



TIMBER NOTICE OF SALE

SALE NAME: BARRED ENTRY

AGREEMENT NO: 30-104801

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

SALE LOCATION: Sale located approximately 26 miles southeast of Forks, WA

PRODUCTS SOLD AND SALE AREA: All timber, except trees marked with a band of blue paint, bounded out by leave tree area tags or any downed red cedar: bounded by timber sale boundary tags, the H-1061 road, timber type change in Unit 1; timber sale boundary tags, the H-1000 & H-1800 roads in Unit 2; timber sale boundary tags, the H-1800 & H-1820 roads in Unit 3; timber sale boundary tags, the H-1000 road in Units 4 & 5; timber sale boundary tags, the H-1000 & H-1066 roads in Unit 6; timber boundary tags, the H-1009 road in Unit 7.

All forest products above located on part(s) of Sections 1, 2, 11 and 12 all in Township 26 North, Range 11 West, Sections 36 all in Township 27 North, Range 11 West, Sections 29 and 32 all in Township 27 North, Range 10 West, W.M., containing 245 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, Red alder, and Sale Total.

MINIMUM BID: \$0.00 BID METHOD: Sealed Bids

PERFORMANCE SECURITY: \$0.00 SALE TYPE: Lump Sum

EXPIRATION DATE: October 31, 2026 ALLOCATION: Export Restricted

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

HARVEST METHOD: Ground based 50%/Uphill Cable 30%/Downhill Cable 20%

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 are restricted unless approved by the Contract Administrator. Authority to use other equipment or to operate outside the equipment specifications detailed above must be approved in writing by the State.



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30' Equipment Limitations Zones on all typed water, shovel logging must meet rutting and skidding requirements and harvest plans.

ROADS:

5.04 stations of required reconstruction. 3.00 stations of optional construction. 680.63 stations of required prehaul maintenance. 0.80 stations of optional prehaul maintenance. Pipe work on the H-1000, H-1617, and H-1520 must be completed between July 1st and Sept 30th. Temporary crossing on H-1520 must be installed and removed in one season. On the H-1000 at stations 174+70-185+30 any road work, right-of-way timber falling and yarding, rock pit operations, or operation of heavy equipment must be performed during the limited operating period if implemented during the nesting season. The limited operating period runs from two hours after sunrise to two hours before sunset between April 1 through September 23. This restriction does not apply to the hauling of timber, rock, or equipment.

ACREAGE DETERMINATION

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

FEES:

\$107,151.00 is due on day of sale. \$9.00 per MBF is due upon removal. These are in addition to the bid price.

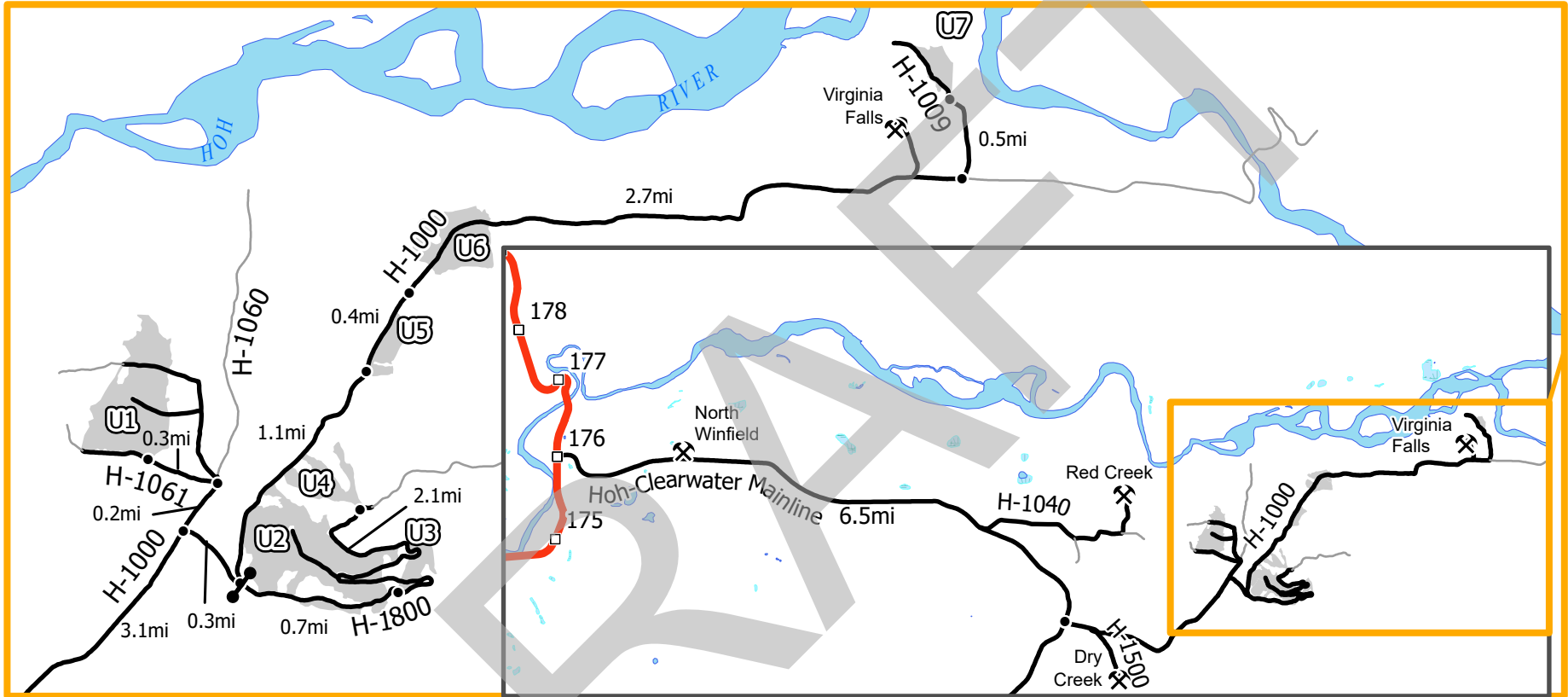
SPECIAL REMARKS:

Logging operations that block travel on the H-1000 (Units 5 and 6) must be completed between January 1st and March 31st. Traffic shall not be stopped for more than one hour at a time. If a longer closure is required, closure time must be posted 14 days in advance. Use of flaggers shall be required when operations cause road closure, or when yarding across H-1000. The H-1000 shall remain open to traffic after work hours, on weekends, and on holidays, unless authorized in writing by the Contract Administrator. There are locked gates on the H-1800 and North Winfield Pit. Contact Olympic Region Dispatch Center at 360-374-2800 to obtain a AA1 key.

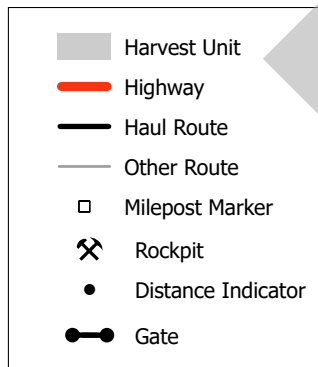
DRIVING MAP

SALE NAME: BARRED ENTRY
AGREEMENT#: 30-104801
TOWNSHIP(S): T26R11W, T27R10W, T27R11W
TRUST(S): Common School and Indemnity (3)

REGION: Olympic Region
COUNTY(S): Jefferson
ELEVATION RGE: 460-1620



Map may not be to scale



DRIVING DIRECTIONS:

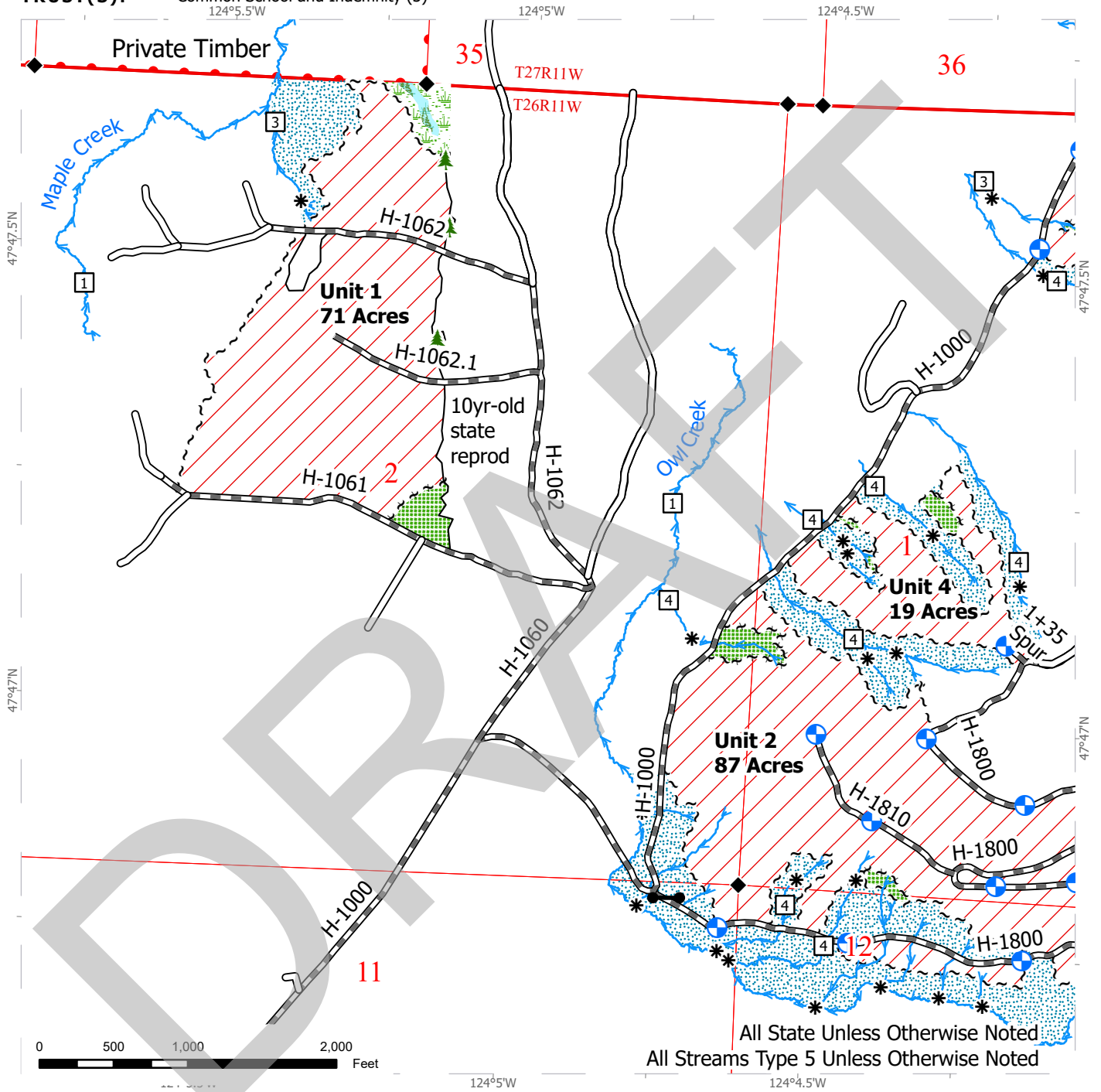
Unit 1: Drive south on HWY 101 from Forks, WA for 15 miles. Turn left onto Hoh-Clearwater Mainline. Continue for 6.5 miles and turn left onto H-1000. Drive 3.1 miles, then keep left onto H-1060. Continue for 0.2 miles and take the first left onto H-1061. Drive 0.3 miles.
Unit 2: From H-1060 JCT, continue east on H-1000 for 0.3 miles. Keep right onto H-1800 and arrive.
Unit 3: From Unit 2, continue on H-1800 for 0.7 miles.
Unit 4: From Unit 3, continue on H-1800 for 2.1 miles.
Unit 5: From H-1800 JCT, continue on H-1000 for 1.1 miles.
Unit 6: From Unit 5, continue on H-1000 for 0.4 miles.
Unit 7: From Unit 6, continue on H-1000 for 2.7 miles and turn left onto H-1009. Continue for 0.5 miles.
North Winfield Pit: Turn left at MP1.5 Hoh-Clearwater Mainline
Red Creed Quarry: Turn left at MP4.5 Hoh-Clearwater Mainline. Drive 1 mile, and continue straight onto H-1043. Drive 0.6 miles and turn left onto H-1044. Drive 0.5 miles.
Dry Creek Pit: Drive 0.5 miles on H-1500 from JCT H-1000.
Virginia Falls Pit: From Unit 6, continue on H-1000 for 1.8 miles. Turn left on Virginia Falls Pit road. Drive 0.5 miles.



