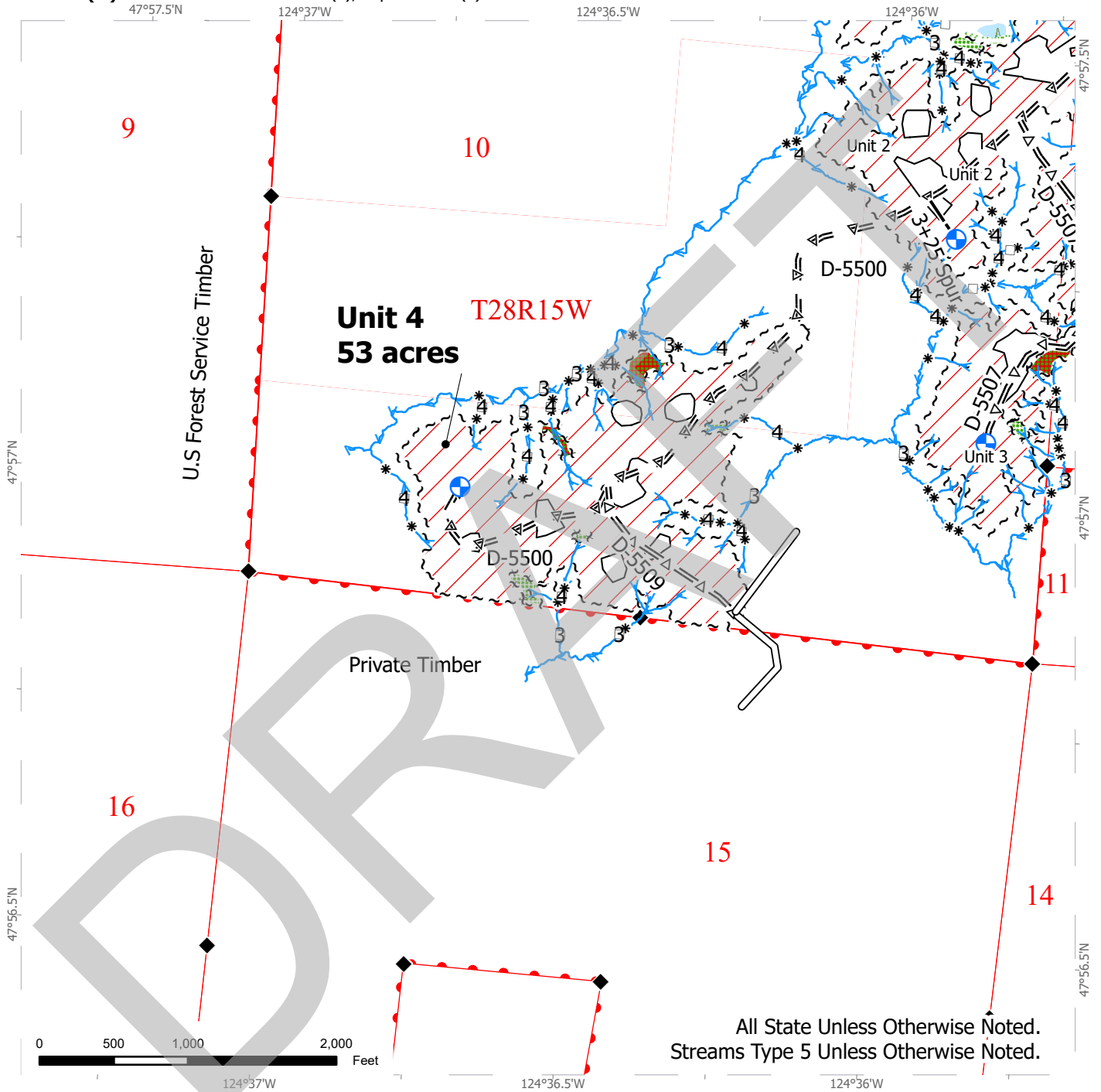
All State Unless Otherwise Noted.
Streams Type 5 Unless Otherwise Noted.

Variable Retention Harvest	Forested Wetland	Optional Pre-Haul Maint.
Sale Boundary Tags	Wetland Mgt Zone	Optional Reconstruction
Leave Tree Tags	Streams	Proposed Landing
Timber Type Change	Stream Type	DNR Managed Lands
Non-Tradeable Leave Tree Area	Stream Break	Public Land Survey Townships
Leave Tree Area	Existing Road	Public Land Survey Sections
Riparian Mgt Zone	Optional Construction	Survey Monument

TIMBER SALE MAP

SALE NAME: ELLENS ROCK
AGREEMENT #: 30-104809
TOWNSHIP(S): T28R15W, T28R14W
TRUST(S): State Forest Transfer (1), Capitol Grant (7)

REGION: Olympic Region
COUNTY(S): Clallam
ELEVATION RGE: 80'-320'



All State Unless Otherwise Noted.
 Streams Type 5 Unless Otherwise Noted.

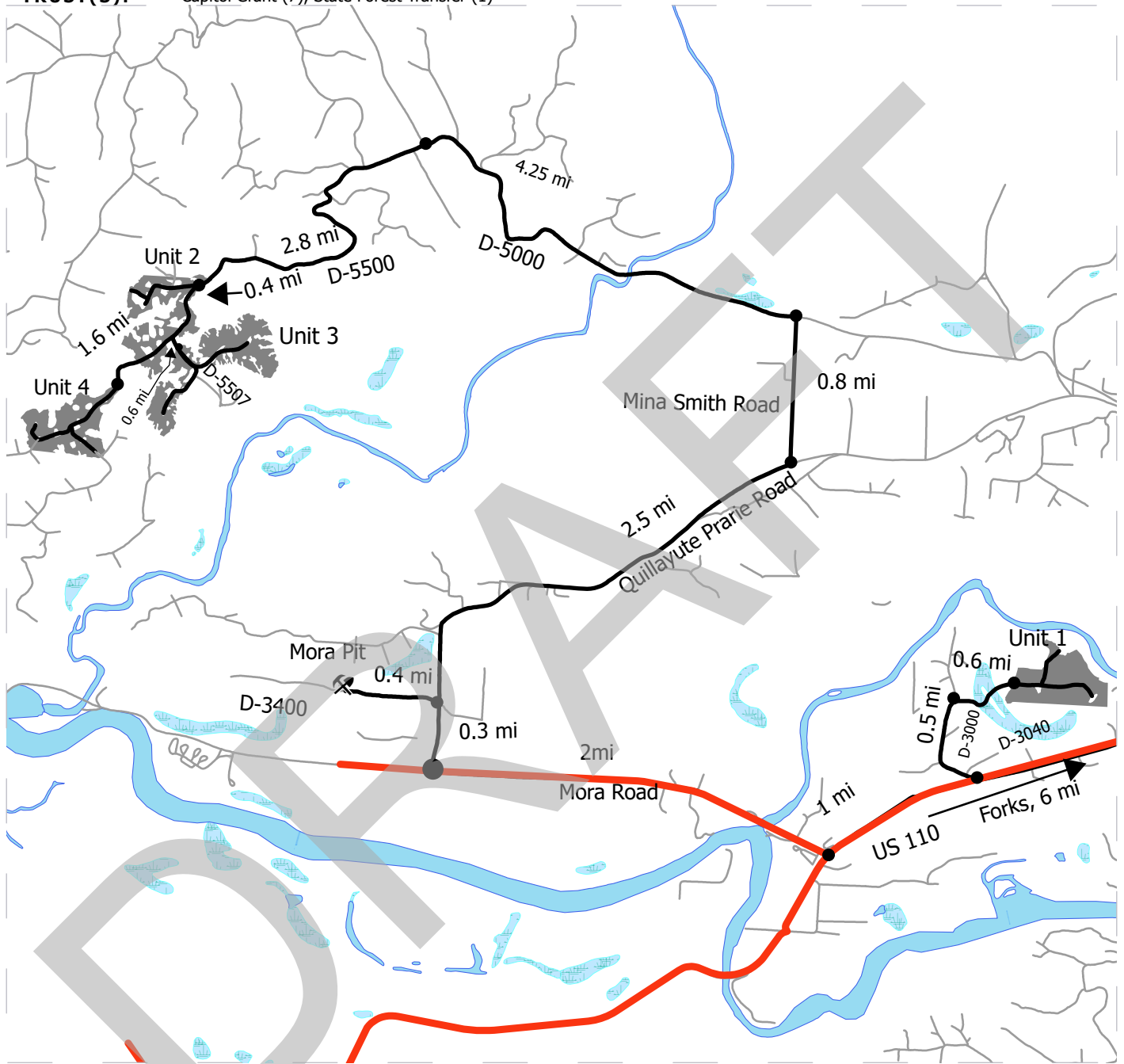
Variable Retention Harvest	Forested Wetland	Optional Pre-Haul Maint.
Sale Boundary Tags	Wetland Mgt Zone	Proposed Landing
Leave Tree Tags	Streams	DNR Managed Lands
Timber Type Change	Stream Type	Public Land Survey Townships
Non-Tradeable Leave Tree Area	Stream Break	Public Land Survey Sections
Leave Tree Area	Existing Road	Survey Monument
Riparian Mgt Zone	Optional Construction	








DRIVING MAP

SALE NAME: ELLENS ROCK
AGREEMENT #: 30-104809
TOWNSHIP(S): T28R14W, T28R15W
TRUST(S): Capitol Grant (7), State Forest Transfer (1)

REGION: Olympic Region
COUNTY(S): Clallam
ELEVATION RGE: 80'-320'



Map may not be to scale

<ul style="list-style-type: none">  Harvest Unit  Highway  Haul Route  Other Route  Rock Pit 	<p><u>DRIVING DIRECTIONS:</u></p> <p>Unit 1: From U.S 101 turn left on U.S 110 for 6 miles. Turn right on the D-3000 and continue for 0.5 miles. Turn right at the D-3040 and continue for 0.6 miles.</p> <p>Unit 2: From U.S 110/ D-3000 junction continue for 1 mile, turn right on Mora Road for 2 miles. Drive 2.5 miles on Quillayute-Prairie Road then turn left on Mina Smith Road and turn left on the D-5000 in 0.8 miles. In 4.25 miles turn on to D-5500 and continue for 2.8 miles to reach Unit 2.</p> <p>Unit 3: From Unit 1 head straight for 0.4 mi, turn left on D-5507 and continue for 0.6 miles to reach unit 3.</p> <p>Unit 4: From Unit 1 drive 1.6 miles on the D-5500 to reach Unit 4.</p> <p>Mora Pit: From Mora Road/Quillayute Prairie Road junction, head north and turn left in 0.3 miles. Continue for 0.4 miles on the D-3400 to reach Mora Pit.</p>
--	--



Timber Sale Cruise Report Ellens Rock

Sale Name: ELLENS ROCK

Sale Type: LUMP SUM

Region: OLYMPIC

District: OZETTE

Lead Cruiser: Kevin Peterson

Other Cruisers:

Cruise Narrative:

Location:

This sale is located off of the D-5000, west of Forks. Access to all units is really good.

Cruise Design:

For this sale I used a 40 BAF for all species on all 4 units. Merch height was determined at 40% of diameter at 16'. All butt logs were cruised in 40' lengths.

Timber Quality:

These units were all thinned 5-10 years ago and are a mixture of DF, WH and SS. DBH range from 10"-24" and bole heights range from 50'-80'. Common defects were sweep and forked tops.

Logging and Stand Conditions:

Some of the units have a decent salmonberry understory but its pretty easy walking. There are some pockets of the sale that haven't been thinned.

Timber Sale Notice Volume (MBF)

Sp	DBH	Rings/In	Age	MBF Volume by Grade			
				All	2 Saw	3 Saw	4 Saw
WH	15.5	6.0		1,595	342	919	334
DF	17.3	6.0		1,247	386	654	207
SS	15.3	5.6		1,199	365	599	235
ALL	15.9	5.8		4,041	1,093	2,172	776

Timber Sale Notice Weight (tons)

Sp	Tons by Grade			
	All	2 Saw	3 Saw	4 Saw
WH	17,013	3,665	9,525	3,823
DF	12,130	3,724	6,344	2,062
SS	10,682	3,249	5,479	1,954
ALL	39,825	10,638	21,348	7,839

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 (%)
167.3	3.3	99.3	1.0	16,561	3.4

Timber Sale Unit Cruise Design

Unit	Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
ELLENS ROCK U1	B1C: VR, 1 BAF (40) Measure/Count Plots, Sighting Ht = 4.5 ft	65.0	65.6	33	11	1
ELLENS ROCK U2	B1C: VR, 1 BAF (40) Measure/Count Plots, Sighting Ht = 4.5 ft	54.0	56.6	27	9	2
ELLENS ROCK U3	B1C: VR, 1 BAF (40) Measure/Count Plots, Sighting Ht = 4.5 ft	72.0	73.9	37	12	1
ELLENS ROCK U4	B1C: VR, 1 BAF (40) Measure/Count Plots, Sighting Ht = 4.5 ft	53.0	55.2	27	9	0
All		244.0	251.3	124	41	4

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	12.8	40	1,614	1,582	1.9	3,723.7	386.1
DF	LIVE	3 SAW	Domestic	9.3	40	2,743	2,681	2.2	6,344.0	654.2
DF	LIVE	4 SAW	Domestic	5.5	24	848	848	0.0	2,062.0	206.9
SS	LIVE	2 SAW	Domestic	13.1	40	1,562	1,496	4.2	3,249.3	365.0
SS	LIVE	3 SAW	Domestic	8.9	40	2,464	2,454	0.4	5,478.7	598.7
SS	LIVE	4 SAW	Domestic	5.4	22	966	963	0.2	1,953.9	235.1
WH	LIVE	2 SAW	Domestic	12.8	40	1,486	1,402	5.7	3,665.0	342.2
WH	LIVE	3 SAW	Domestic	9.2	40	3,827	3,766	1.6	9,525.1	918.9
WH	LIVE	4 SAW	Domestic	5.4	27	1,378	1,368	0.7	3,823.4	333.9

Timber Sale Log Sort x Diameter Bin Summary

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	5 - 8	LIVE	Domestic	5.9	27	1,412	0.0	3,536.0	344.4
DF	9 - 11	LIVE	Domestic	10.4	40	2,117	2.8	4,870.0	516.7
DF	12 - 14	LIVE	Domestic	12.8	40	1,582	1.9	3,723.7	386.1
SS	5 - 8	LIVE	Domestic	6.0	26	1,917	0.1	4,248.2	467.7
SS	9 - 11	LIVE	Domestic	10.1	40	1,500	0.7	3,184.4	366.1
SS	12 - 14	LIVE	Domestic	13.1	40	1,496	4.2	3,249.3	365.0

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
WH	5 - 8	LIVE	Domestic	5.9	30	2,336	0.7	6,524.8	569.9
WH	9 - 11	LIVE	Domestic	10.5	40	2,799	1.9	6,823.6	682.8
WH	12 - 14	LIVE	Domestic	12.8	40	1,402	5.7	3,665.0	342.2

DRAFT

Cruise Unit Report ELLENS ROCK U1

Unit Sale Notice Volume (MBF): ELLENS ROCK U1

Sp	DBH	Rings/In	Age	MBF Volume by Grade			
				All	2 Saw	3 Saw	4 Saw
DF	15.8	6.0		423	122	224	78
WH	13.3			410	77	227	106
SS	14.9	5.0		261	54	154	52
ALL	14.5	5.5		1,094	253	605	236

Unit Cruise Design: ELLENS ROCK U1

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	65.0	65.5	33	11	1

Unit Cruise Summary: ELLENS ROCK U1

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	18	57	1.7	1
WH	20	54	1.6	0
SS	12	35	1.1	1
ALL	50	146	4.4	2

Unit Cruise Statistics: ELLENS ROCK 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	69.1	123.0	21.4	94.3	9.7	2.3	6,514	123.4	21.5
WH	65.5	134.8	23.5	96.3	17.3	3.9	6,305	135.9	23.8
SS	42.4	147.1	25.6	94.6	12.2	3.5	4,013	147.6	25.8
ALL	177.0	32.5	5.7	95.1	13.6	1.9	16,833	35.2	6.0

Unit Summary: ELLENS ROCK U1

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	18	ALL	15.8	61	75	6,737	6,514	3.3	50.7	69.1	17.4	423.4
SS	LIVE	CUT	12	ALL	14.9	55	68	4,075	4,013	1.5	35.0	42.4	11.0	260.9

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
WH	LIVE	CUT	20	ALL	13.3	56	68	6,475	6,305	2.6	67.8	65.5	17.9	409.8
ALL	LIVE	CUT	50	ALL	14.5	57	71	17,287	16,833	2.6	153.5	177.0	46.3	1,094.1
ALL	ALL	ALL	50	ALL	14.5	57	71	17,287	16,833	2.6	153.5	177.0	46.3	1,094.1

DRAFT

Cruise Unit Report ELLENS ROCK U2

Unit Sale Notice Volume (MBF): ELLENS ROCK U2

Sp	DBH	Rings/In	Age	MBF Volume by Grade			
				All	2 Saw	3 Saw	4 Saw
WH	17.2			337	98	189	50
DF	18.6			270	113	114	43
SS	17.0			158	55	81	21
ALL	17.5			765	266	384	114

Unit Cruise Design: ELLENS ROCK U2

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	54.0	56.6	27	9	2

Unit Cruise Summary: ELLENS ROCK U2

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
WH	13	39	1.4	0
DF	9	34	1.3	0
SS	8	19	0.7	0
ALL	30	92	3.4	0

Unit Cruise Statistics: ELLENS ROCK 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 (%)
WH	57.8	104.0	20.0	108.0	8.2	2.3	6,242	104.3	20.1
DF	50.4	109.2	21.0	99.2	9.2	3.1	4,998	109.6	21.2
SS	28.1	235.9	45.4	103.8	11.3	4.0	2,922	236.1	45.6
ALL	136.3	38.4	7.4	103.9	9.8	1.8	14,163	39.6	7.6

Unit Summary: ELLENS ROCK U2

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	9	ALL	18.6	68	85	4,998	4,998	0.0	26.7	50.4	11.7	269.9
SS	LIVE	CUT	8	ALL	17.0	65	81	2,922	2,922	0.0	17.9	28.1	6.8	157.8
WH	LIVE	CUT	13	ALL	17.2	66	82	6,242	6,242	0.0	35.8	57.8	13.9	337.1

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
ALL	LIVE	CUT	30	ALL	17.6	67	83	14,163	14,163	0.0	80.4	136.3	32.4	764.8
ALL	ALL	ALL	30	ALL	17.6	67	83	14,163	14,163	0.0	80.4	136.3	32.4	764.8

DRAFT

Cruise Unit Report ELLENS ROCK U3

Unit Sale Notice Volume (MBF): ELLENS ROCK U3

Sp	DBH	Rings/In	Age	MBF Volume by Grade			
				All	2 Saw	3 Saw	4 Saw
WH	15.5	6.0		564	124	305	135
SS	13.5	6.0		450	120	215	116
DF	16.8	6.0		242	21	184	37
ALL	14.9	6.0		1,257	264	704	288

Unit Cruise Design: ELLENS ROCK 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	72.0	73.9	37	12	1

Unit Cruise Summary: ELLENS ROCK U3

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
WH	17	74	2.0	1
SS	17	62	1.7	1
DF	9	32	0.9	1
ALL	43	168	4.5	3

Unit Cruise Statistics: ELLENS ROCK 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 (%)
WH	80.0	89.0	14.6	98.0	18.9	4.6	7,838	91.0	15.3
SS	67.0	125.9	20.7	93.3	15.2	3.7	6,251	126.8	21.0
DF	34.6	149.7	24.6	97.2	10.8	3.6	3,364	150.1	24.9
ALL	181.6	45.1	7.4	96.1	15.9	2.4	17,454	47.9	7.8

Unit Summary: ELLENS ROCK U3

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	9	ALL	16.8	67	84	3,478	3,364	3.3	22.5	34.6	8.4	242.2
SS	LIVE	CUT	17	ALL	13.5	52	64	6,462	6,251	3.3	67.4	67.0	18.2	450.1

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
WH	LIVE	CUT	17	ALL	15.5	62	76	8,208	7,838	4.5	61.1	80.0	20.3	564.3
ALL	LIVE	CUT	43	ALL	14.9	58	72	18,148	17,454	3.8	151.0	181.6	47.0	1,256.7
ALL	ALL	ALL	43	ALL	14.9	58	72	18,148	17,454	3.8	151.0	181.6	47.0	1,256.7

DRAFT

Cruise Unit Report ELLENS ROCK U4

Unit Sale Notice Volume (MBF): ELLENS ROCK U4

Sp	DBH	Rings/In	Age	MBF Volume by Grade			
				All	2 Saw	3 Saw	4 Saw
SS	17.3			330	136	148	46
DF	18.6			312	131	132	49
WH	16.9			284	43	198	42
ALL	17.5			925	310	478	138

Unit Cruise Design: ELLENS ROCK U4

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	53.0	55.2	27	9	0

Unit Cruise Summary: ELLENS ROCK U4

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
SS	11	40	1.5	0
DF	9	40	1.5	0
WH	10	33	1.2	0
ALL	30	113	4.2	0

Unit Cruise Statistics: ELLENS ROCK 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 (%)
SS	59.3	136.8	26.3	105.1	10.4	3.1	6,226	137.2	26.5
DF	59.3	118.9	22.9	99.2	9.2	3.1	5,880	119.3	23.1
WH	48.9	142.3	27.4	109.5	8.4	2.6	5,353	142.6	27.5
ALL	167.4	23.9	4.6	104.3	9.8	1.8	17,458	25.8	4.9

Unit Summary: ELLENS ROCK U4

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	9	ALL	18.6	68	85	5,880	5,880	0.0	31.4	59.3	13.7	311.7
SS	LIVE	CUT	11	ALL	17.3	66	82	6,226	6,226	0.0	36.3	59.3	14.2	330.0
WH	LIVE	CUT	10	ALL	16.9	66	82	5,353	5,353	0.0	31.4	48.9	11.9	283.7

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
ALL	LIVE	CUT	30	ALL	17.6	67	83	17,458	17,458	0.0	99.1	167.4	39.9	925.3
ALL	ALL	ALL	30	ALL	17.6	67	83	17,458	17,458	0.0	99.1	167.4	39.9	925.3

DRAFT

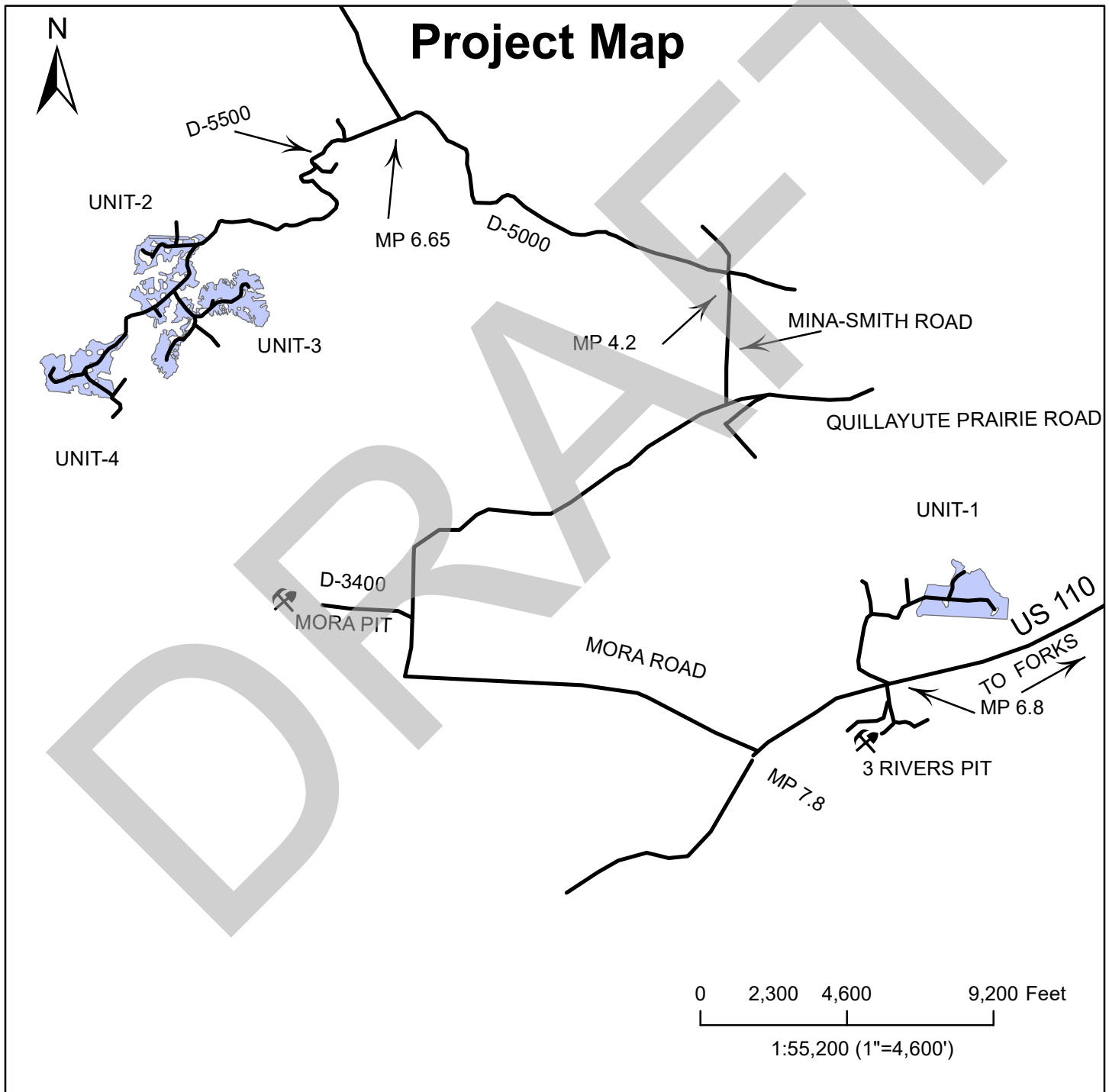
STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES
ELLENS ROCK TIMBER SALE ROAD PLAN
CLALLAM COUNTY
COAST DISTRICT

AGREEMENT NO.: 30-104809

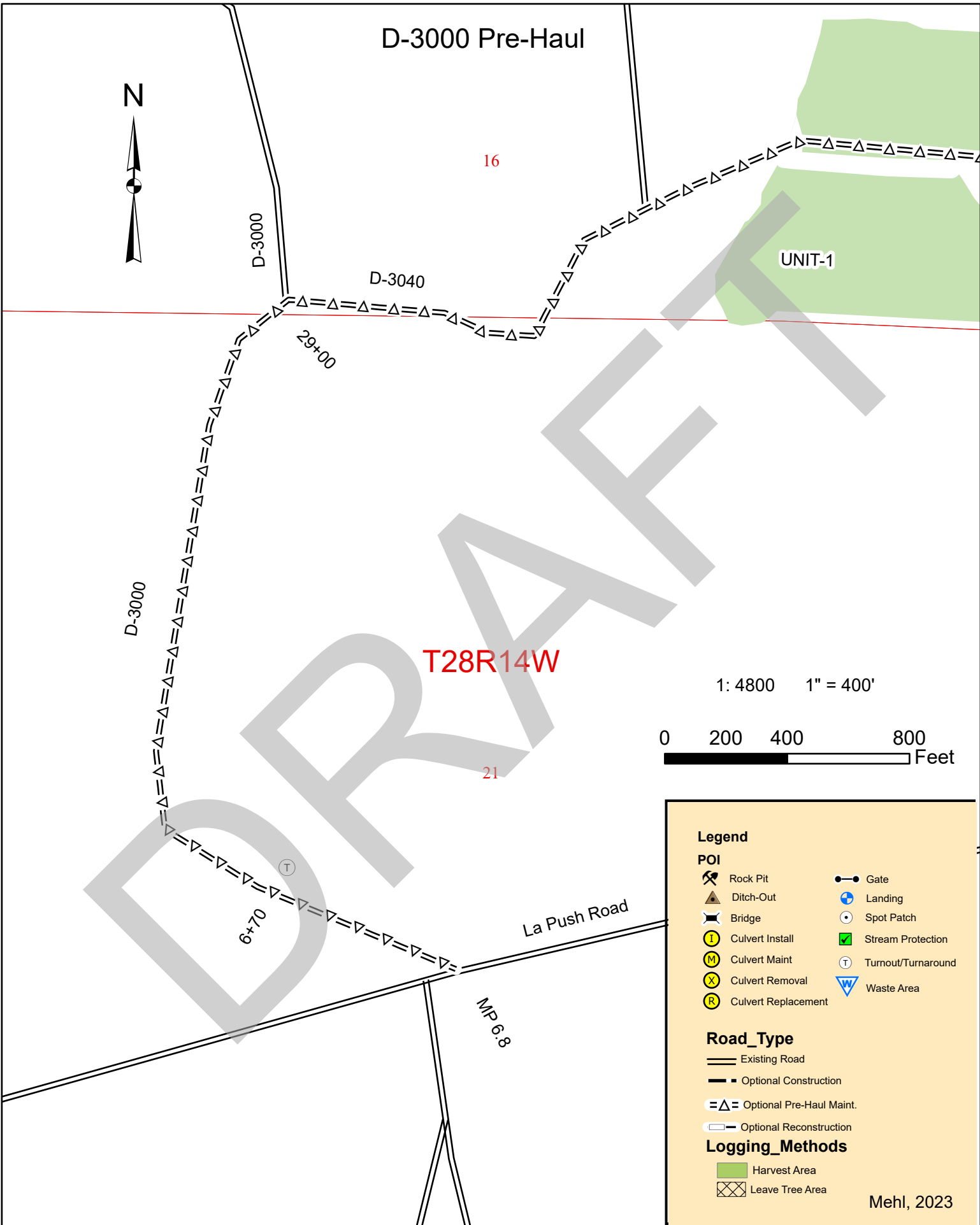
DISTRICT ENGINEER: BILL MEHL

DATE 28 NOVEMBER 2023

DRAWN AND COMPILED BY: BILL MEHL



ELLENS ROCK TIMBER SALE

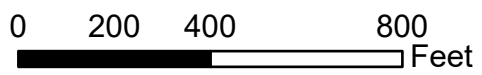


16

UNIT-1

T28R14W

1: 4800 1" = 400'



Legend

POI

- Rock Pit
- Ditch-Out
- Bridge
- Culvert Install
- Culvert Maint
- Culvert Removal
- Culvert Replacement
- Gate
- Landing
- Spot Patch
- Stream Protection
- Turnout/Turnaround
- Waste Area

Road_Type

- Existing Road
- Optional Construction
- Optional Pre-Haul Maint.
- Optional Reconstruction