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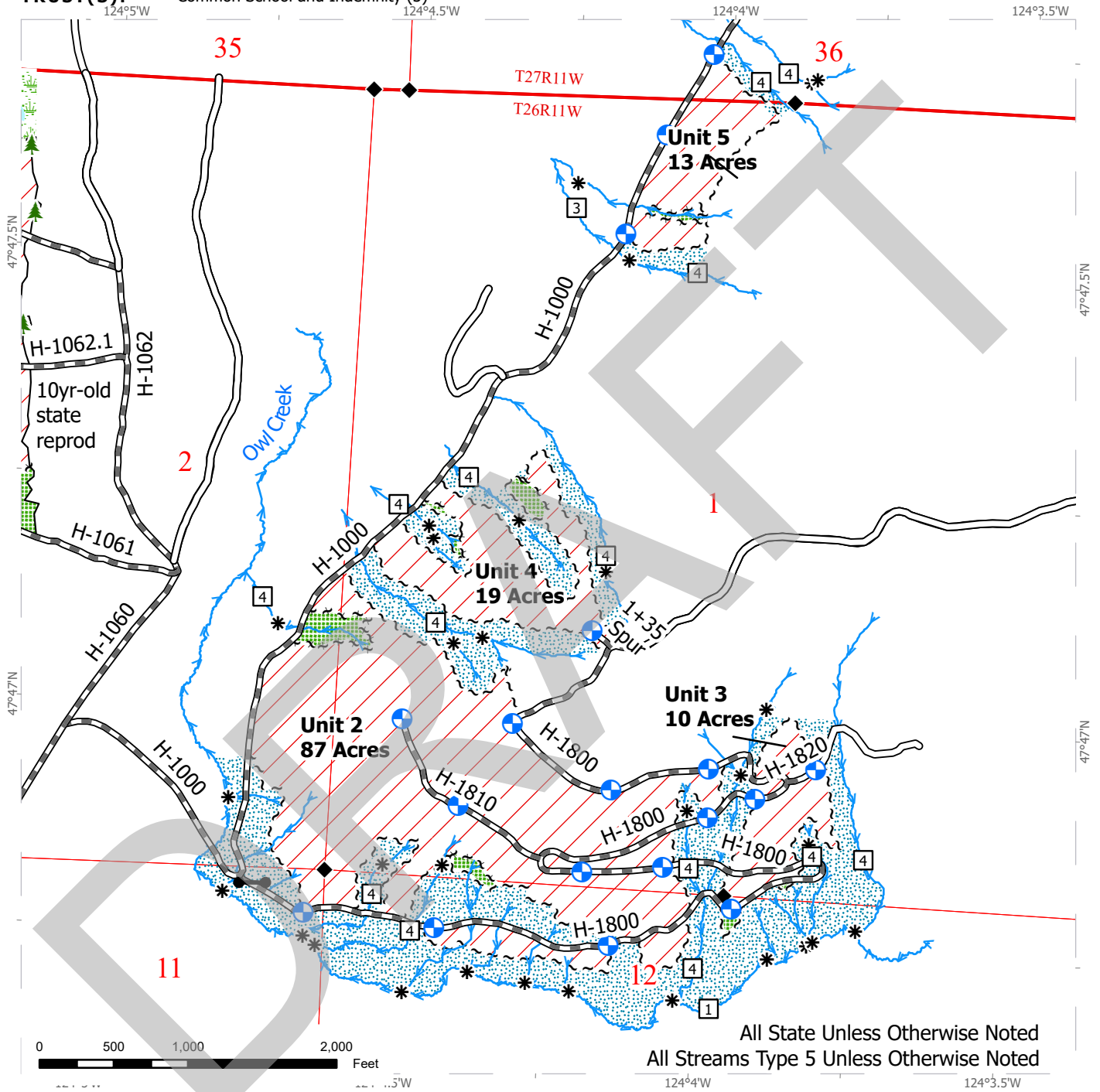


Variable Retention Harvest	Timber Type Change	Existing Road
Leave Tree Area	Streams	Required Pre-haul Maintenance
Forested Wetland	Stream Type	Public Land Survey Sections
Wetland Mgt Zone	Stream Break	Public Land Survey Townships
Riparian Mgt Zone	Leave Tree Area <1/4-acre	DNR Managed Lands
Sale Boundary Tags	Gate	Survey Monument
Leave Tree Tags	Landing	

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

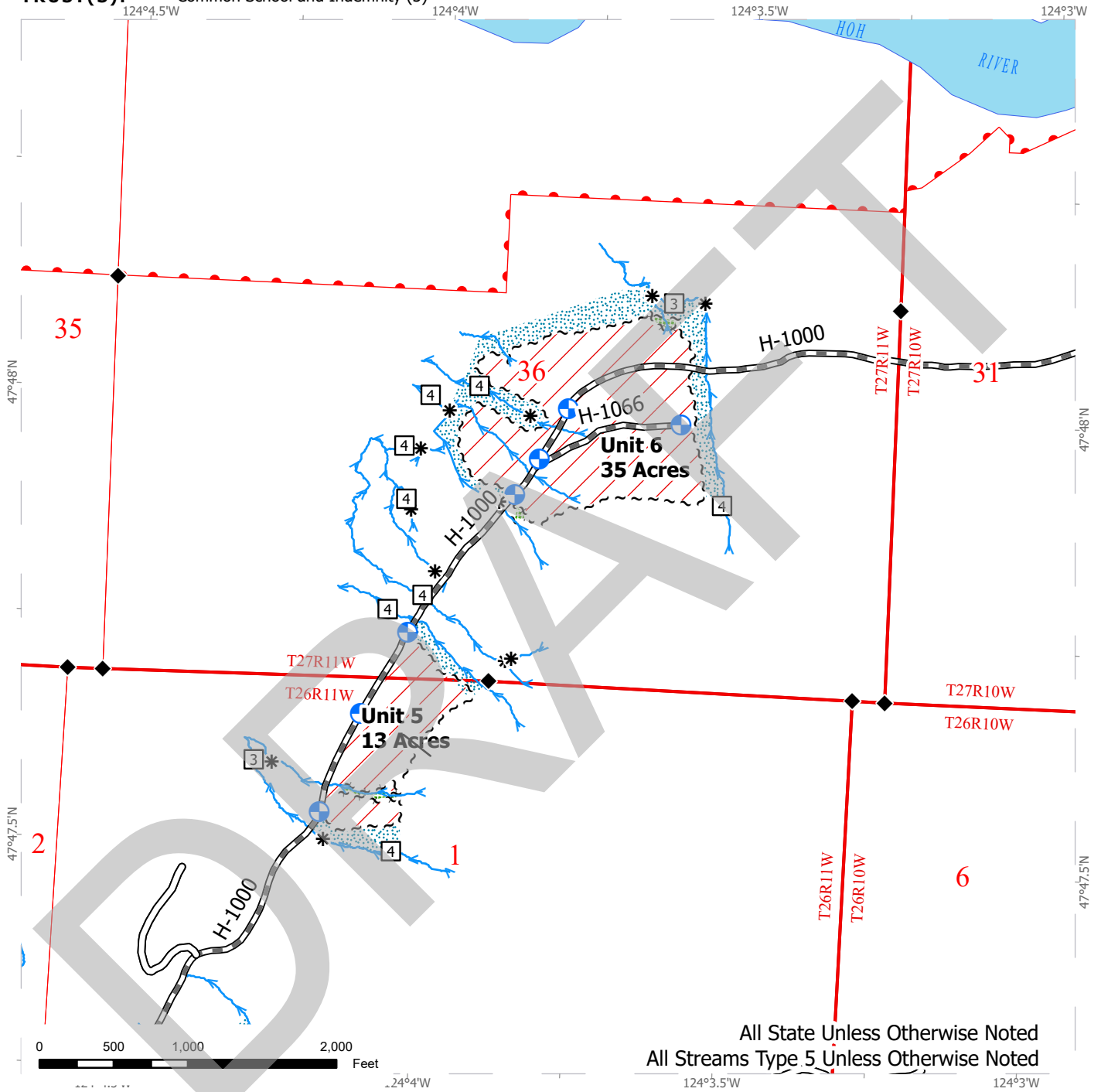
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Leave Tree Area	Streams	Required Pre-haul Maintenance
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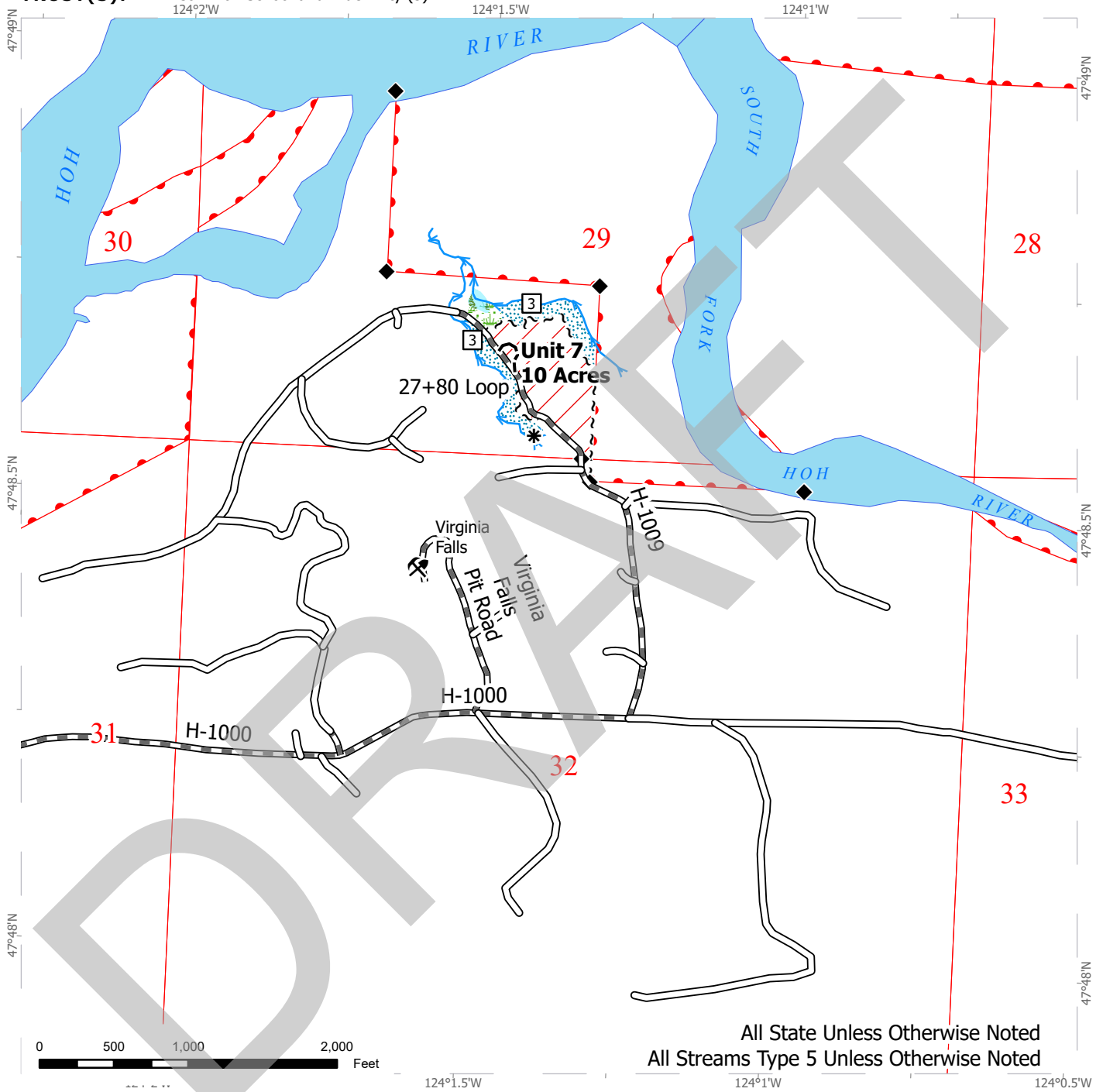
Variable Retention Harvest	Stream Type	Public Land Survey Sections
Leave Tree Area	Stream Break	Public Land Survey Townships
Riparian Mgt Zone	Gate	DNR Managed Lands
Sale Boundary Tags	Landing	Survey Monument
Leave Tree Tags	Existing Road	
Streams	Required Pre-haul Maintenance	