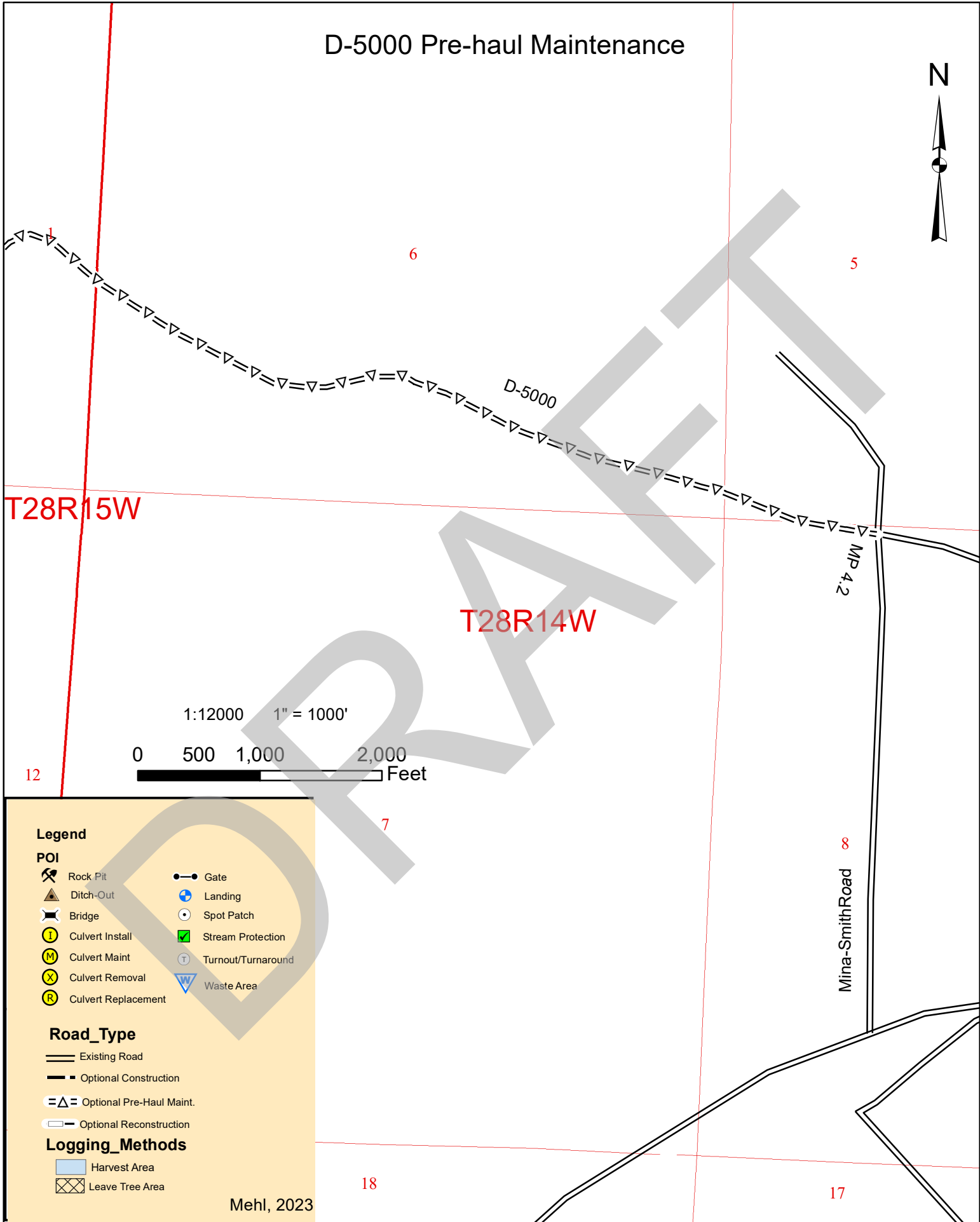
Logging_Methods

- Harvest Area
- Leave Tree Area

Mehl, 2023

ELLENS ROCK TIMBER SALE

D-5000 Pre-haul Maintenance



Legend

POI

- Rock Pit
- Ditch-Out
- Bridge
- Culvert Install
- Culvert Maint
- Culvert Removal
- Culvert Replacement
- Gate
- Landing
- Spot Patch
- Stream Protection
- Turnout/Turnaround
- Waste Area

Road_Type

- Existing Road
- Optional Construction
- Optional Pre-Haul Maint.
- Optional Reconstruction

Logging_Methods

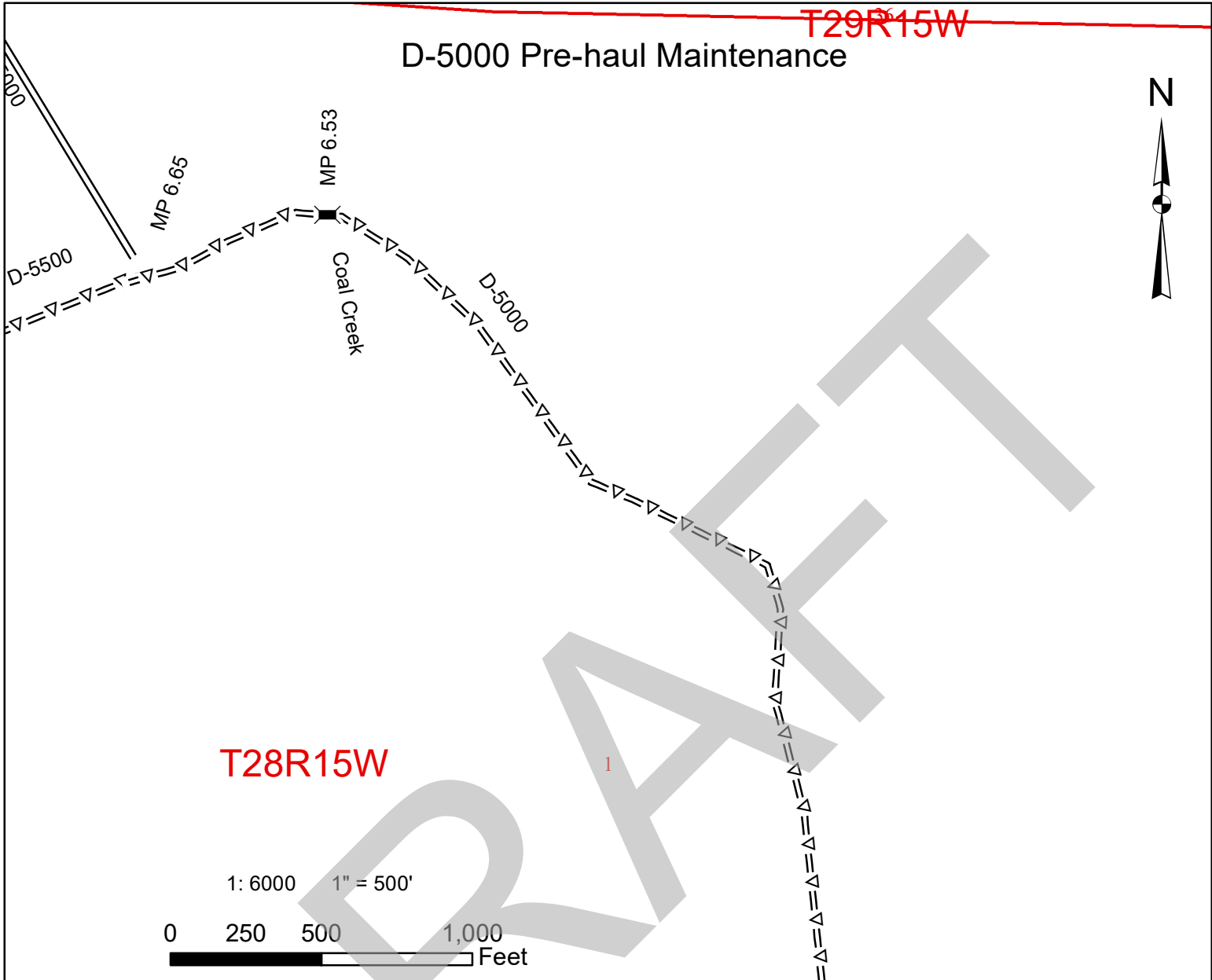
- Harvest Area
- Leave Tree Area

Mehl, 2023

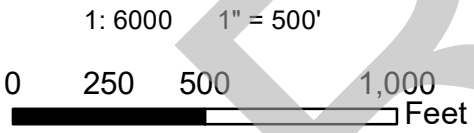
ELLENS ROCK TIMBER SALE

T29R15W

D-5000 Pre-haul Maintenance



T28R15W



Legend

POI

- Rock Pit
- Ditch-Out
- Bridge
- Culvert Install
- Culvert Maint
- Culvert Removal
- Culvert Replacement
- Gate
- Landing
- Spot Patch
- Stream Protection
- Turnout/Turnaround
- Waste Area

Road_Type

- Existing Road
- Optional Construction
- Optional Pre-Haul Maint.
- Optional Reconstruction

Logging_Methods

- Harvest Area
- Leave Tree Area

Mehl, 2023

ELLENS ROCK TIMBER SALE

D-5500 Pre-Haul Maintenance

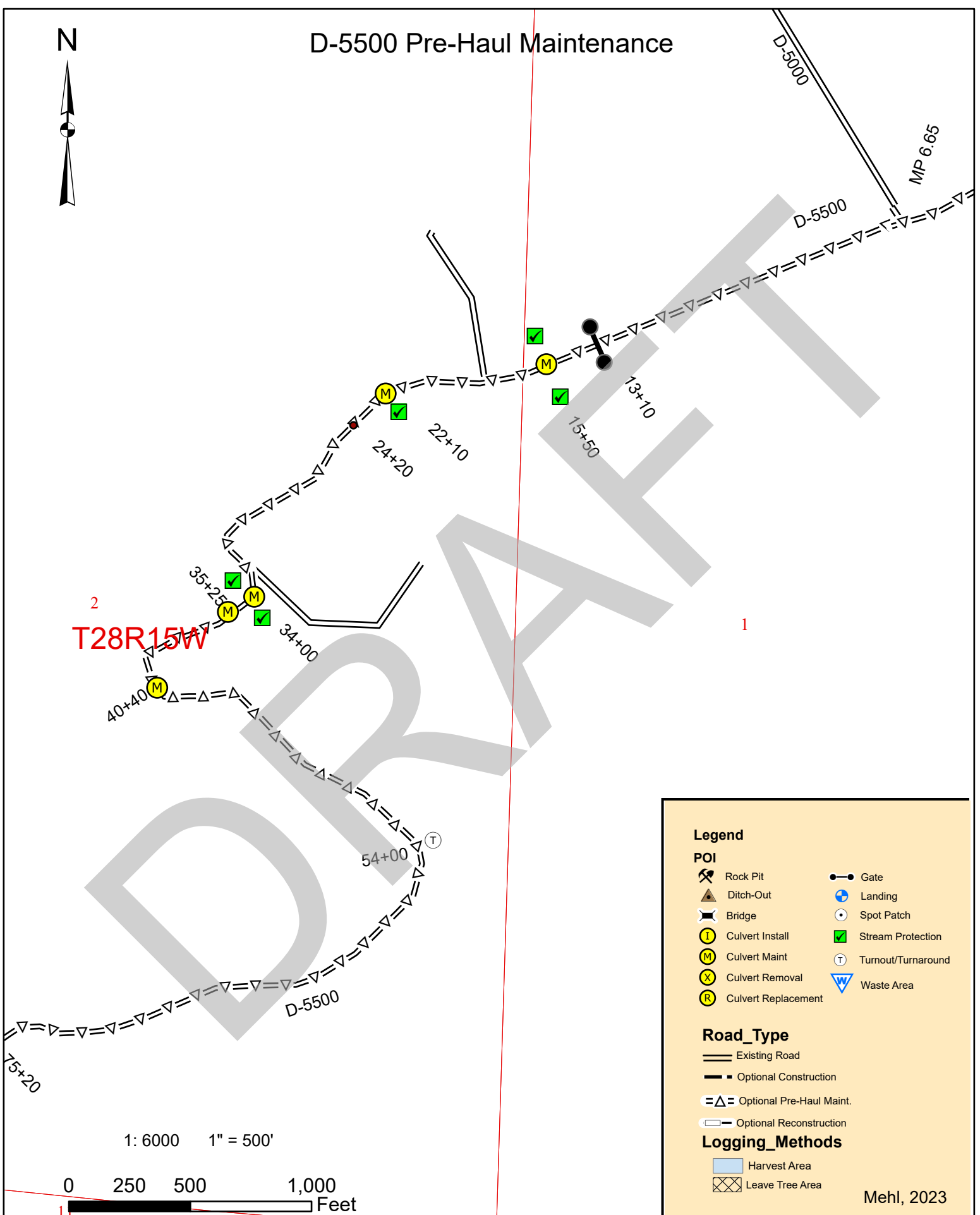
N



D-5000
MP 6.65

2
T28R15W

1



Legend

POI

	Rock Pit		Gate
	Ditch-Out		Landing
	Bridge		Spot Patch
	Culvert Install		Stream Protection
	Culvert Maint		Turnout/Turnaround
	Culvert Removal		Waste Area
	Culvert Replacement		

Road_Type

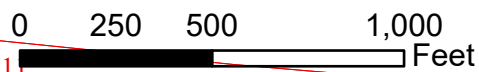
- Existing Road
- Optional Construction
- Optional Pre-Haul Maint.
- Optional Reconstruction

Logging_Methods

- Harvest Area
- Leave Tree Area

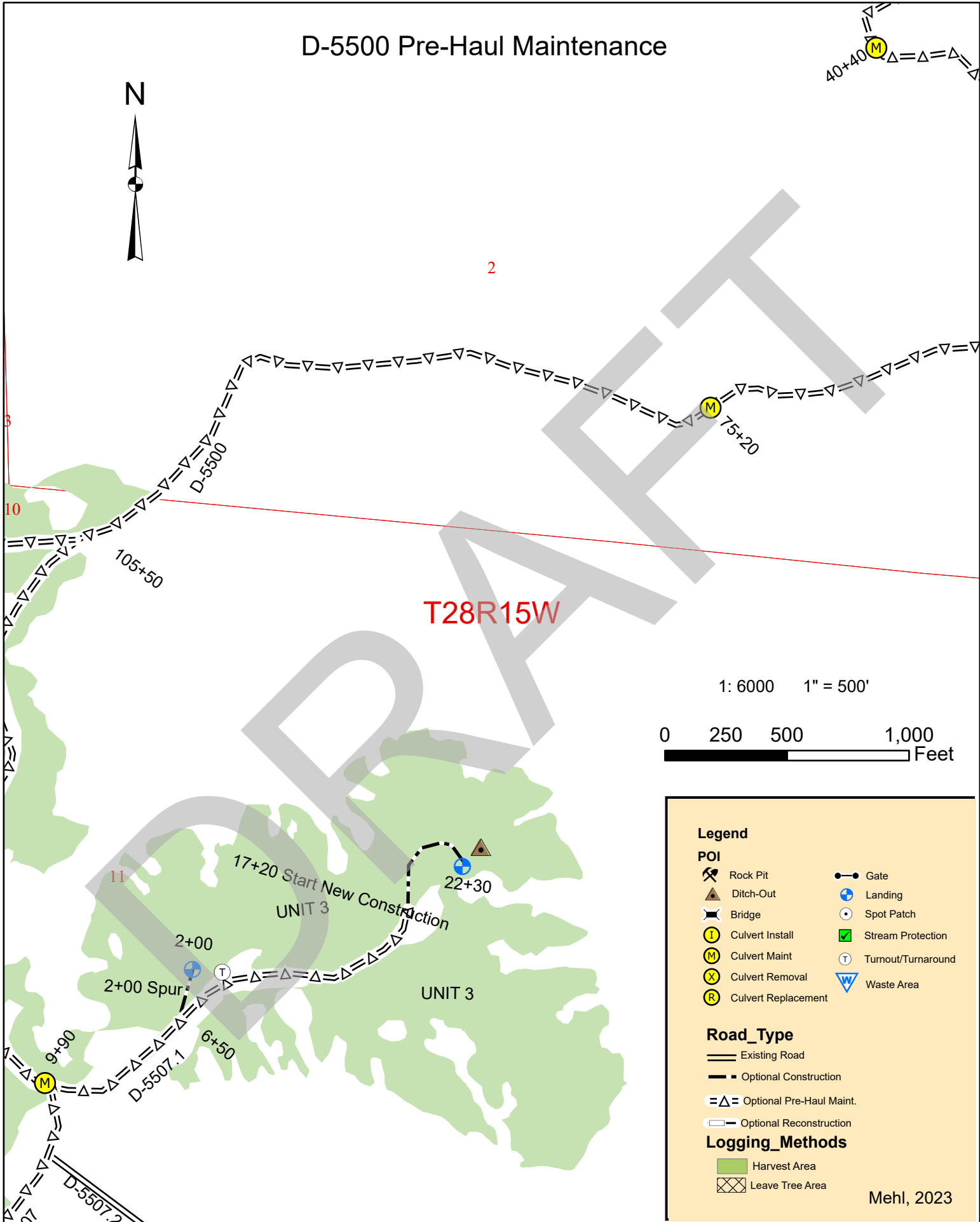
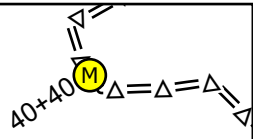
Mehl, 2023

1: 6000 1" = 500'



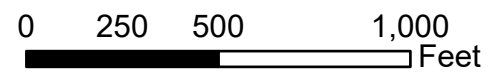
ELLENS ROCK TIMBER SALE

D-5500 Pre-Haul Maintenance



T28R15W

1: 6000 1" = 500'



Legend

- POI**
- Rock Pit
 - Ditch-Out
 - Bridge
 - Culvert Install
 - Culvert Maint
 - Culvert Removal
 - Culvert Replacement
 - Gate
 - Landing
 - Spot Patch
 - Stream Protection
 - Turnout/Turnaround
 - Waste Area

Road_Type

- Existing Road
- Optional Construction
- Optional Pre-Haul Maint.
- Optional Reconstruction

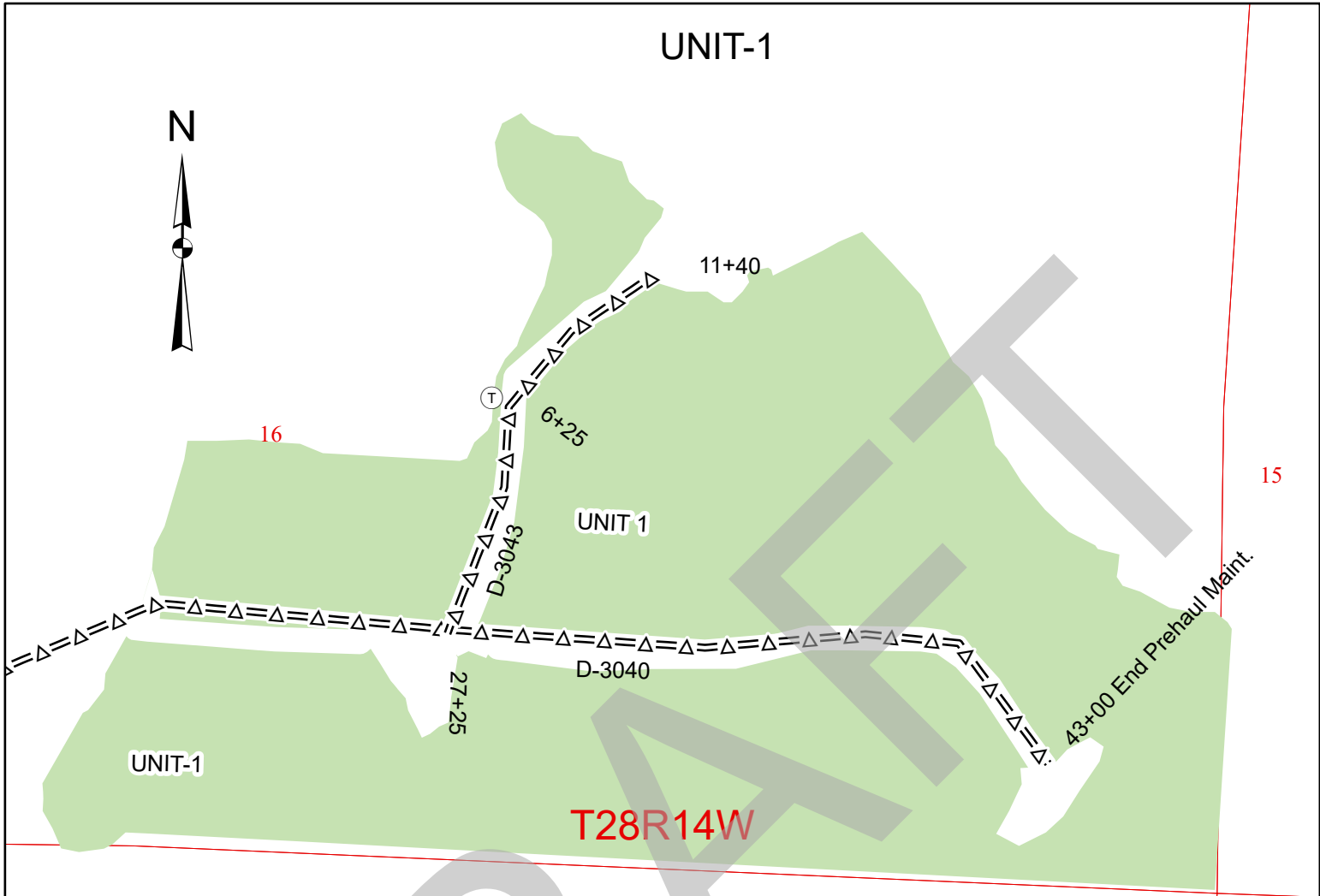
Logging_Methods

- Harvest Area
- Leave Tree Area

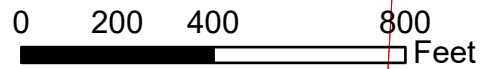
Mehl, 2023

ELLENS ROCK TIMBER SALE

UNIT-1



1: 4800 1" = 400'



Legend

POI

- Rock Pit
- Ditch-Out
- Bridge
- Culvert Install
- Culvert Maint
- Culvert Removal
- Culvert Replacement
- Gate
- Landing
- Spot Patch
- Stream Protection
- Turnout/Turnaround
- Waste Area

Road_Type

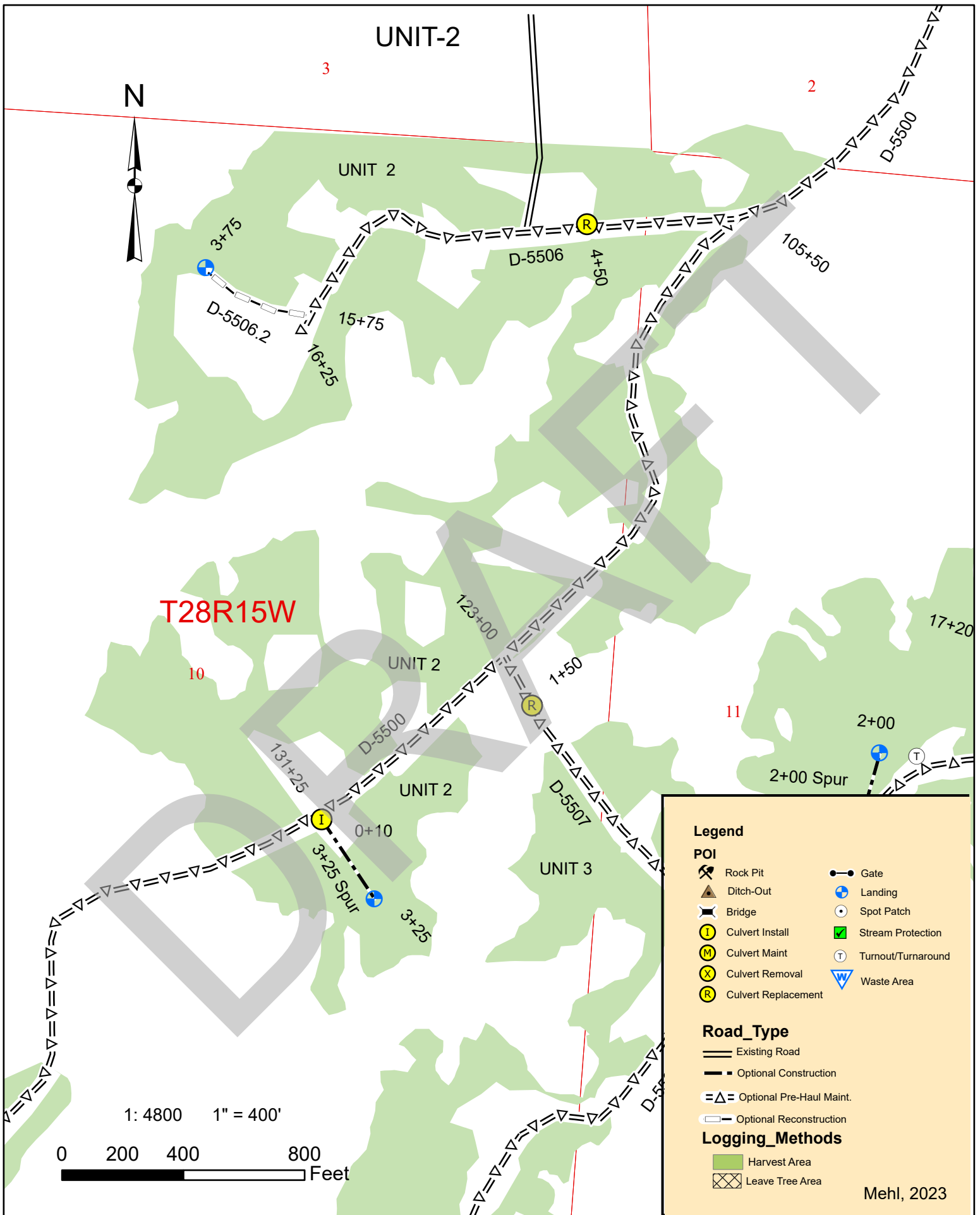
- Existing Road
- Optional Construction
- Optional Pre-Haul Maint.
- Optional Reconstruction

Logging_Methods

- Harvest Area
- Leave Tree Area

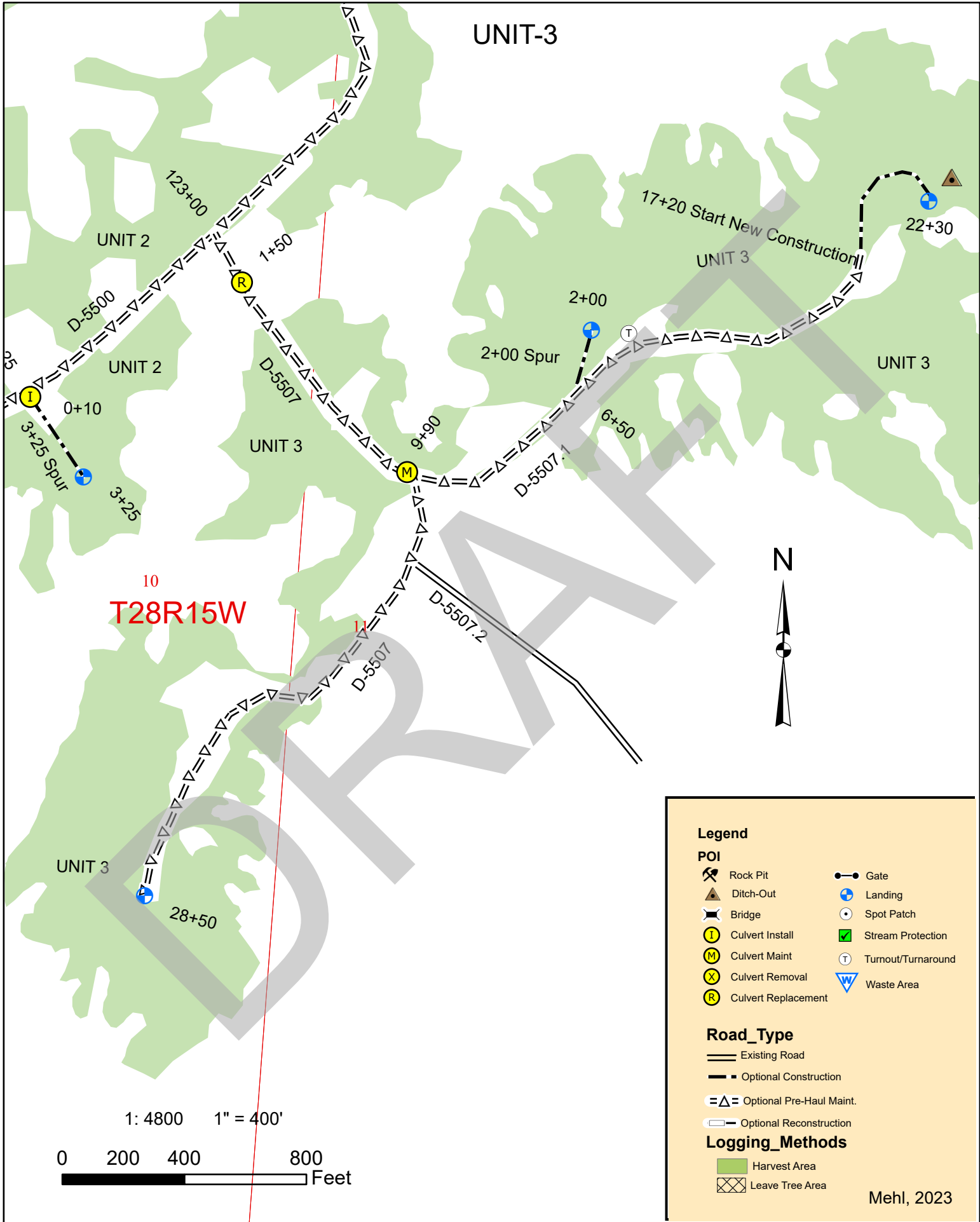
Mehl, 2023

ELLENS ROCK TIMBER SALE



ELLENS ROCK TIMBER SALE

UNIT-3



Legend

POI

- Rock Pit
- Ditch-Out
- Bridge
- Culvert Install
- Culvert Maint
- Culvert Removal
- Culvert Replacement
- Gate
- Landing
- Spot Patch
- Stream Protection
- Turnout/Turnaround
- Waste Area

Road_Type

- Existing Road
- Optional Construction
- Optional Pre-Haul Maint.
- Optional Reconstruction