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 All Streams Type 5 Unless Otherwise Noted

Variable Retention Harvest	Stream Type	Required Pre-haul Maintenance
Forested Wetland	Stream Break	Public Land Survey Sections
Wetland Mgt Zone	Rock Pit	Public Land Survey Townships
Riparian Mgt Zone	Gate	DNR Managed Lands
Sale Boundary Tags	Existing Road	Survey Monument
Streams	Optional Construction	



Timber Sale Cruise Report Barred Entry

Sale Name: BARRED ENTRY

Sale Type: LUMP SUM

Region: OLYMPIC

District: COAST

Lead Cruiser: Kevin Peterson

Other Cruisers:

Cruise Narrative:

Location:

This sale is located south of Forks off of the H-1000. Access is good to all the units.

Cruise Design:

I used a 40 BAF for Unit 1 and 6. A 54.44/40 BAF combo for all other units, 40 BAF was used for picking up RA. Merch height was determined at 40% of the diameter at 16'. All butt logs were cruised in 40' lengths.

Timber Quality:

This sale is a mixture of 40-50 year old WH and DF with some RA and SS mixed throughout. Units 1 and 6 were thinned previously so the timber in those units is a little bigger. Common defects found were sweep, spike knots and forked tops.

Logging and Stand Conditions:

This sale uses 50% ground based, 30% uphill cable and 20% downhill harvest systems. The flat units are pretty easy to walk thru. Unit 2 gets really steep at points and has some brush patches as well.

Timber Sale Notice Volume (MBF)

Sp	DBH	Rings/In	Age	MBF Volume by Grade				Utility
				All	2 Saw	3 Saw	4 Saw	
WH	17.2	5.5		3,371	1,622	1,346	396	7
DF	16.3	5.9		2,572	811	1,354	374	33
SS	18.9	5.0		221	85	120	17	
RA	11.3			138			136	2
ALL	16.2	5.7		6,303	2,518	2,819	923	43

Timber Sale Notice Weight (tons)

Sp	Tons by Grade				
	All	2 Saw	3 Saw	4 Saw	Utility
WH	35,530	16,350	14,526	4,558	96
DF	24,513	7,382	13,308	3,615	207
SS	1,894	648	1,080	166	
RA	1,505			1,491	14
ALL	63,442	24,380	28,914	9,830	317

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 (%)
241.7	2.5	106.9	1.1	25,623	2.6

Timber Sale Unit Cruise Design

Unit	Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
BARRED ENTRY U1	B1C: VR, 1 BAF (40) Measure/Count Plots, Sighting Ht = 4.5 ft	71.0	70.7	36	12	0
BARRED ENTRY U2	B2C: VR, 2 BAF (54.44, 40 for some species) Measure/Count Plots, Sighting Ht = 4.5 ft	88.0	87.1	44	14	2
BARRED ENTRY U3	B2: VR, 2 BAF (54.44, 40 for some species) Measure All, Sighting Ht = 4.5 ft	10.0	10.5	5	5	0
BARRED ENTRY U4	B2C: VR, 2 BAF (54.44, 40 for some species) Measure/Count Plots, Sighting Ht = 4.5 ft	19.0	18.9	10	5	0
BARRED ENTRY U5	B2C: VR, 2 BAF (54.44, 40 for some species) Measure/Count Plots, Sighting Ht = 4.5 ft	13.0	13.1	7	4	0
BARRED ENTRY U6	B1C: VR, 1 BAF (40) Measure/Count Plots, Sighting Ht = 4.5 ft	35.0	39.3	20	8	0
BARRED ENTRY U7	B2: VR, 2 BAF (54.44, 40 for some species) Measure All, Sighting Ht = 4.5 ft	10.0	9.9	5	5	0
All		246.0	249.5	127	53	2

Timber Sale Log Grade x Sort Summary

Sp	Status	Grade	Sort	Dia	Len	BF Gross	BF Net	Defect %	Tons	MBF Net
DF	LIVE	2 SAW	Domestic	13.1	40	3,503	3,297	5.9	7,382.5	811.2
DF	LIVE	3 SAW	Domestic	8.6	39	5,706	5,504	3.5	13,308.1	1,354.0
DF	LIVE	4 SAW	Domestic	5.2	27	1,539	1,521	1.2	3,615.4	374.1
DF	LIVE	UTILITY	Pulp	5.1	22	135	135	0.0	206.7	33.2
RA	LIVE	4 SAW	Domestic	5.8	36	590	554	6.0	1,490.8	136.4
RA	LIVE	UTILITY	Pulp	5.0	18	8	8	0.0	14.4	2.0
SS	LIVE	2 SAW	Domestic	14.2	40	355	345	2.7	647.5	84.9
SS	LIVE	3 SAW	Domestic	9.2	39	492	486	1.2	1,080.4	119.6
SS	LIVE	4 SAW	Domestic	5.7	22	69	69	0.7	165.7	16.9
SS	LIVE	CULL	Cull	5.7	18	5	0	100.0	0.0	0.0

Sp	Status	Grade	Sort	Dia	Len	BF Gross	BF Net	Defect %	Tons	MBF Net
WH	LIVE	2 SAW	Domestic	13.3	40	6,935	6,594	4.9	16,350.4	1,622.1
WH	LIVE	3 SAW	Domestic	8.3	39	5,553	5,471	1.5	14,525.6	1,345.9
WH	LIVE	4 SAW	Domestic	5.4	30	1,613	1,608	0.3	4,557.9	395.5
WH	LIVE	UTILITY	Pulp	7.5	40	30	30	0.0	96.1	7.5

Timber Sale Log Sort x Diameter Bin Summary

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	5 - 8	LIVE	Pulp	5.1	22	135	0.0	206.7	33.2
DF	5 - 8	LIVE	Domestic	5.9	31	3,504	1.1	8,731.3	861.9
DF	9 - 11	LIVE	Domestic	10.2	40	3,521	4.9	8,192.2	866.2
DF	12 - 14	LIVE	Domestic	13.0	40	3,008	5.3	6,780.7	740.1
DF	15 - 19	LIVE	Domestic	15.5	40	289	11.8	601.8	71.1
RA	5 - 8	LIVE	Pulp	5.0	18	8	0.0	14.4	2.0
RA	5 - 8	LIVE	Domestic	5.6	36	510	5.7	1,375.3	125.4
RA	9 - 11	LIVE	Domestic	9.2	40	44	10.3	115.6	10.9
SS	5 - 8	LIVE	Cull	5.7	18	0	100.0	0.0	0.0
SS	5 - 8	LIVE	Domestic	6.5	31	178	1.3	444.3	43.8
SS	9 - 11	LIVE	Domestic	10.7	40	377	1.1	801.8	92.7
SS	12 - 14	LIVE	Domestic	13.6	40	188	2.3	378.4	46.2
SS	15 - 19	LIVE	Domestic	15.8	40	157	3.3	269.2	38.7
WH	5 - 8	LIVE	Domestic	6.0	33	3,846	0.9	11,085.0	946.0
WH	5 - 8	LIVE	Pulp	7.5	40	30	0.0	96.1	7.5
WH	9 - 11	LIVE	Domestic	10.5	40	3,233	1.6	7,998.4	795.3
WH	12 - 14	LIVE	Domestic	13.2	40	5,544	4.0	13,955.2	1,363.8
WH	15 - 19	LIVE	Domestic	15.7	40	987	10.0	2,284.4	242.8
WH	20+	LIVE	Domestic	20.4	40	63	0.0	110.7	15.5

Cruise Unit Report BARRED ENTRY U1

Unit Sale Notice Volume (MBF): BARRED ENTRY U1

Sp	DBH	Rings/In	Age	MBF Volume by Grade				Utility
				All	2 Saw	3 Saw	4 Saw	
WH	18.5	5.0		1,070	509	460	93	7
DF	18.5	6.0		344	100	206	38	
RA	11.5			37			37	
ALL	17.5	5.5		1,452	610	667	168	7

Unit Cruise Design: BARRED ENTRY 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	71.0	70.7	36	12	0

Unit Cruise Summary: BARRED ENTRY U1

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
WH	38	120	3.3	1
DF	12	42	1.2	1
RA	4	8	0.2	0
ALL	54	170	4.7	2

Unit Cruise Statistics: BARRED ENTRY 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 (%)
WH	133.3	60.9	10.1	113.1	9.8	1.6	15,074	61.6	10.3
DF	46.7	135.1	22.5	103.9	11.3	3.2	4,851	135.6	22.8
RA	8.9	418.2	69.7	59.1	11.2	5.6	526	418.3	69.9
ALL	188.9	28.0	4.7	108.3	16.5	2.2	20,450	32.5	5.2

Unit Summary: BARRED ENTRY U1

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	12	ALL	18.5	72	90	5,288	4,851	8.3	25.0	46.7	10.8	344.4
RA	LIVE	CUT	4	ALL	11.5	46	56	545	526	3.5	12.3	8.9	2.6	37.3