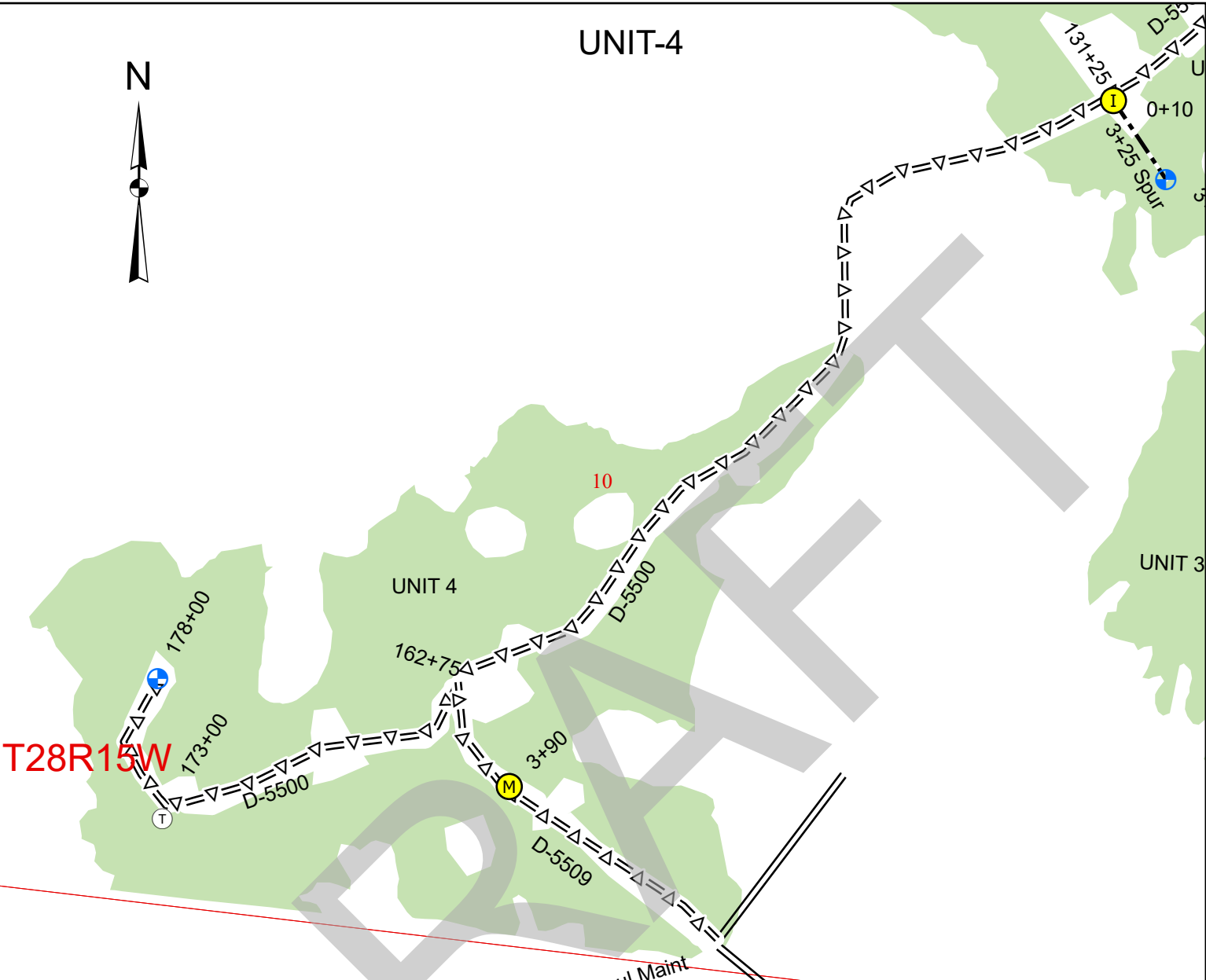
Logging_Methods

- Harvest Area
- Leave Tree Area

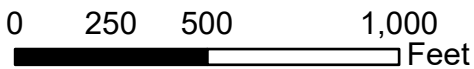
Mehl, 2023

ELLENS ROCK TIMBER SALE

UNIT-4



1: 6000 1" = 500'



Legend

POI

- Rock Pit
- Ditch-Out
- Bridge
- Culvert Install
- Culvert Maint
- Culvert Removal
- Culvert Replacement
- Gate
- Landing
- Spot Patch
- Stream Protection
- Turnout/Turnaround
- Waste Area

Road_Type

- Existing Road
- Optional Construction
- Optional Pre-Haul Maint.
- Optional Reconstruction

Logging_Methods

- Harvest Area
- Leave Tree Area

Mehl, 2023

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.

0-3 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>
D-3000	29.00	Pre-Haul Maintenance
D-3040	43.00	Pre-Haul Maintenance
D-3043	11.40	Pre-Haul Maintenance
D-5000	124.00	Pre-Haul Maintenance
D-5500	178.00	Pre-Haul Maintenance
D-5506	16.25	Pre-Haul Maintenance
D-5506.2	3.75	Reconstruction
D-5507	28.50	Pre-Haul Maintenance
D-5507.1	17.20	Pre-Haul Maintenance
D-5507.1	5.10	Construction
2+00 Spur	2.00	Construction
3+25 Spur	3.25	Construction
D-5509	11.75	Pre-Haul Maintenance

0-4 CONSTRUCTION

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

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
D-5507.1	17+20 – 22+30	See Below
2+00 Spur	0+00 – 2+00	See Below
3+25 Spur	0+00 – 3+25	See Below
Total:	10.35	

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>
D-5506.2	0+00 – 3+75	See Below
Total:	3.75	

Reconstruction includes, but is not limited to:

Installing additional culvert, realigning road segments, application of rock, removing culvert.

0-6 PRE-HAUL MAINTENANCE

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

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
D-3000	0+00 – 29+00	Grade/shape/compact in accordance with Clause 2-5.
D-3040	0+00 – 43+00	Grade/shape/compact in accordance with Clause 2-5. Apply rock in accordance with Rock List. Compact rock in accordance with Compaction List.
D-3043	0+00 – 11+40	Grade/shape/compact in accordance with Clause 2-5. Apply rock in accordance with Rock List. Compact rock in accordance with Compaction List.
D-5000	MP. 4.2 to MP 6.55	Grade/shape/compact in accordance with Clause 2-5. Maintain erosion control structures in accordance with Clause 2-6 & 2-8 and as directed by Contract Administrator.
D-5500	0+00 – 178+00	Grade/shape/compact in accordance with Clause 2-5. Maintain erosion control structures in accordance with Clause 2-8 and 8-1, and as directed by Contract Administrator. Maintain culverts in accordance with Culvert List and Clause 2-6, Apply rock in accordance with Rock List. Compact rock in accordance with Compaction List.
D-5506	0+00 – 16+25	Brush road in accordance with Clause 3-1 and Brushing Detail. Replace culvert in accordance with Culvert List, Apply rock in accordance with Rock List. Compact rock in accordance with Compaction List.
D-5507	0+00 – 28+50	Brush road in accordance with Clause 3-1 and Brushing Detail. Replace/maintain culverts in accordance with Culvert List, Apply rock in accordance with Rock List. Compact rock in accordance with Compaction List.
D-5507.1	0+00 – 17+20	Brush road in accordance with Clause 3-1 and Brushing Detail. Apply rock in accordance with Rock List. Compact rock in accordance with Compaction List.
D-5509	0+00 – 11+75	Grade/shape/compact in accordance with Clause 2-5. Maintain culvert in accordance with Culvert List, Apply rock in accordance with Rock List. Compact rock in accordance with Compaction List.
Total:	459.10	

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 replacement, installing erosion control materials and sediment removal structures, spot rocking, grading and shaping existing road surface and turnouts, constructing additional turnouts, compaction of road surface, application of rock, acquisition and application of grass seed and hay.

0-7 POST-HAUL MAINTENANCE

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

0-12 DEVELOP ROCK SOURCE

The Purchaser shall develop rock at Mora Pit. Purchaser shall crush 5,000 CY of 1.5" minus by 6/30/2025. Work for developing rock sources is listed in Section 6 ROCK AND SURFACING.

0-13 STRUCTURES

The Purchaser shall acquire and install all structures. Requirements for these structures are listed in Section 7 Structures.

SECTION 1 – GENERAL

1-1 ROAD PLAN CHANGES

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

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

Unless controlled by construction stakes or design data (plan, profile, and cross-sections), road work shall be performed in accordance with the dimensions shown on the Typical Section Sheet and the specifications within this Road Plan.

1-5 DESIGN DATA

Design data is available upon request at the Department of Natural Resources Olympic Region Office in Forks, WA.

1-6 ORDER OF PRECEDENCE

Any conflict or inconsistency in this Road Plan shall be resolved by giving the documents precedence in the following order:

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

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

1-8 REPAIR OR REPLACEMENT OF DAMAGED MATERIALS

The Purchaser is responsible for the repair or replacement of all materials, roadway infrastructure, and road components damaged during roadwork or operation activities. Repairs and replacements shall be directed by the Contract Administrator. Repairs to structural materials will be made according to the manufacturer's recommendation, and shall not begin without written approval from the Contract Administrator.

1-9 DAMAGED METALLIC COATING

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

1-12 SURVEY MONUMENTS

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

SUBSECTION ROAD MARKING

1-15 ROAD MARKING

Road work must be 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.

1-16 CONSTRUCTION STAKES SET BY STATE

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

<u>Road</u>	<u>Stations</u>	<u>Type</u>
2+00 Spur	0+00 – 2+00	Construction Centerline
D-5507.1	17+20 – 22+30	Construction Centerline
3+25 Spur	0+00 – 3+25	Construction Centerline
D-5506.2	0+00 – 3+75	Construction Centerline

1-18 REFERENCE POINT DAMAGE

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

SUBSECTION TIMING

1-20 COMPLETE BY DATE

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

1-21 HAUL APPROVAL

The Purchaser shall not use roads under this Road Plan without written approval from the Contract Administrator.

1-22 WORK NOTIFICATIONS

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

1-23 ROAD WORK PHASE APPROVAL

Written approval by Contract Administrator needs to be given at these phases of road work:

- Subgrade approval
- Drainage installation
- Subgrade compaction
- Rock application
- Rock compaction

SUBSECTION RESTRICTIONS

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 shall suspend road work or hauling of right-of-way timber, forest products, or rock under the following conditions:

- 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, the Purchaser will be required to cease operations, or perform corrective maintenance or repairs, subject to specifications within this Road Plan. Before and during any suspension, the Purchaser shall protect the work from damage or deterioration.

1-32 BRIDGE AND ASPHALT SURFACE RESTRICTION

The use of metal tracked equipment is not allowed on bridge or asphalt surfaces at any time. If Purchaser must run equipment on bridge or asphalt surfaces, then rubber tired equipment or other methods, as approved in writing by Contract Administrator, shall be used. If tracked equipment is used on bridge or asphalt surfaces, Purchaser shall immediately cease all road work and hauling operations. Any dirt, rock, or other material tracked or spilled on bridge or asphalt surface(s) shall be removed immediately. Any damage to the surface(s) shall be repaired at the Purchaser's expense as directed by the Contract Administrator.

1-33 SNOW PLOWING RESTRICTION

On all roads, snow plowing shall be permitted only after the execution of a Snow Plowing Agreement, which is available from the Contract 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

At existing road approaches to county roads and state highways, any mud, dirt, rock or other material tracked or spilled on the asphalt surface shall be removed immediately by the Purchaser.

If additional damage to the surface, signs, guardrails, etc. occurs then the damage shall 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>
La Push Road
Mina Smith Road
Quillayute Prairie Rd

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.

C-060 Designated Roads

<u>Road</u>	<u>Stations</u>
D-5000	MP 4.2 to MP 6.65
Mora pit Access	All

2-4 PASSAGE OF LIGHT VEHICLES

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

<u>Road</u>	<u>Stations</u>
D-5000	MP 4.2 – MP 6.65
D-3000	0+00 – 29+00

2-5 MAINTENANCE GRADING – EXISTING ROAD

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

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
D-5000	MP 4.2 – MP 6.65	Grade/Shape/Compact existing road surface
D-5500	0+00 – 162+75	Grade/Shape/Compact existing road surface
D-5509	0+00 – 11+75	Grade/Shape/Compact existing road surface
D-3000	0+00 – 29+00	Grade/Shape/Compact existing road surface
D-3040	0+00 – 43+00	Grade/Shape/Compact existing road surface
D-3043	0+00 – 11+40	Grade/Shape/Compact existing road surface

2-6 CLEANING CULVERTS

On the following road(s), all inlets and outlets of culverts shall be cleaned before the start of timber haul and shall be subject to the written approval of the Contract Administrator.

<u>Road</u>	<u>Stations</u>
D-5500	See Culvert List
D-5507	See Culvert List
D-5509	See Culvert List

2-8 MAINTAINING EROSION CONTROL STRUCTURES

On the following road(s), Purchaser shall clean and maintain all erosion control devices. Work shall be completed before the start of timber haul and shall be done in accordance with all pertaining clauses contained in this Road Plan. Excavated material shall be disposed of in accordance with Clause 4-35 through Clause 4-38.

<u>Road</u>	<u>Stations</u>	<u>Work Needed</u>
D-5000	MP 4.2 – MP 6.55	As directed by C/A
D-5500	0+00 – 178+00	As directed by C/A

SECTION 3 – CLEARING, GRUBBING, AND DISPOSAL

SUBSECTION BRUSHING

3-1 BRUSHING

On the following road(s), vegetative material up to 5 inches in diameter, including limbs, shall be cut as shown on the Brushing Detail. Brushing shall be achieved by mechanical cutting of brush, trees, and branches. Root systems and stumps of cut vegetation shall not be disturbed unless directed by the Contract Administrator.

<u>Road</u>	<u>Stations</u>
D-5507	12+60 – 28+50
D-5507.1	0+00 – 17+20
D-5506	0+00 – 16+25

3-2 BRUSHING RESTRICTION

Pulling, digging, pushing over, and other non-cutting methods used for vegetation removal shall not be used for brushing. Excavator buckets, log loaders and similar equipment shall not be used for brushing.

3-3 BRUSH REMOVAL

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

SUBSECTION CLEARING

3-5 CLEARING

Purchaser shall fall all vegetative material larger than 5 inches DBH or over 15 feet high between the marked right-of-way boundaries or 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.

3-7 RIGHT-OF-WAY DECKING

Deck all merchantable right-of-way timber. Decks shall be parallel to the road centerline and placed within the cleared right-of-way. Decks shall be free of dirt, limbs and other right-of-way debris, and removable by standard log loading equipment.

3-8 PROHIBITED DECKING AREAS

Right-of-way timber shall not be decked 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 unless approved by the Contract Administrator.

SUBSECTION GRUBBING

3-10 GRUBBING

Remove all stumps between the grubbing limits specified on the Typical Section Sheet. Those stumps outside the grubbing limits but with undercut roots shall also be removed. Stump removal shall be accomplished using a hydraulic mounted excavator unless authorized, in writing, by the Contract Administrator. Grubbing shall be completed before starting excavation and embankment.

3-12 STUMP PLACEMENT

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

SUBSECTION ORGANIC DEBRIS

3-20 ORGANIC DEBRIS DEFINITION

Organic debris is defined as all vegetative material not eligible for removal by Contract Clauses 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 Typical Section Sheet.

3-21 DISPOSAL COMPLETION

All disposal of organic debris, shall be completed before the application of rock.

3-23 PROHIBITED DISPOSAL AREAS

Organic debris shall not be deposited in the following areas:

- Within 5 feet of a cross drain culvert.
- Within 50 feet of a live stream, or wetland.
- On road subgrades road prism 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 will fall into the ditch or onto the road surface.
- Against standing timber.

3-24 BURYING ORGANIC DEBRIS RESTRICTED

Organic debris shall not be buried unless otherwise stated in this Road Plan.

3-25 SCATTERING ORGANIC DEBRIS

Organic debris shall be scattered 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

3-31 PILING

Organic debris shall be piled 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 shall be free of rock and soil.

SECTION 4 – EXCAVATION

4-1 EXCAVATOR CONSTRUCTION

All roads shall be constructed, reconstructed, and maintained using a track mounted hydraulic excavator unless stated otherwise within this Road Plan, or permission to do otherwise is granted in writing by the Contract Administrator.

4-2 PIONEERING

Pioneering shall not extend past construction that will be completed during the current construction season. Pioneering shall not extend more than 1000 feet beyond completed construction unless approved in writing by the Contract Administrator. In addition, the following actions shall be taken as pioneering progresses:

- Drainage shall be provided on all uncompleted construction.
- Road pioneering operations shall not undercut the final cut slope or restrict drainage.

- Culverts at live stream crossings shall be installed during pioneering operations prior to embankment.