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
WH	LIVE	CUT	38	ALL	18.5	72	89	15,600	15,074	3.4	71.4	133.3	31.0	1,070.2
ALL	LIVE	CUT	54	ALL	17.8	69	86	21,433	20,450	4.6	108.7	188.9	44.5	1,451.9
ALL	ALL	ALL	54	ALL	17.8	69	86	21,433	20,450	4.6	108.7	188.9	44.5	1,451.9

DRAFT

Cruise Unit Report BARRED ENTRY U2

Unit Sale Notice Volume (MBF): BARRED ENTRY U2

Sp	DBH	Rings/In	Age	MBF Volume by Grade				Utility
				All	2 Saw	3 Saw	4 Saw	
DF	15.9	6.0		1,503	492	765	218	29
WH	14.7	6.0		829	370	287	172	
SS	19.0			70		60	11	
RA	12.2			58			56	2
ALL	15.3	6.0		2,461	862	1,112	456	31

Unit Cruise Design: BARRED ENTRY U2

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2C: VR, 2 BAF (54.44, 40 for some species) Measure/Count Plots, Sighting Ht = 4.5 ft	88.0	87.1	44	14	2

Unit Cruise Summary: BARRED ENTRY U2

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	46	139	3.2	1
WH	24	74	1.7	1
SS	1	6	0.1	0
RA	6	11	0.3	0
ALL	77	230	5.2	2

Unit Cruise Statistics: BARRED ENTRY 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	172.0	66.9	10.1	99.3	13.3	2.0	17,080	68.2	10.3
WH	91.6	115.2	17.4	102.9	15.9	3.2	9,421	116.3	17.7
SS	7.4	406.0	61.2	107.7	0.0	0.0	799	406.0	61.2
RA	10.0	260.6	39.3	66.3	24.4	10.0	663	261.7	40.5
ALL	281.0	29.1	4.4	99.5	17.2	2.0	27,963	33.8	4.8

Unit Summary: BARRED ENTRY U2

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	46	ALL	15.9	64	80	17,686	17,080	3.4	124.7	172.0	43.1	1,503.0
RA	LIVE	CUT	6	ALL	12.2	49	59	711	663	6.9	12.3	10.0	2.9	58.3
SS	LIVE	CUT	1	ALL	19.0	68	86	799	799	0.0	3.8	7.4	1.7	70.3
WH	LIVE	CUT	24	ALL	14.7	60	74	9,648	9,421	2.4	77.7	91.6	23.9	829.0
ALL	LIVE	CUT	77	ALL	15.4	62	77	28,844	27,963	3.1	218.5	281.0	71.6	2,460.7
ALL	ALL	ALL	77	ALL	15.4	62	77	28,844	27,963	3.1	218.5	281.0	71.6	2,460.7

Cruise Unit Report BARRED ENTRY U3

Unit Sale Notice Volume (MBF): BARRED ENTRY U3

Sp	DBH	Rings/In	Age	MBF Volume by Grade			
				All	2 Saw	3 Saw	4 Saw
WH	16.9			147	22	105	20
DF	13.0			112	22	56	34
RA	11.0			4			4
ALL	14.5			264	44	161	59

Unit Cruise Design: BARRED ENTRY U3

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	10.0	10.5	5	5	0

Unit Cruise Summary: BARRED ENTRY U3

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
WH	12	12	2.4	0
DF	11	11	2.2	0
RA	1	1	0.2	0
ALL	24	24	4.8	0

Unit Cruise Statistics: BARRED ENTRY 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	130.7	47.5	21.2	112.7	6.8	2.0	14,726	48.0	21.3
DF	119.8	49.8	22.3	93.7	24.0	7.2	11,217	55.3	23.4
RA	8.0	223.6	100.0	53.0	0.0	0.0	424	223.6	100.0
ALL	258.4	34.5	15.4	102.0	20.7	4.2	26,367	40.2	16.0

Unit Summary: BARRED ENTRY U3

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	11	ALL	13.0	56	70	11,523	11,217	2.7	129.9	119.8	33.2	112.2
RA	LIVE	CUT	1	ALL	11.0	44	52	485	424	12.5	12.1	8.0	2.4	4.2

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
WH	LIVE	CUT	12	ALL	16.9	69	86	14,974	14,726	1.7	83.9	130.7	31.8	147.3
ALL	LIVE	CUT	24	ALL	14.5	61	75	26,982	26,367	2.3	225.9	258.4	67.4	263.7
ALL	ALL	ALL	24	ALL	14.5	61	75	26,982	26,367	2.3	225.9	258.4	67.4	263.7

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Cruise Unit Report BARRED ENTRY U4

Unit Sale Notice Volume (MBF): BARRED ENTRY U4

Sp	DBH	Rings/In	Age	MBF Volume by Grade				Utility
				All	2 Saw	3 Saw	4 Saw	
WH	17.5			383	197	156	30	
DF	17.2			233	63	132	35	4
ALL	17.4			616	260	287	65	4

Unit Cruise Design: BARRED ENTRY U4

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2C: VR, 2 BAF (54.44, 40 for some species) Measure/Count Plots, Sighting Ht = 4.5 ft	19.0	18.9	10	5	0

Unit Cruise Summary: BARRED ENTRY U4

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
WH	14	32	3.2	0
DF	10	23	2.3	0
ALL	24	55	5.5	0

Unit Cruise Statistics: BARRED ENTRY 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 (%)
WH	174.2	81.8	25.9	115.7	9.0	2.4	20,154	82.2	26.0
DF	125.2	96.2	30.4	98.0	10.3	3.3	12,276	96.8	30.6
ALL	299.4	17.7	5.6	108.3	12.7	2.6	32,430	21.7	6.2

Unit Summary: BARRED ENTRY U4

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	10	ALL	17.2	68	85	12,798	12,276	4.1	77.6	125.2	30.2	233.2
WH	LIVE	CUT	14	ALL	17.5	71	88	20,539	20,154	1.9	104.3	174.2	41.6	382.9
ALL	LIVE	CUT	24	ALL	17.4	70	87	33,337	32,430	2.7	181.9	299.4	71.8	616.2
ALL	ALL	ALL	24	ALL	17.4	70	87	33,337	32,430	2.7	181.9	299.4	71.8	616.2

Cruise Unit Report BARRED ENTRY U5

Unit Sale Notice Volume (MBF): BARRED ENTRY U5

Sp	DBH	Rings/In	Age	MBF Volume by Grade			
				All	2 Saw	3 Saw	4 Saw
WH	14.4			256	110	106	40
DF	13.2			157	36	92	28
ALL	14.0			413	146	198	69

Unit Cruise Design: BARRED ENTRY U5

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2C: VR, 2 BAF (54.44, 40 for some species) Measure/Count Plots, Sighting Ht = 4.5 ft	13.0	13.1	7	4	0

Unit Cruise Summary: BARRED ENTRY U5

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
WH	15	23	3.3	0
DF	8	15	2.1	0
ALL	23	38	5.4	0

Unit Cruise Statistics: BARRED ENTRY U5

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
WH	178.9	48.8	18.4	110.2	19.4	5.0	19,714	52.5	19.1
DF	116.7	78.2	29.6	103.3	17.8	6.3	12,049	80.2	30.2
ALL	295.5	20.9	7.9	107.5	18.8	3.9	31,763	28.1	8.8

Unit Summary: BARRED ENTRY U5

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	8	ALL	13.2	58	72	12,194	12,049	1.2	122.8	116.7	32.1	156.6
WH	LIVE	CUT	15	ALL	14.4	60	73	20,385	19,714	3.3	158.2	178.9	47.1	256.3
ALL	LIVE	CUT	23	ALL	13.9	59	73	32,580	31,763	2.5	281.0	295.5	79.2	412.9
ALL	ALL	ALL	23	ALL	13.9	59	73	32,580	31,763	2.5	281.0	295.5	79.2	412.9

Cruise Unit Report BARRED ENTRY U6

Unit Sale Notice Volume (MBF): BARRED ENTRY U6

Sp	DBH	Rings/In	Age	MBF Volume by Grade			
				All	2 Saw	3 Saw	4 Saw
WH	20.0	6.0		430	267	142	22
DF	18.7	5.0		223	98	103	22
RA	9.9			38			38
SS	16.9	5.0		25	14	9	1
ALL	16.4	5.3		717	379	253	84

Unit Cruise Design: BARRED ENTRY U6

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	35.0	39.3	20	8	0

Unit Cruise Summary: BARRED ENTRY U6

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
WH	13	48	2.4	1
DF	11	27	1.4	1
RA	4	7	0.4	0
SS	3	3	0.2	1
ALL	31	85	4.3	3

Unit Cruise Statistics: BARRED ENTRY U6

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
WH	96.0	95.0	21.2	128.1	9.8	2.7	12,294	95.5	21.4
DF	54.0	115.9	25.9	118.0	6.5	2.0	6,372	116.1	26.0
RA	14.0	311.3	69.6	78.6	16.1	8.1	1,100	311.7	70.1
SS	6.0	244.2	54.6	118.1	23.1	13.4	709	245.3	56.2
ALL	170.0	27.4	6.1	120.4	16.6	3.0	20,475	32.0	6.8

Unit Summary: BARRED ENTRY U6

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	11	ALL	18.7	77	97	6,529	6,372	2.4	28.3	54.0	12.5	223.0
RA	LIVE	CUT	4	ALL	9.9	48	58	1,172	1,100	6.1	26.2	14.0	4.4	38.5
SS	LIVE	CUT	3	ALL	16.9	72	90	739	709	4.2	3.9	6.0	1.5	24.8
WH	LIVE	CUT	13	ALL	20.0	80	99	12,772	12,294	3.7	44.0	96.0	21.5	430.3
ALL	LIVE	CUT	31	ALL	17.4	71	88	21,211	20,475	3.5	102.4	170.0	39.9	716.6
ALL	ALL	ALL	31	ALL	17.4	71	88	21,211	20,475	3.5	102.4	170.0	39.9	716.6

DRAFT

Cruise Unit Report BARRED ENTRY U7

Unit Sale Notice Volume (MBF): BARRED ENTRY U7

Sp	DBH	Rings/In	Age	MBF Volume by Grade			
				All	2 Saw	3 Saw	4 Saw
WH	18.3			255	147	90	18
SS	19.2			126	71	51	5
ALL	18.6			381	218	141	23

Unit Cruise Design: BARRED ENTRY U7

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2: VR, 2 BAF (54.44, 40 for some species) Measure All, Sighting Ht = 4.5 ft	10.0	9.9	5	5	0

Unit Cruise Summary: BARRED ENTRY U7

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
WH	20	20	4.0	0
SS	10	10	2.0	0
ALL	30	30	6.0	0

Unit Cruise Statistics: BARRED ENTRY U7

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
WH	217.8	55.9	25.0	117.1	22.1	4.9	25,492	60.1	25.5
SS	108.9	93.5	41.8	115.9	24.8	7.9	12,622	96.8	42.6
ALL	326.6	16.7	7.5	116.7	22.6	4.1	38,115	28.1	8.5