4-3 ROAD GRADE AND ALIGNMENT STANDARDS

The following road grade and alignment standards shall be followed:

- Grade and alignment shall have smooth continuity, without abrupt changes in direction.
- Maximum grade shall not exceed 18 percent favorable and 16 percent adverse.
- Minimum curve radius is 60 feet at centerline.
- Sag vertical curves shall not have a grade change greater than 5% in 100 feet.
- Crest vertical curves shall not have a grade change greater than 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. The following standards for switchbacks shall be followed:

- Adverse grades on switchbacks shall not exceed 10%.
- Favorable grades through switchbacks shall not exceed 12%.
- Transition grades entering and leaving switchbacks shall not exceed a 5% grade change.
- Transition grades required to meet switchback grade limitations shall be constructed on the tangents preceding and departing from the switchbacks.

4-5 CUT SLOPE RATIO

Unless construction staked or designed excavation slopes shall be constructed no steeper than shown on the following table:

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

4-6 EMBANKMENT SLOPE RATIO

Unless construction staked or designed embankment slopes shall be constructed no steeper than shown on the following table:

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

4-7 SHAPING CUT AND FILL SLOPE

Excavation and embankment slopes shall be constructed 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.

Embankment widening shall be applied equally to both sides of the road to achieve the required width.

4-12 FULL BENCH CONSTRUCTION

Where side slopes exceed 45%,> Purchaser shall use full bench construction for the entire subgrade width

SUBSECTION INTERSECTIONS, TURNOUTS AND TURNAROUNDS

4-21 TURNOUTS

Turnouts shall be intervisible with maximum of 1,000 feet between turnouts unless shown otherwise on drawings. Locations shall be adjusted to fit the final subgrade alignment and sight distances. Turnout locations shall be subject to written approval by the Contract Administrator.

4-22 TURNAROUNDS

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

SUBSECTION DITCH CONSTRUCTION

4-25 DITCH CONSTRUCTION AND RECONSTRUCTION

The Purchaser shall construct ditches into the subgrade as specified on the Typical Section Sheet. Excavated slopes shall be consistent with Clause 4-5 Cut Slope Ratio. Ditches shall be constructed concurrently with construction of the subgrade.

4-27 DITCH WORK – MATERIAL USE PROHIBITED

On all roads, pulling ditch material across the road or mixing in with the road surface will not be allowed. Excavated material shall be disposed of as specified in Clause 4-36 through Clause 4-38.

4-28 DITCH DRAINAGE

Ditches must drain to cross-drain culverts or ditchouts.

4-29 DITCHOUTS

Ditchouts shall be constructed at locations shown on the list below, and as needed to fit as built conditions. Ditchouts shall be constructed in a manner that diverts ditch water onto the forest floor and shall have excavation backslopes no steeper than a 1:1 ratio. L or R denotes ditchout left or ditchout right heading in.

<u>Road</u>	<u>Stations</u>
D-5507.1	22+00 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.

4-38 PROHIBITED WASTE DISPOSAL AREAS

Waste material shall not be deposited in the following areas:

- Within 5 feet of a cross drain culvert.
- Within 50 feet of a live stream or wetland.
- Within a riparian management zone.
- On side slopes steeper than 45%.
- In locations that interfere with the construction of the road prism.
- In locations that impede drainage.
- Within the operational area for cable landings.
- Against standing timber.

4-39 WASTE AREA COMPACTION

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

SUBSECTION BORROW

4-45 SELECT BORROW

Select borrow shall consist of granular material, either naturally occurring or processed, and shall contain no more than 5% clay, organic debris, or trash by volume.

4-46 COMMON BORROW

Common borrow shall consist of soil, and/or aggregate that is non-plastic and shall contain no more than 5% clay, organic debris, or trash by volume. The material is considered non-plastic if the fines (passes the U.S. #40 sieve) in the sample cannot be rolled between the hand and a smooth surface into a thread at any moisture content.

4-47 NATIVE MATERIAL

Native material shall be excavated material free of organic debris, trash, and rocks greater than 12" in any dimension.

4-48 BORROW MATERIAL

Borrow material shall contain no more than 5% clay, organic debris, or trash by volume.

SUBSECTION SHAPING

4-55 ROAD SHAPING

The road subgrade and surface shall be shaped as shown on the Typical Section Sheet. The subgrade and surface shape shall ensure runoff in an even, un-concentrated manner, and shall be uniform, firm, and rut-free.

4-56 DRY WEATHER SHAPING

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

SUBSECTION COMPACTION

4-60 FILL COMPACTION

Purchaser shall compact all embankment and waste material in accordance with the Compaction List by routing equipment over the entire width of each lift. A plate compactor must be used for areas specifically requiring keyed embankment construction, and 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

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

4-63 EXISTING SURFACE COMPACTION

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

4-64 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.

SUBSECTION SUBGRADE REINFORCEMENT

SECTION 5 – DRAINAGE

5-1 REMOVAL OF SHOULDER BERMS

On the following road(s), berms shall be removed from road shoulders to permit the escape of runoff. Material shall be disposed of in accordance with Clauses 4-35 through 4-38. The construction of ditchouts will be required where ponding will result from the effects of sidecast debris.

<u>Road</u>	<u>Stations</u>
D-5500	As directed by C/A

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

Culverts shall be installed as part of this contract. Culverts shall be installed concurrently with subgrade work and shall 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 shall be adjusted to fit as-built conditions and shall not terminate directly on unprotected soil. Culverts shall be new and meet the material specifications in Clauses 10-15 through 10-24.

5-11 UNUSED MATERIALS STATE PROPERTY

On required roads, any materials listed on the Culvert List and Rock List that are not installed shall become the property of the State. Purchaser shall stockpile materials as directed by the Contract Administrator.

5-12 CONTINGENCY CULVERTS

The following culverts will be supplied by the Purchaser and will be available for installation on any road listed in the TYPICAL SECTION SHEET as directed by the Contract Administrator. Unused pipes will be located at Forks Compound or as directed by C/A prior to contract expiration.

<u>Road</u>	<u>Size</u>
As Directed	(1) 18" x 30'
By C/A	

SUBSECTION CULVERT INSTALLATION

5-15 CULVERT INSTALLATION

Installation shall be in accordance with the Typical Cross Drain Culvert Installation Detail, Typical Type Ns Np Culvert Installation Detail, 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 shall be installed in a manner consistent with the manufacturer's recommendations.

5-16 APPROVAL FOR LARGER CULVERT INSTALLATION

Installation of culverts 30 inches in diameter and over shall be subject to written approval by the District Engineer or their designee before backfilling.

5-17 CROSS DRAIN SKEW AND SLOPE

Cross drains on road grades in excess of 3% shall 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. Where the cross drain is at the low point in the road, culverts shall not be skewed. Cross drain culverts shall 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 shall be installed with a depth of cover of not less than 18 inches of compacted depth over the top of the culvert at the shallowest point. Stream crossing culverts shall be installed with a depth of cover specified in the Engineer's design, Type Ns Np Typical Detail Sheet, or to the minimum depth recommended by the culvert manufacturer for the type of cover material over the pipe, whichever is greater.

SUBSECTION ENERGY DISSIPATERS

5-20 ENERGY DISSIPATERS

Energy dissipaters shall be installed to prevent erosion and are subject to approval by the Contract Administrator. Rock shall weigh at least 10 pounds and be placed by zero-drop-height method. Energy dissipater shall extend a minimum of ¾ foot to each side of the culvert at the outlet and a minimum of 2 feet beyond the outlet.

5-21 DOWNSPOUTS AND FLUMES

Downspouts and flumes longer than 10 feet shall be staked on both sides at maximum intervals of 10 feet with 6-foot heavy-duty steel posts or 1 1/2" X 3/16" angle iron, and fastened securely to the posts with No. 10 galvanized smooth wire, or bolted using minimum 5/16" bolts and 2 washers per bolt, in accordance with the Culvert Installation Typical Details Page.

SUBSECTION CATCH BASINS, HEADWALLS, AND ARMORING

5-25 CATCH BASINS

Catch basins shall be constructed to resist erosion. Approximate dimensions are 1-2 feet deep, 1-2 feet wide, and 2-4 feet long.

5-26 HEADWALLS FOR CROSS DRAIN CULVERTS

Headwalls shall be constructed 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 shall consist of oversize or quarry spall material. Rock shall be placed on shoulders, slopes, and around culvert inlets and outlets. Rock shall not restrict the flow of water into culvert inlets or catch basins. No end dumping of rock is allowed.

SECTION 6 – ROCK AND SURFACING

SUBSECTION ROCK SOURCE

6-2 ROCK SOURCE ON STATE LAND

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

<u>Source</u>	<u>Location</u>	<u>Rock Type</u>
Mora Pit	T28N R15W Sec 24	Pit Run, Oversize, 1 1/2" minus
Mary Clark	T30N R12W Sec 32	LL Rip-Rap

6-5 ROCK FROM COMMERCIAL SOURCE

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

SUBSECTION ROCK SOURCE DEVELOPMENT

6-10 ROCK SOURCE DEVELOPMENT PLAN BY STATE

All rock source development and use shall be in accordance with a written Rock Source Development and Reclamation Plan prepared by the State and included in this Road Plan. Rock source operations shall be conducted as directed by the Contract Administrator and in accordance with the plan. Upon completion of operations, the rock source shall be left in the condition specified in the Rock Source Development and Reclamation Plan, and approved in writing by the Contract Administrator. The Purchaser shall notify the Contract Administrator a minimum of 5 calendar days before starting any operations in the rock source.

6-12 ROCK SOURCE SPECIFICATIONS

Rock sources shall be in accordance with the following unless otherwise specified in Rock Source Development and reclamation plan:

- Pit walls shall not be undermined or over-steepened. The maximum slope of the walls shall 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 shall be maintained in a condition to minimize the possibility of the walls sliding or failing.
- The width of pit benches shall be a minimum of 1.5 times the maximum length of the largest machine used.
- The surface of pit floors and benches shall be uniform and free-draining at a minimum 2% outslope gradient.
- All operations shall 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.
- Block all vehicle access to the top of the pit faces.

6-15 REQUIRED ROCK SOURCE WORK

The following rock source work is required. Work is to be done according to the approved Rock Source Development And Reclamation Plan and as directed by the Contract Administrator.

<u>Site</u>	<u>Requirements</u>
Mora Pit	Crush 5,000 CY of 1 ½" minus rock

6-22 FRACTURE REQUIREMENT FOR ROCK

A minimum of 40% by weight of coarse aggregate shall have at least one fractured face. Coarse aggregate is the material greater than 1/4-inch in size.

6-23 ROCK CRUSHING OPERATIONS

Rock crushing operations shall conform to the following specifications:

- Operations and placement of oversize material shall be conducted in or near the rock source site, as approved in writing by the Contract Administrator.
- The crushing operation shall be concluded within 30 working days from the time it begins.
- All testing and operations shall be performed in accordance with 6-24 Rock Crushing Compliance Procedure.
- The Purchaser may use commercial testing lab to produce sieve analysis.

6-24 ROCK CRUSHING COMPLIANCE PROCEEDURE

Phase I. Equipment Adjustment

Step 1:

At start up of crushing operations, the Purchaser will notify the Contract Administrator when the rock meets the gradation specifications in the contract.

Step 2:

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

Phase II. Production

Step 3:

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

- After the first 500 yards
- After every 1,500 yards thereafter.

a) Any time a sample is out of spec, but is within 5%*, the Purchaser will be notified and a second sample will be taken later in the day. If the second sample meets specifications, the rock crushed during that day will be accepted. If the second sample also fails to meet spec, none of the rock crushed since the last acceptable test will be counted toward the amount to be crushed.

b) Any time a sample is out of spec and is more than 5% off in any category, none of the rock crushed since the last acceptable test will be accepted and that rock must be kept separate from the stockpile. Return to Step 1.

c) Purchaser is strongly encouraged to take their own samples regularly and keep their operations in spec to avoid unnecessary expenses.

- The 5% will be applied only to sieve specs for 2" to 1/4"; rock that is out of spec in larger sizes must be kept separate from the acceptable rock.

SUBSECTION ROCK GRADATIONS

6-29 1 1/2-INCH MINUS CRUSHED ROCK

% Passing 1 1/2" square sieve	100%
% Passing 1" square sieve	50 - 85%
% Passing U.S. #4 sieve	30 - 50%
% Passing U.S. #40 sieve	16% maximum
% Passing U.S. #200 sieve	5% maximum

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

6-50 LIGHT LOOSE RIP RAP

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

At Least/Not More Than
20% / 90%

Weight Range
300 lbs. to 1 ton

Size Range
12"- 36"

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.

SUBSECTION ROCK STOCKPILE

6-67 ROCK STOCKPILE SPECIFICATIONS

Rock stockpiles shall meet the following specifications and require C/A approval:

- Before placing aggregates upon the stockpile site, the site shall be cleared of vegetation, trees, stumps, brush, rocks or other debris and the ground leveled to a smooth, firm, uniform surface.
- When completed, the stockpile shall be neat and regular in shape.
- The stockpile height shall be limited to a maximum of 30 feet.
- Stockpiles in excess of 500 cubic yards shall be built up in layers not more than 8 feet in depth. Stockpile layers shall be constructed by trucks, clamshells, or other methods approved, in writing, by the Contract Administrator.
- Each layer shall be completed over the entire area of the pile before depositing aggregates in the next layer. The aggregates shall not be dumped so that they run down and over the lower layers in the stockpile. The method of dropping from a bucket or spout in one location so as to form a cone shaped pile will not be permitted.
- Stockpiles of different types or sizes of aggregate shall be spaced far enough apart, or separated by suitable walls or partitions, to prevent the mixing of the aggregates.

SUBSECTION ROCK APPLICATION

6-70 APPROVAL BEFORE ROCK APPLICATION

Subgrade drainage installation including grading and compaction, shall be completed and approved in writing by the Contract Administrator, before rock application.

6-71 ROCK APPLICATION

Rock shall be applied in accordance with the specifications and quantities shown on the Rock List. Rock shall be spread, shaped, and compacted full-width concurrent with rock hauling operations. Rock shall be compacted in accordance with Compaction List, 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 1 1/2" minus crushed rock in accordance with the quantities shown on the Rock List.

Road	Stations	Amount
D-5000	MP 4.2 – MP 6.65	100 yd ³
D-5500	0+00 – 178+00	200 yd ³
D-3000	0+00 – 29+00	200 yd ³

6-73 ROCK FOR WIDENED PORTIONS

Turnarounds, turnouts, and areas with curve widening shall have rock applied to the same depth and specifications as the traveled way.

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.

SECTION 7 – STRUCTURES

SUBSECTION STREAM CROSSING STRUCTURES GENERAL

7-5 STRUCTURE DEBRIS

The Purchaser shall ensure that debris from the installation or removal of structures does not enter any stream. Components removed from the existing structures(s) shall be placed at designated site(s), as directed in writing by the Contract Administrator. The Purchaser is responsible for maintaining a clean jobsite, with all materials stored away from any high water mark or other area presenting a risk of the materials entering a stream. Debris entering any stream shall be removed immediately and placed in the site(s) designated for stockpiling or disposal. The Purchaser is responsible for retrieving all material carried downstream from the jobsite by the stream current.

7-6 STREAM CROSSING INSTALLATION

Installation of stream crossing structures shall be in accordance with the manufacturer's requirements, and as directed by the District Engineer or their designee.

7-7 BANK PROTECTION FOR STREAM CROSSING STRUCTURES

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

7-30 BRIDGE MAINTENANCE

On the following road(s), bridge maintenance, as listed below, is required as part of this contract. All old bridge material shall be removed from state land by the Purchaser before the termination of the contract.