Unit Summary: BARRED ENTRY U7

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
SS	LIVE	CUT	10	ALL	19.2	68	86	13,030	12,622	3.1	54.2	108.9	24.8	126.2
WH	LIVE	CUT	20	ALL	18.3	73	91	26,762	25,492	4.7	119.2	217.8	50.9	254.9
ALL	LIVE	CUT	30	ALL	18.6	72	89	39,792	38,115	4.2	173.4	326.6	75.8	381.1
ALL	ALL	ALL	30	ALL	18.6	72	89	39,792	38,115	4.2	173.4	326.6	75.8	381.1

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES
BARRED ENTRY TIMBER SALE ROAD PLAN
JEFFERSON COUNTY
COAST DISTRICT

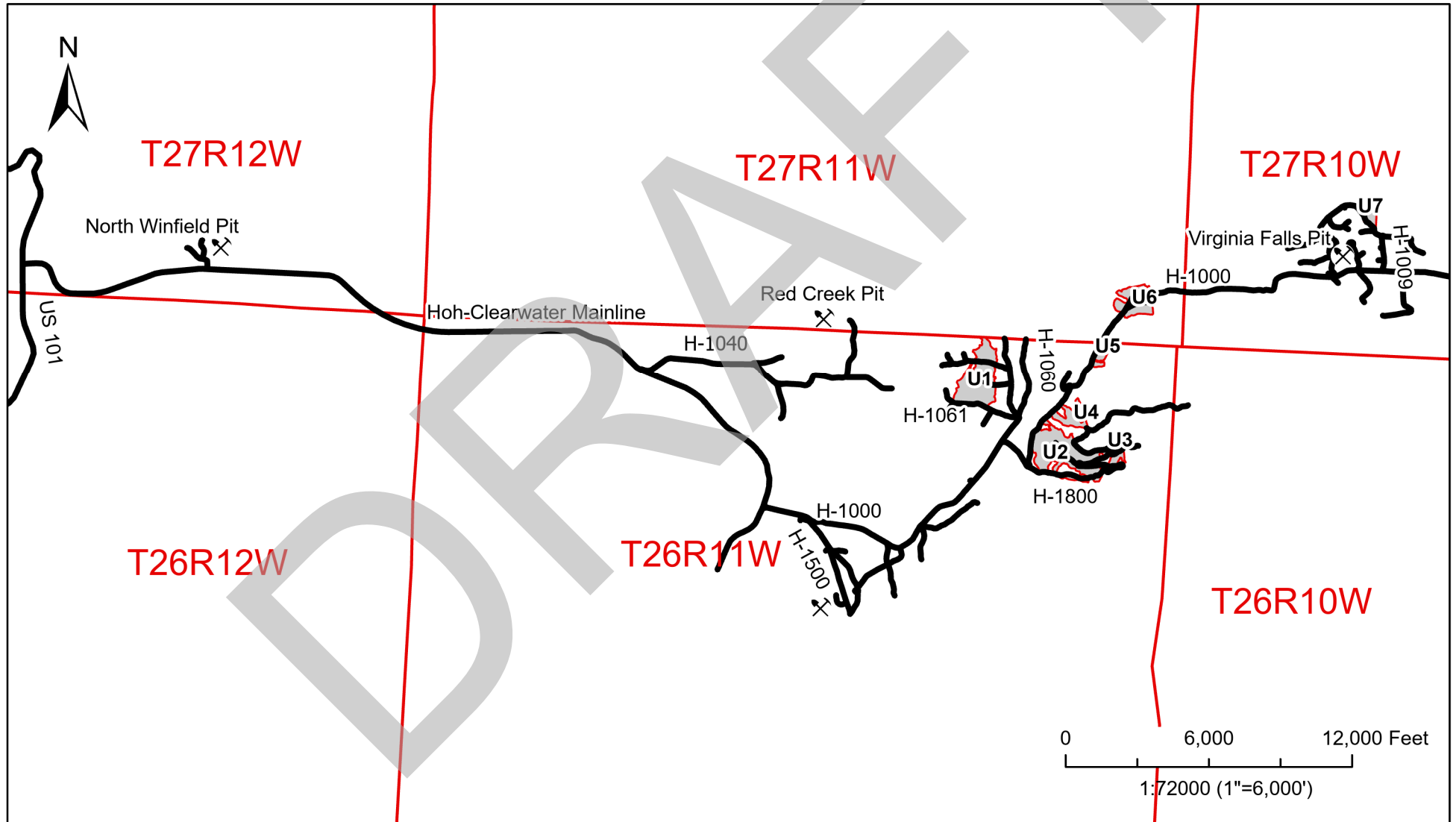
DISTRICT ENGINEER: BILL MEHL

AGREEMENT NO.: 30-104801

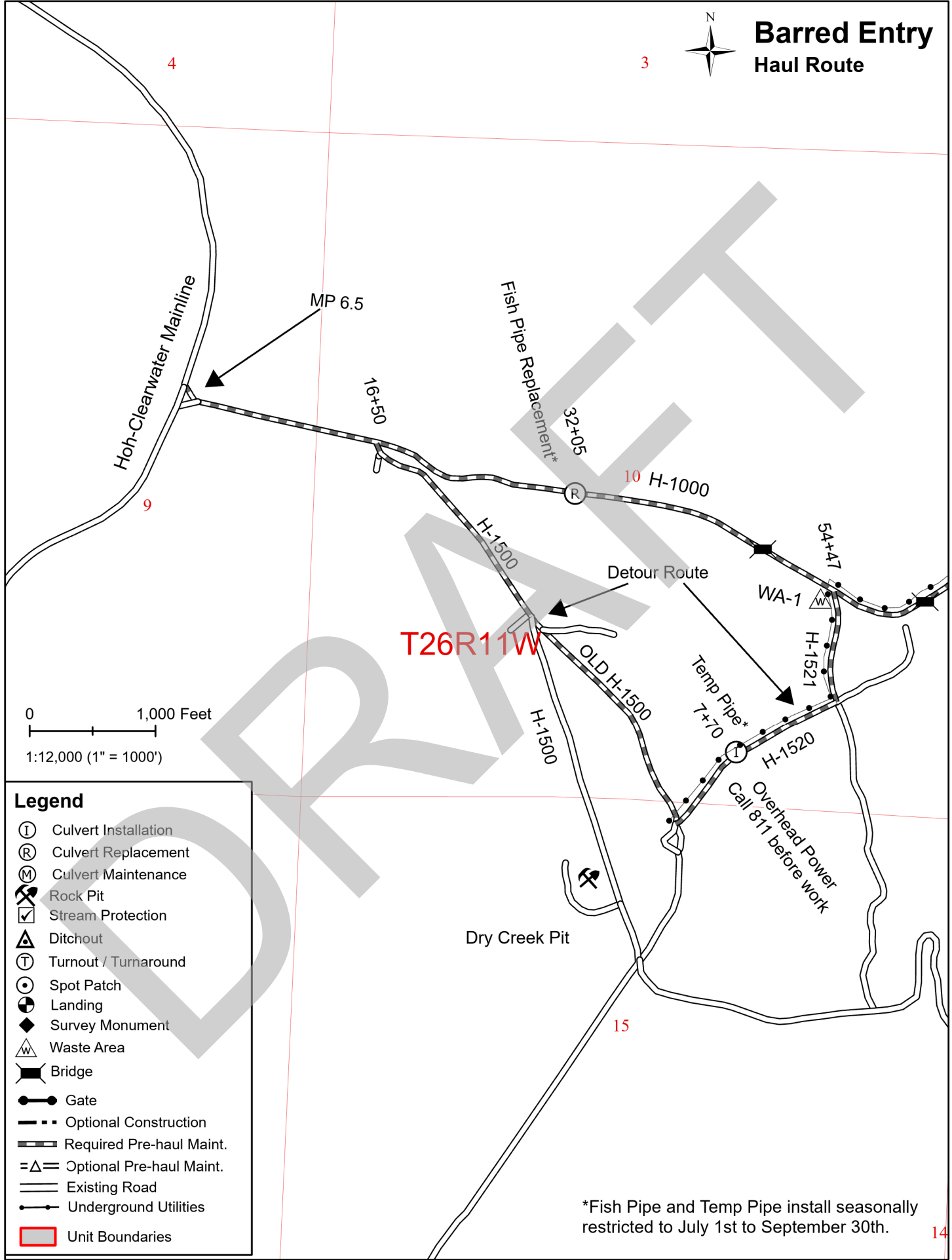
DATE 29 JANUARY 2024

Project Map

DRAWN AND COMPILED BY: MAIJA GRIFFIOEN



Barred Entry Haul Route



Legend	
	Culvert Installation
	Culvert Replacement
	Culvert Maintenance
	Rock Pit
	Stream Protection
	Ditchout
	Turnout / Turnaround
	Spot Patch
	Landing
	Survey Monument
	Waste Area
	Bridge
	Gate
	Optional Construction
	Required Pre-haul Maint.
	Optional Pre-haul Maint.
	Existing Road
	Underground Utilities
	Unit Boundaries

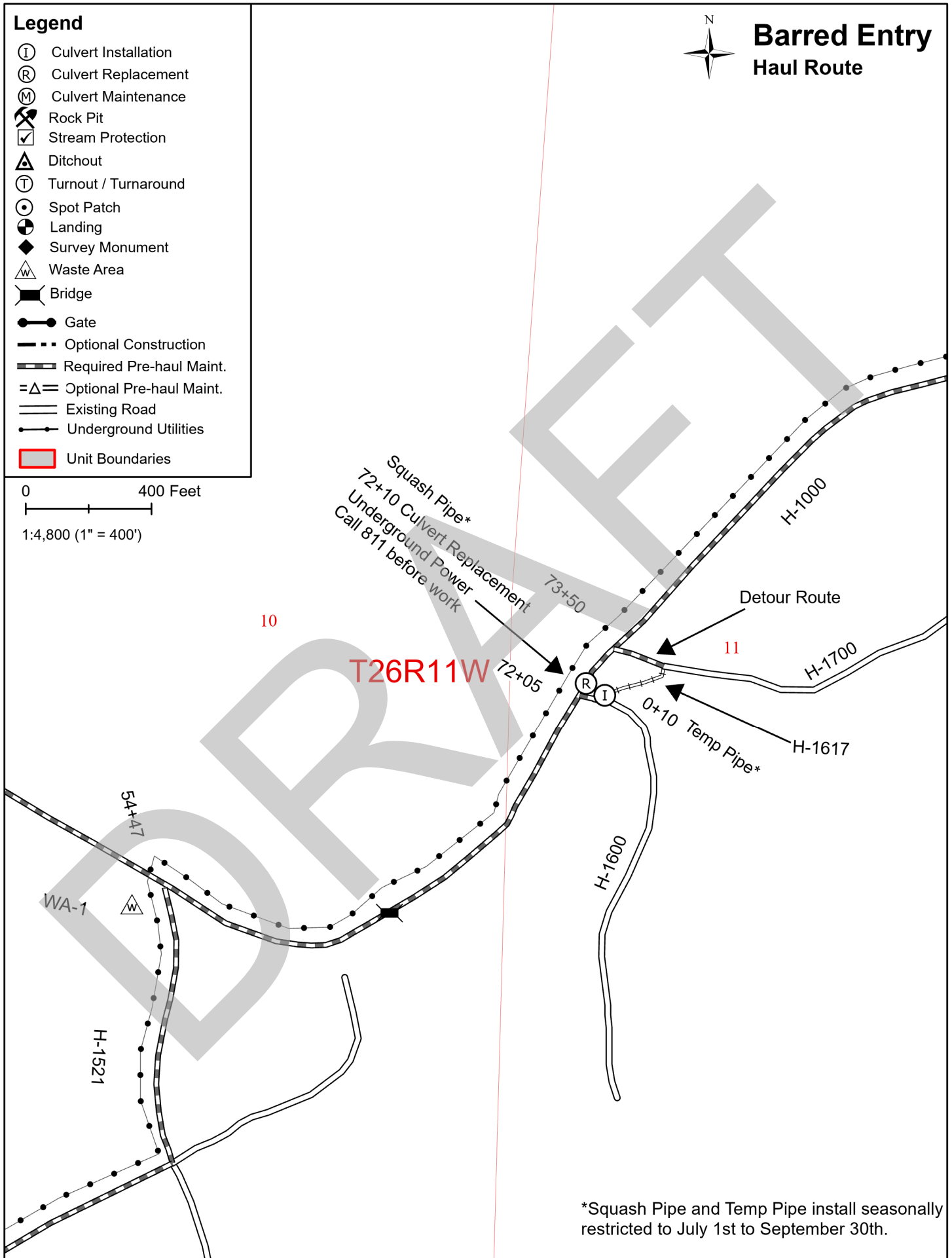
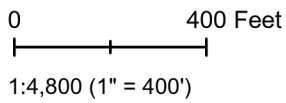
*Fish Pipe and Temp Pipe install seasonally restricted to July 1st to September 30th.