<u>Road</u>	<u>Station</u>	<u>Requirements</u>	<u>Detail Sheet</u>
D-5500	24+20	Replace Bridge delineators	Typical delineator

7-57 CULVERT SHAPE CONTROL

Purchaser shall monitor the culvert shape during backfill and compaction. Special attention shall be paid to maintaining the structure's rise dimensions, concentricity and smooth, uniform curvature. If compaction methods are resulting in peaking and/or deflection of the culvert, Purchaser shall, in consultation with the District Engineer or their designee, modify their compaction method to achieve the appropriate end-result. The National Corrugated Steel Pipe Association "Installation Manual for Corrugated Steel Pipe, Pipe Arches, and Structural Plate" includes guidance on how to monitor culvert shape control and recommends corrective actions to take when shape control problems arise.

SUBSECTION GATES AND FENCES

SECTION 8 – EROSION CONTROL

8-1 SEDIMENT CONTROL STRUCTURES

On the following road(s), Purchaser shall install sediment control structures as listed below.

<u>Road</u>	<u>Stations</u>	<u>Comments</u>
D-5500	15+50	Settling ponds and silt fence in ditch, all four corners
D-5500	22+10	Settling ponds on right side corners, 50' silt fence L & R
D-5500	34+00	Settling Ponds upstation corners

8-2 PROTECTION FOR EXPOSED SOIL

Purchaser shall furnish and evenly spread a 3-inch layer of straw to all exposed soils at stream culvert installations. Soils shall not be allowed to sit exposed during any rain event.

SUBSECTION REVEGETATION

8-15 REVEGETATION

Purchaser shall grass seed and hay mulch all exposed soils including, but not limited to, stream culverts, waste areas, sidecast pull back 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 revegetation must be approved in writing by the Contract Administrator.

8-16 REVEGETATION SUPPLY

All seed, mulch, hay, matting, etc. will be provided by the Purchaser.

8-17 REVEGETATION TIMING

Purchaser shall perform revegetation during the first available opportunity. Soils shall 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

Purchaser shall provide a protective cover over the revegetated area. The protective cover may consist of, but not be limited to, such items as dispersed hay mulch 3" thick or jute matting.

8-19 ASSURANCE FOR SEEDED AREA

The Purchaser shall be responsible to ensure a uniform and dense crop of grass. The Purchaser shall reapply the seed and/or mulch in areas that have been damaged through any cause, before approval from the Contract Administrator. The Purchaser shall restore eroded or disturbed areas, clean up and properly dispose of eroded materials, and reapply the seed and/or mulch at no additional 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 soils at a rate of 60 pounds per acre of exposed soil.

<u>Seed Species</u>	<u>% by Weight</u>
• Perennial Ryegrass	40.00
• Creeping Red Fescue	40.00
• White Dutch Clover	10.00
• Colonial Bentgrass	10.00

Grass seed shall 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

SECTION 9 – POST-HAUL ROAD WORK

SUBSECTION POST-HAUL MAINTENANCE

9-5 POST-HAUL MAINTENANCE

Post-haul maintenance shall be performed 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
D-5000	MP 4.2 – MP 6.55	Apply post haul rock as per Clause 6-72.
D-5500	0+00 – 178+00	Apply post haul rock as per Clause 6-72.
D-3000	0+00 – 29+00	Apply post haul rock as per Clause 6-72.

SUBSECTION POST-HAUL LANDING MAINTENANCE

9-10 LANDING DRAINAGE

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

9-11 LANDING EMBANKMENT

On all roads, landing embankments shall be sloped to original construction specifications.

SECTION 10 MATERIALS

SUBSECTION GEOTEXTILES

10-6 GEOTEXTILE FOR TEMPORARY SILT FENCE

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

<u>Type</u>	<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 shall meet AASHTO M-36 (ASTM A-760) specifications. Culverts shall be aluminized (aluminum type 2 coated meeting AASHTO M-274).

10-17 CORRUGATED PLASTIC CULVERT

Polyethylene culverts shall meet AASHTO M-294 specifications. Culverts shall be Type S – double walled with a corrugated exterior and smooth interior.

10-20 FLUME AND DOWNSPOUT

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

10-21 METAL BAND

Metal coupling and end bands shall meet the AASHTO specification designated for the culvert and shall have matching corrugations. On culverts 24 inches and smaller, bands shall have a minimum width of 12 inches. On culverts over 24 inches, bands shall have a minimum width of 24 inches.

10-22 PLASTIC BAND

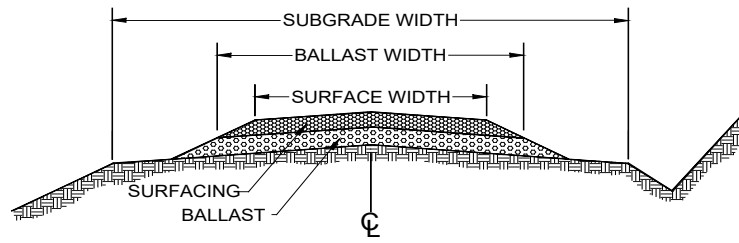
Plastic coupling and end bands shall meet the AASHTO specification designated for the culvert. Only fittings supplied or recommended by the culvert manufacturer shall be used. Couplings shall be split coupling band. Split coupling bands shall have a minimum of four corrugations, two on each side of the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

10-24 GAGE AND CORRUGATION

Metal culverts shall 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 42"	14 (0.079")	2 2/3" X 1/2"
48" to 54"	12	5" X 1"
60" +	10	5" X 1"

ROCK LIST SHEET

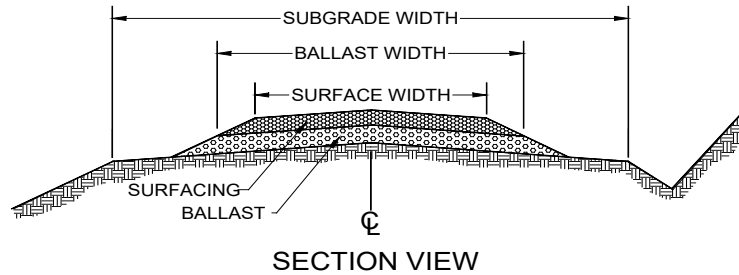


SECTION VIEW

1. Rock quantities, subtotals and totals are "truck measure" estimates. Rock shall be applied to at least the depths listed.
2. All depths are compacted depths.
3. Rock slopes shall be 1½ (H) : 1 (V).
4. All rock sources are subject to approval by the Contract Administrator.
5. Pitrun is defined as pitrun or ballast per Line 6. Crushed is defined as any crushed rock from ¼" minus to 4" minus per Line 6. Oversize is defined as oversize, quarry spalls, light loose rip rap, or heavy loose rip rap per Line 6.
6. Rock sources=1: Mora Pit Ballast, 2: Mora Pit 1 ½" minus, 3: Mora Pit Oversize

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)
D-3000															
Misc	0+00	29+00							2				50		
Post haul	0+00	29+00							2				200		
D-3040															
Misc	0+00	43+00							2				100		
D-3043															
Misc	0+00	11+40							2				100		
D-5000															
Post haul	221+78	345+85							2				100		
D-5500															
Lift	162+75	178+00		1	12	8"	45	690							
Post haul	0+00	178+00							2				200		
D-5506															
Lift	0+00	16+25		1	12	6"	35	570							
Culvert	4+50			1				20							
D-5506.2															
Lift	0+00	3+75	17	1	12	18"	110	410							
D-5507															
Culvert	1+50			1				20							
Lift	12+60	28+50		1	12	6"	35	560							
Totals:								2270					750		

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).
4. All rock sources are subject to approval by the Contract Administrator.
5. Pitrun is defined as pitrun or ballast per Line 6. Crushed is defined as any crushed rock from ¼" minus to 4" minus per Line 6. Oversize is defined as oversize, quarry spalls, light loose rip rap, or heavy loose rip rap per Line 6.
6. Rock sources=1: Mora Pit Ballast, 2: Mora Pit 1 ½" minus, 3: Mora Pit Oversize

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)
D-5507.1															
Misc	0+00	17+20							2				50		
Lift	17+20	22+30	17	1	12	18	110	560							
Landing	22+30			1				50							
D-5509															
Misc	0+00	11+75							2				40		
2+00 Spur															
Lift	0+00	2+00		1	12	18	110	220							
Landing	2+00			1				50							
3+25 Spur															
Lift	0+00	3+25		1	12	18	110	360							
Culvert	0+10							20							
Landing	3+25			1				50							
Totals:								1310					90		

ROCK LIST SHEET GRAND TOTAL

Source	Quantity (yd ³)
1: Mora Pit Pitrun	3580
2: Mora Pit Pit 1½" minus	840

DRAFT

COMPACTION LIST

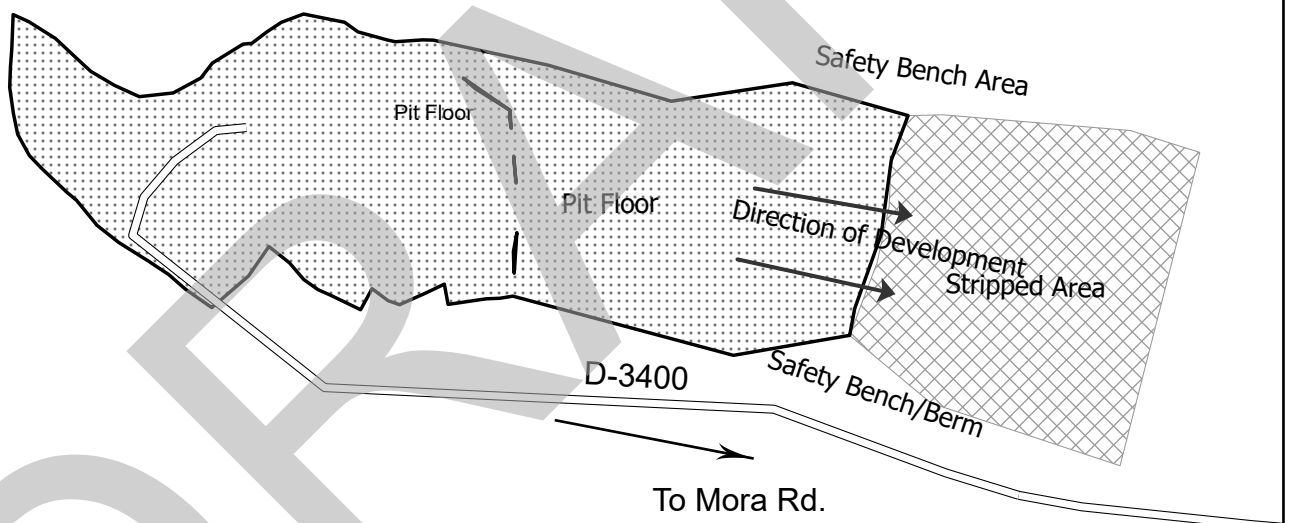
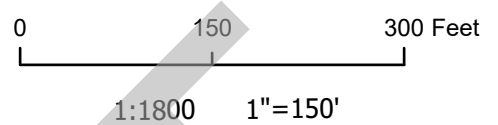
Road	Stations	Type	Max Depth per Lift (In)	Equipment Type	Equipment Weight (lbs)	Minimum Number of Passes	Maximum Operating Speed (mph)
Construction	All	Culvert Backfills	6	Jumping Jack	N/A	3	N/A
Construction	All	Subgrade, Embankment	6	Vibratory Smooth Drum Roller	6,000	3	3
Construction	All	Rock Placement	6				
Pre-haul Maintenance	All	Existing Pre-haul Surface	6				
Pre-haul Maintenance, Post-haul Maintenance	All	Rock Lifts	6				
Pre-haul Maintenance	All	Culvert Backfills	6	Jumping Jack	N/A	3	N/A
Waste Areas	See Clause 4-37	Waste Material	24	Excavation Equipment	See Clause 4-39		

SUMMARY - Road Development Costs													
SALENAME:	Ellen's Rock	CONTRACT#:	30-104809	REGION:	Olympic	DISTRICT:	Olympic						
LEGAL DESCRIPTION:	T28N R15W Sec. 10												
ROAD NAME:	D-5507.1	2+00 Spur	3+25 Spur	D-5506.2	D-3000	D-3040	D-3043	D-5000	D-5500	D-5506	D-5507	TOTAL:	SHEET #2-4
ROAD TYPE:	Construction Construction Construction			Recon.	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul		
NUMBER OF STATIONS:	5	2	3	4	29	43	11	124	178	16	29	444.25	359.95
SIDE SLOPE:	10%	10%	10%	5%	0%	0%	0%	0%	0%	0%	0%	0%	35%
CLEARING AND GRUBBING:	\$436	\$143	\$232	\$232	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,042	\$0
ROAD BRUSHING:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$442	\$435	\$468
EXCAVATION AND FILL:	\$864	\$339	\$551	\$459	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,213	\$0
ROAD GRADING:	\$0	\$0	\$0	\$0	\$601	\$892	\$236	\$2,572	\$3,381	\$0	\$0	\$7,682	\$7,109
DITCH CLEANING/CONSTRUCTION:	\$0	\$0	\$0	\$146	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$146	\$0
ROCK TOTALS (Cu. Yds.)/ROCK COSTS:													
Ballast:	3580	610	270	430	410	0	0	0	690	590	580	3,580	0
Surface:	840	0	0	0	0	50	100	100	0	0	0	\$4,871	0
Oversize:	0	0	0	0	0	0	\$820	\$820	\$0	\$0	\$0	\$2,680	\$8,612
CULVERTS AND FLUMES:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
STRUCUTURES:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
MISC. EXPENSES:	\$100	\$12	\$19	\$0	\$170	\$252	\$67	\$725	\$1,594	\$0	\$24	\$2,961	\$2,029
OVERHEAD:	\$923	\$391	\$750	\$982	\$163	\$177	\$101	\$297	\$1,420	\$946	\$869	\$7,019	\$1,787
TOTAL COSTS:	\$11,181	\$4,737	\$9,088	\$9,911	\$1,974	\$2,140	\$1,224	\$3,594	\$17,196	\$11,452	\$10,530	\$83,028	\$20,004
COST PER STATION:	\$2,192	\$2,369	\$2,796	\$2,643	\$68	\$50	\$107	\$29	\$97	\$705	\$369	\$187	\$6
MOBILIZATION:			\$7,200										
ROAD DEACTIVATION AND ABANDONMENT COSTS:			\$0										
Pit Work			\$60,000										
NOTE: This appraisal has no allowance for profit and risk.													
Sheet 1 of 2													
Plans to be furnished by:													

Road Standard	Const.	Reconst.	Prehaul	Posthaul	TOTAL (All Roads) =
Total Costs =	\$26,806	\$11,711	\$53,744	\$17,971	\$175,632
Total Sta. =	10	4	459	459	4,041
Cost per Sta. =	\$2,590	\$3,123	\$117	\$39	\$43.46
Complied by:	Bill Mehl				TOTAL COST PER STATION= \$218.39
					Date: 1/29/2024