Legend

- Ⓜ Culvert Installation
- Ⓡ Culvert Replacement
- Ⓜ Culvert Maintenance
- ⚡ Rock Pit
- ☑ Stream Protection
- ⚠ Ditchout
- Ⓜ Turnout / Turnaround
- ⊙ Spot Patch
- ⊙ Landing
- ◆ Survey Monument
- ⚠ Waste Area
- ▭ Bridge
- Gate
- - - Optional Construction
- ▭ Required Pre-haul Maint.
- =Δ= Optional Pre-haul Maint.
- Existing Road
- Underground Utilities
- ▭ Unit Boundaries



**Barred Entry
Haul Route**

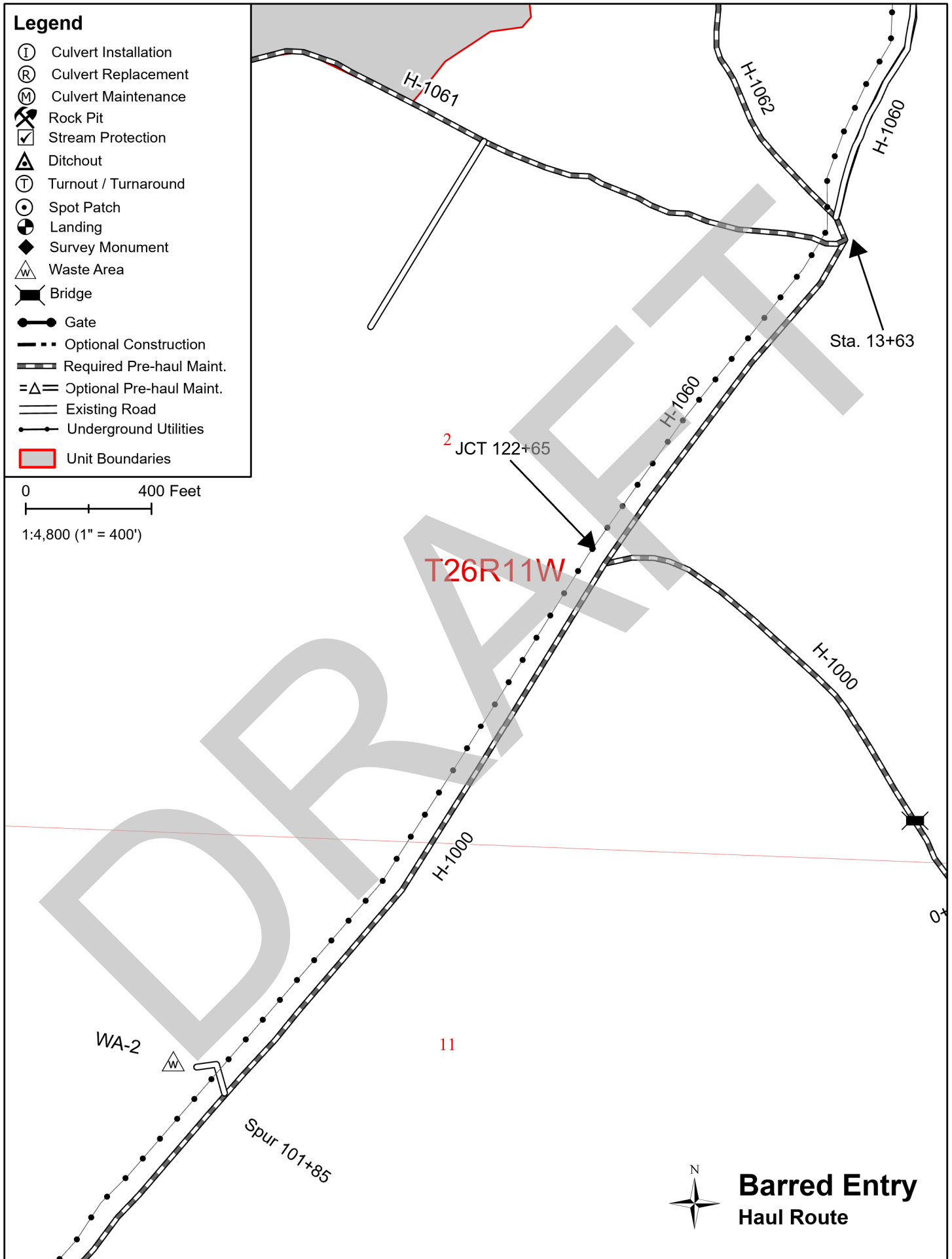


*Squash Pipe and Temp Pipe install seasonally restricted to July 1st to September 30th.

Legend

- Ⓜ Culvert Installation
- Ⓜ Culvert Replacement
- Ⓜ Culvert Maintenance
- Ⓜ Rock Pit
- ☑ Stream Protection
- ⚠ Ditchout
- Ⓜ Turnout / Turnaround
- Ⓜ Spot Patch
- Ⓜ Landing
- ◆ Survey Monument
- ⚠ Waste Area
- Ⓜ Bridge
- Gate
- - - Optional Construction
- ▬ Required Pre-haul Maint.
- =Δ= Optional Pre-haul Maint.
- Existing Road
- Underground Utilities
- ▭ Unit Boundaries

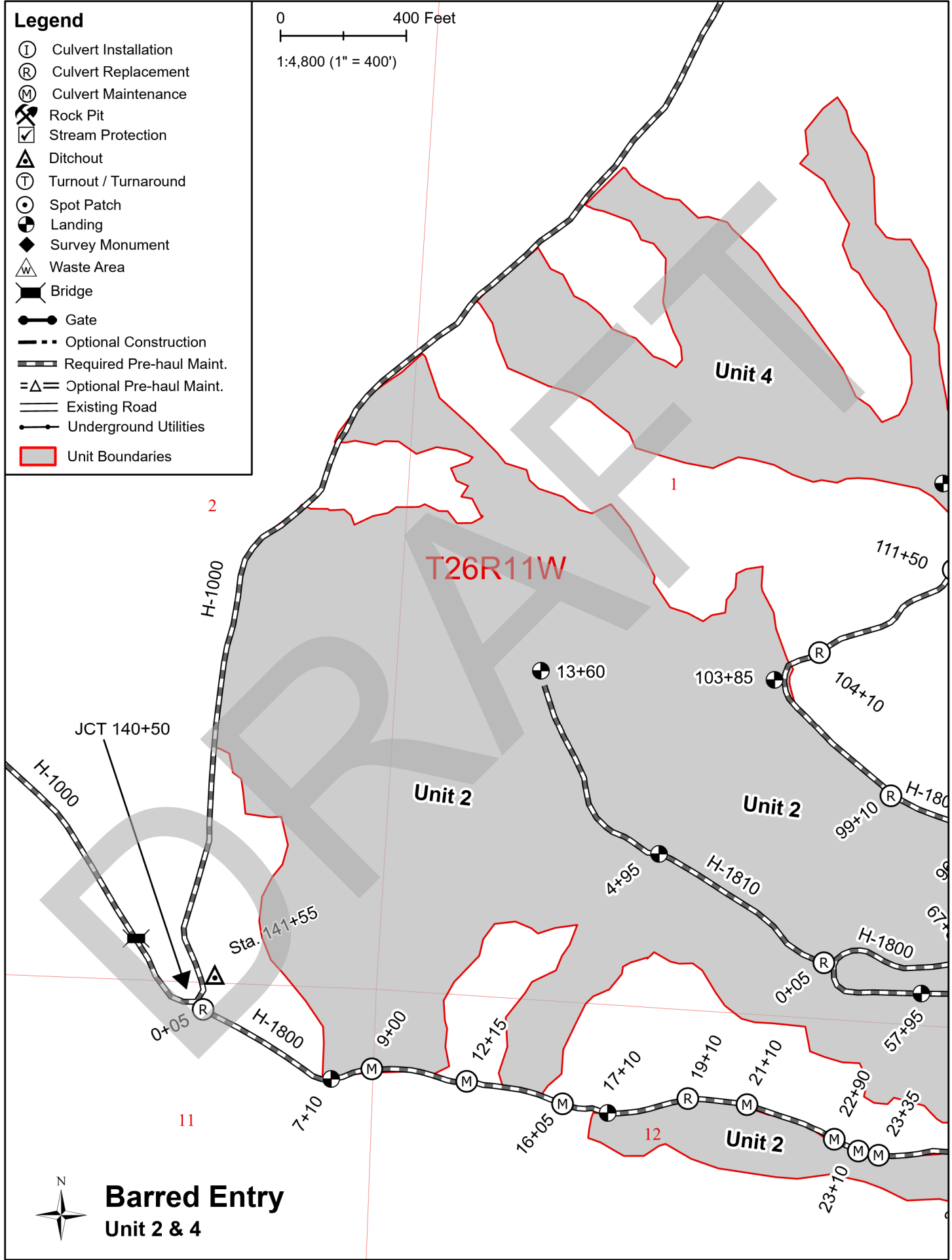
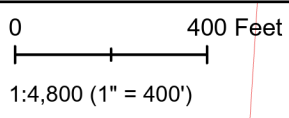
0 400 Feet
 1:4,800 (1" = 400')



**Barred Entry
Haul Route**

Legend

- Ⓜ Culvert Installation
- Ⓜ Culvert Replacement
- Ⓜ Culvert Maintenance
- Ⓜ Rock Pit
- ☑ Stream Protection
- ⚠ Ditchout
- Ⓜ Turnout / Turnaround
- Ⓜ Spot Patch
- Ⓜ Landing
- ◆ Survey Monument
- Ⓜ Waste Area
- Ⓜ Bridge
- Gate
- - - Optional Construction
- ▬ Required Pre-haul Maint.
- =Δ= Optional Pre-haul Maint.
- ▬ Existing Road
- Underground Utilities
- ▭ Unit Boundaries



Barred Entry
Unit 2 & 4

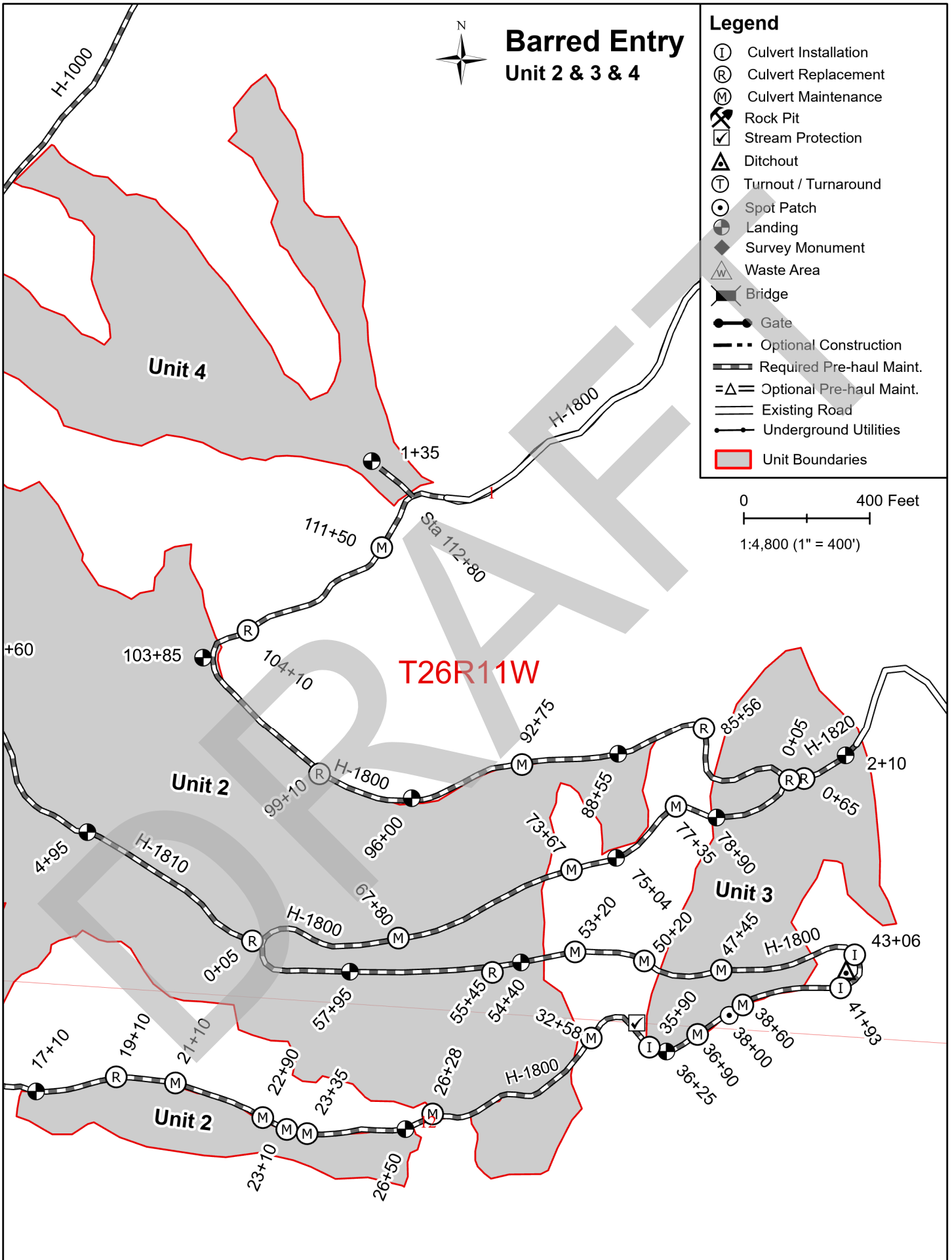
Barred Entry Unit 2 & 3 & 4



Legend

- Culvert Installation
- Culvert Replacement
- Culvert Maintenance
- Rock Pit
- Stream Protection
- Ditchout
- Turnout / Turnaround
- Spot Patch
- Landing
- Survey Monument
- Waste Area
- Bridge
- Gate
- Optional Construction
- Required Pre-haul Maint.
- Optional Pre-haul Maint.
- Existing Road
- Underground Utilities
- Unit Boundaries

0 400 Feet
 1:4,800 (1" = 400')



35  **Barred Entry**
Unit 5

36
T27R11W




















*Unit 5 harvest restriction: closure April 1st to December 31st of the same calendar year

Unit 5

T26R11W

0 400 Feet
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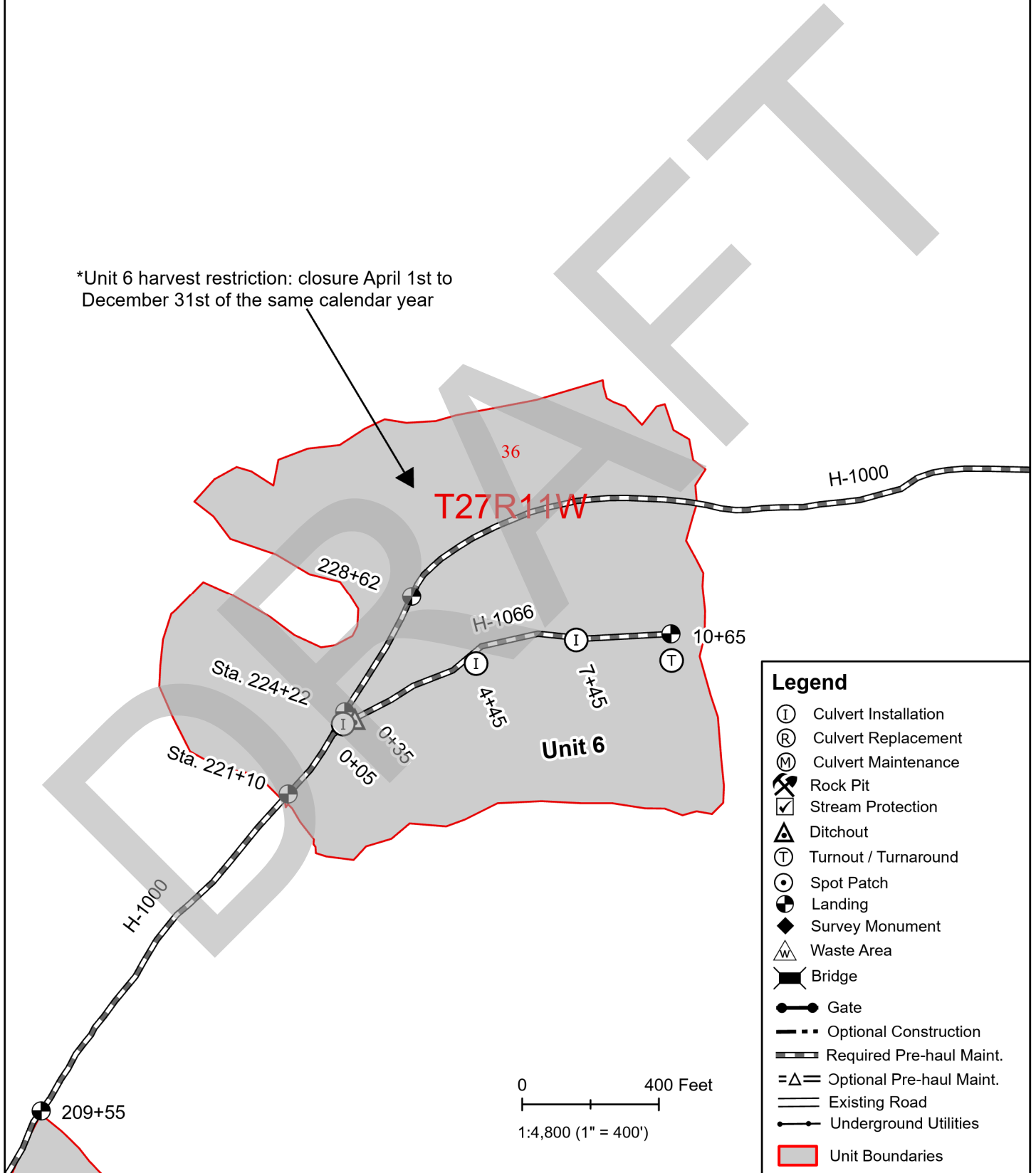
Legend

-  Culvert Installation
-  Culvert Replacement
-  Culvert Maintenance
-  Rock Pit
-  Stream Protection
-  Ditchout
-  Turnout / Turnaround
-  Spot Patch
-  Landing
-  Survey Monument
-  Waste Area
-  Bridge
-  Gate
-  Optional Construction
-  Required Pre-haul Maint.
-  Optional Pre-haul Maint.
-  Existing Road
-  Underground Utilities
-  Unit Boundaries



Barred Entry Unit 6

*Unit 6 harvest restriction: closure April 1st to December 31st of the same calendar year



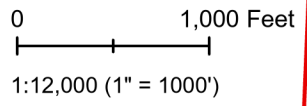
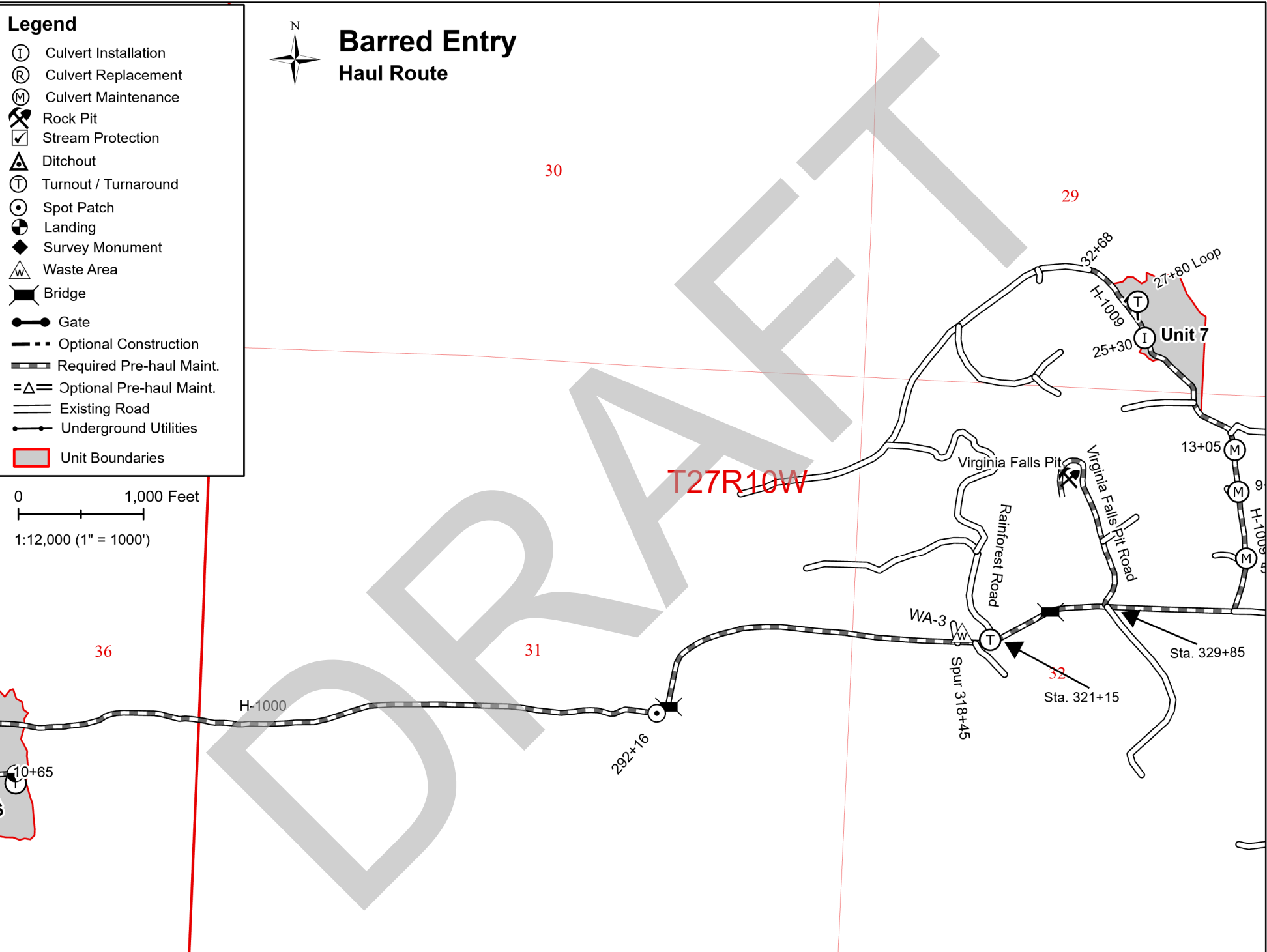
Legend	
	Culvert Installation
	Culvert Replacement
	Culvert Maintenance
	Rock Pit
	Stream Protection
	Ditchout
	Turnout / Turnaround
	Spot Patch
	Landing
	Survey Monument
	Waste Area
	Bridge
	Gate
	Optional Construction
	Required Pre-haul Maint.
	Optional Pre-haul Maint.
	Existing Road
	Underground Utilities
	Unit Boundaries