Mora Pit Plan

Sec. 23 & 24, T28N, R15W



Pit Development Plan

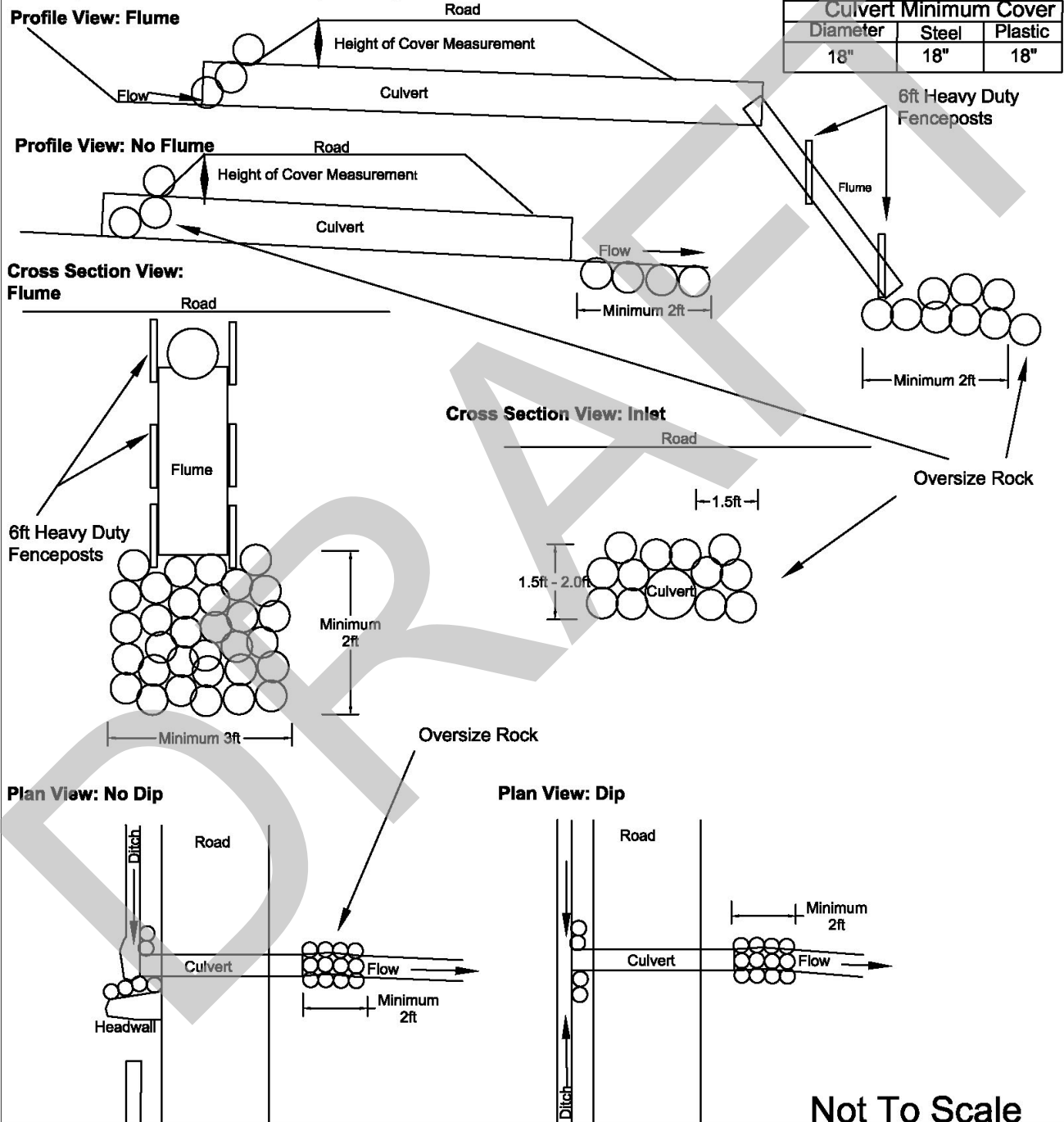
1. Areas to be developed as directed by the Contract Administrator.
2. Working face height shall not exceed 15 feet.
3. Waste material and oversize material shall be placed as directed by the Contract Administrator. Segregate soil & wood.
4. Pit face shall not be mined to within 15' of any unstripped area.
5. Crushed stockpile to be located by C/A.

Mehl, 1/2024

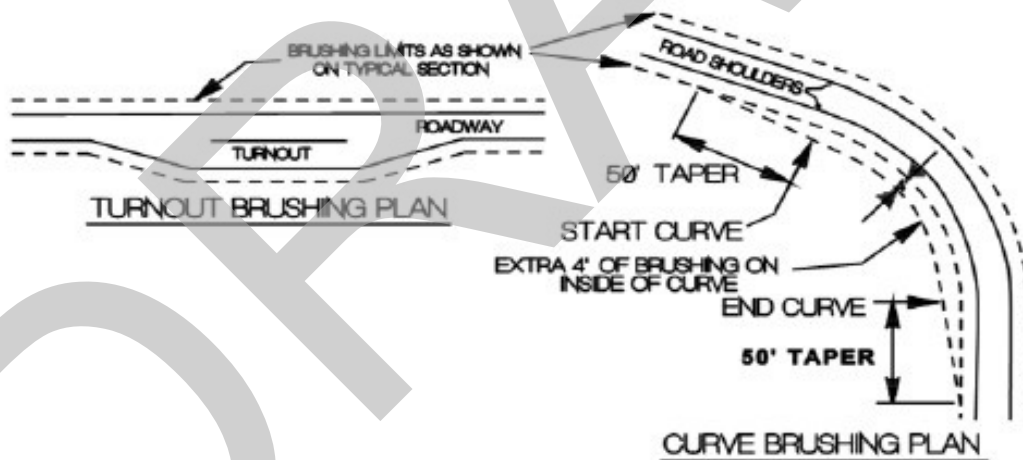
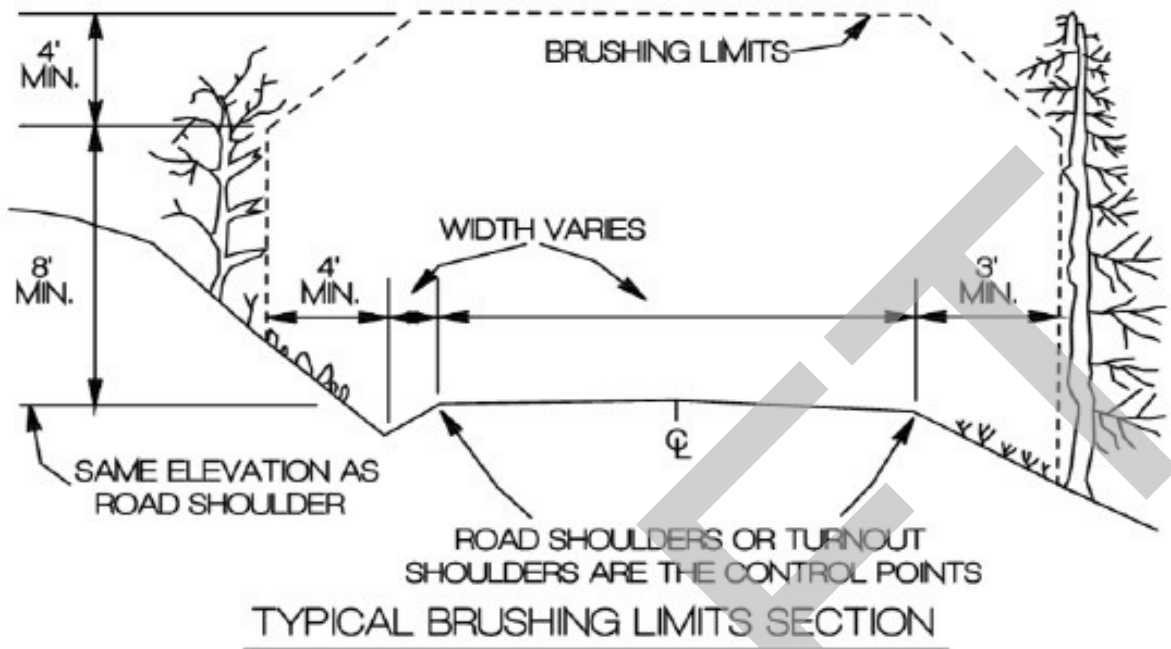
Typical Cross Drain Culvert Installation Detail Sheet

- 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..

Culvert Minimum Cover		
Diameter	Steel	Plastic
18"	18"	18"

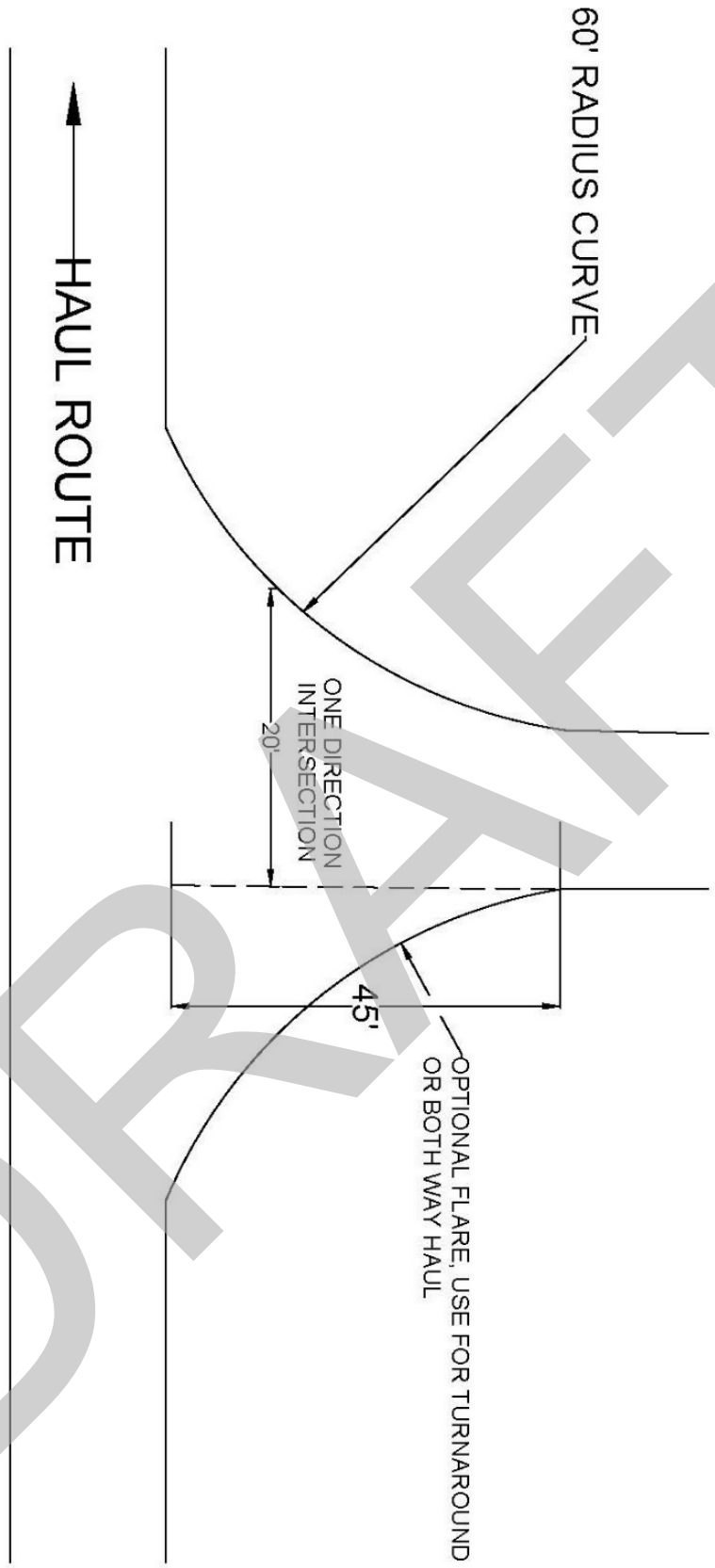


BRUSHING DETAIL



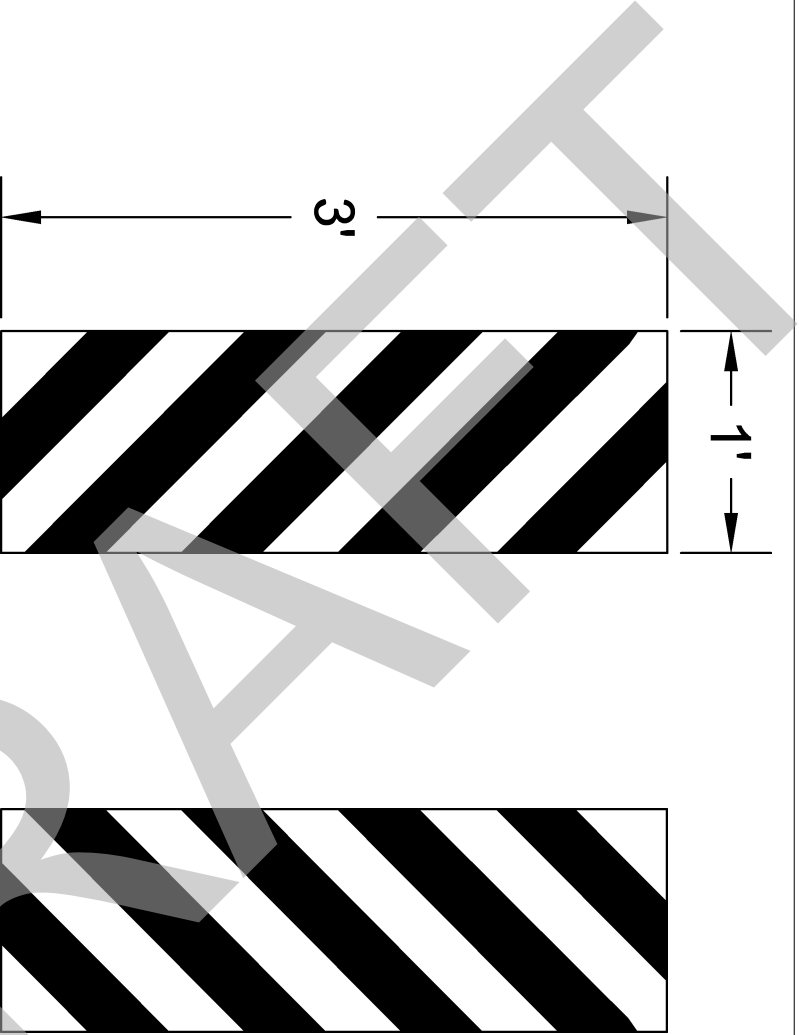
- 1) ALL VEGETATION WITHIN THE BRUSHING LIMITS SHALL BE CUT TO WITHIN 8' OF THE GROUND, UNLESS OTHERWISE DIRECTED BY THE CONTRACT ADMINISTRATOR.
- 2) ALL BRUSH, TREES, LIMBS, ETC. SHALL BE REMOVED FROM THE ROAD SURFACE.
- 3) ALL BRUSH, TREES, LIMBS, ETC. THAT MAY RESTRICT THE FLOW OF WATER SHALL BE REMOVED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

TYPICAL INTERSECTION



NOT TO SCALE

TYPICAL DELINEATORS



OBJECT MARKERS TYPE 3 SHALL BE 12" X 36" WITH REFLECTIVE STRIP BONDED TO A 14 GAUGE ALUMINUM SHEET. REFLECTIVE STRIPS SHALL BE 3M ENGINEER GRADE REFLECTIVE SHEETING OM-3R OR EQUAL.

NO SCALE

FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS

Cuts and Fills

- Maintain slope lines to a stable gradient compatible with the cut slope/fill slope ratios. Remove slides from ditches and the roadway. Repair fill-failures in accordance with Clause 4-6 Embankment Slope Ratio, and with material approved by the Contract Administrator. Remove overhanging material from the top of cut slopes.
- Waste material from slides or other sources shall be placed and compacted in stable locations identified in the road plan or approved by the Contract Administrator, so that sediment will not deliver to any streams or wetlands.
- Slide material and debris shall not be mixed into the road surface materials, unless approved by the Contract Administrator.

Surface

- Grade, shape, and compact the road surface, turnouts, and shoulders to the original shape on the Typical Section Sheet, 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 culvert headwalls to a level slightly below the road shoulder with material that will resist erosion. This is to allow for culverts that are overtopped to keep the water in the ditchline.
- 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.