Legend

- Ⓡ Culvert Installation
- Ⓜ Culvert Replacement
- Ⓜ Culvert Maintenance
- Ⓧ Rock Pit
- ☑ Stream Protection
- ⚠ Ditchout
- Ⓧ Turnout / Turnaround
- ⊙ Spot Patch
- ⊙ Landing
- ◆ Survey Monument
- Ⓜ Waste Area
- Ⓧ Bridge
- Gate
- - - Optional Construction
- ▬ Required Pre-haul Maint.
- =Δ= Optional Pre-haul Maint.
- Existing Road
- Underground Utilities
- ▭ Unit Boundaries

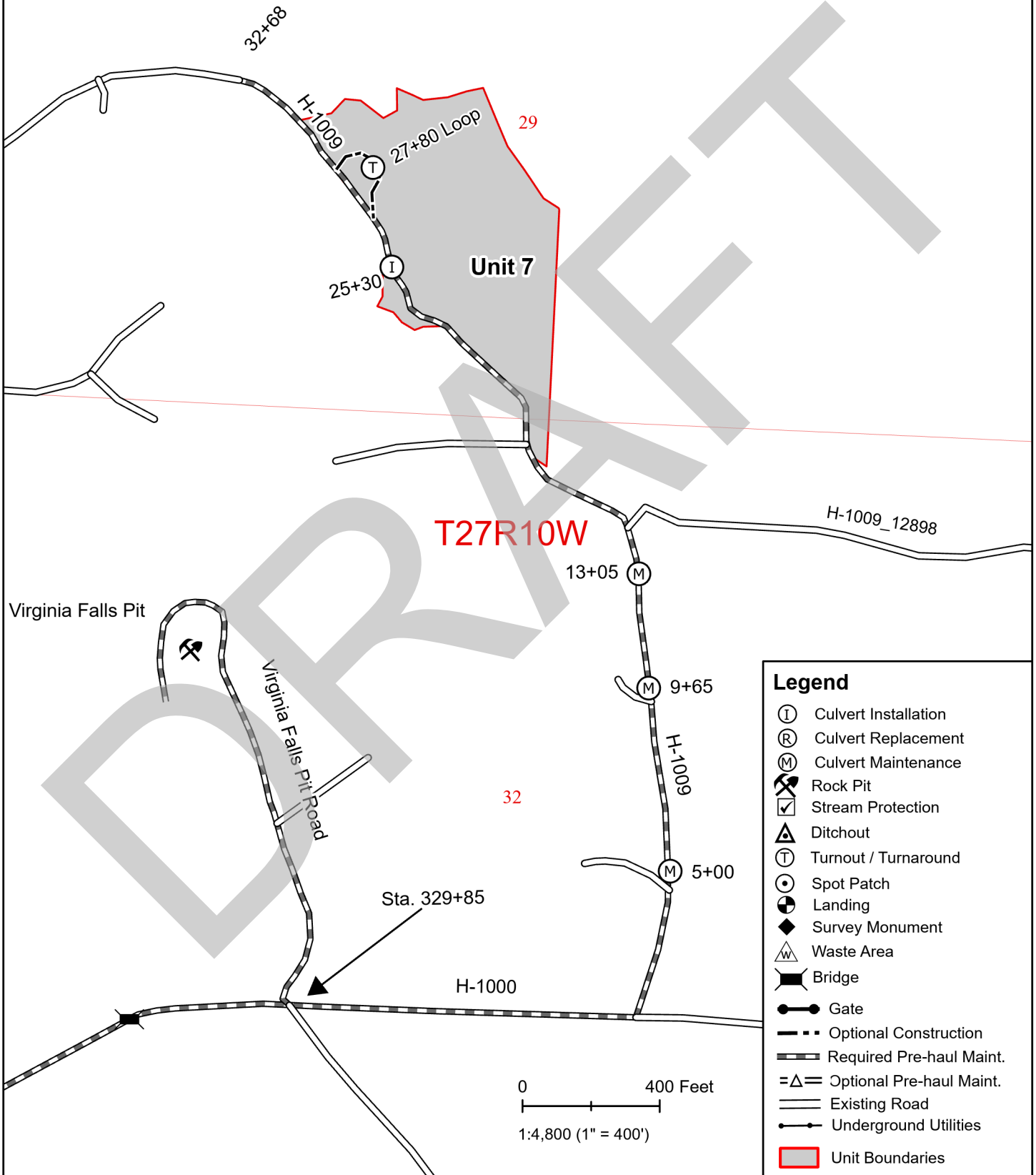


**Barred Entry
Haul Route**

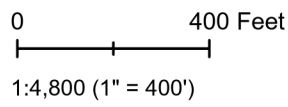




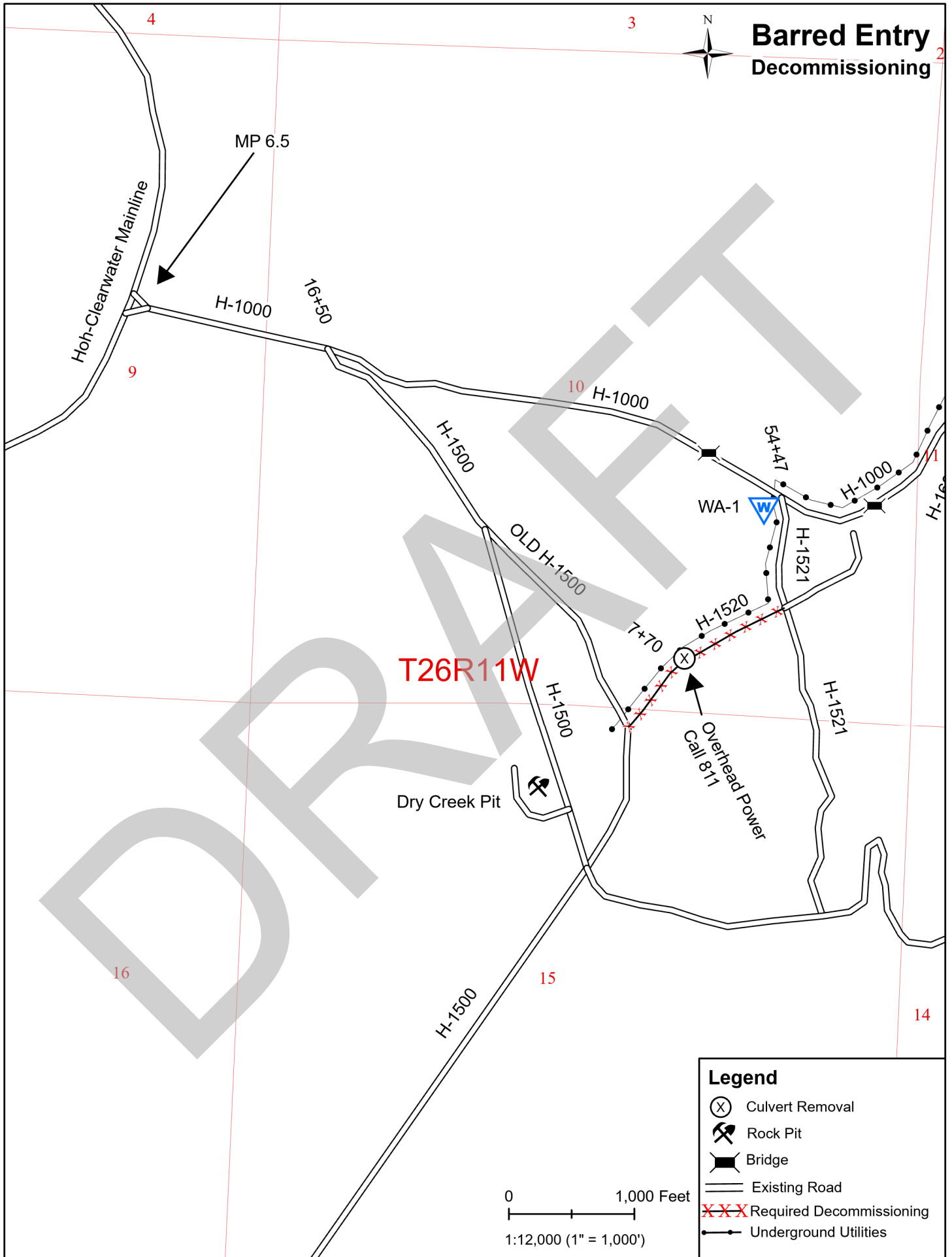
Barred Entry Unit 7



Legend	
(I)	Culvert Installation
(R)	Culvert Replacement
(M)	Culvert Maintenance
(R with hammer)	Rock Pit
(checkmark)	Stream Protection
(triangle)	Ditchout
(T)	Turnout / Turnaround
(circle with dot)	Spot Patch
(circle with horizontal line)	Landing
(diamond)	Survey Monument
(W in triangle)	Waste Area
(rectangle with X)	Bridge
(circle with vertical line)	Gate
(dashed line)	Optional Construction
(thick dashed line)	Required Pre-haul Maint.
(thin dashed line)	Optional Pre-haul Maint.
(solid line)	Existing Road
(line with dots)	Underground Utilities
(red outline)	Unit Boundaries

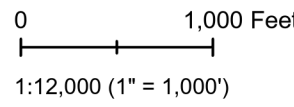


Barred Entry Decommissioning



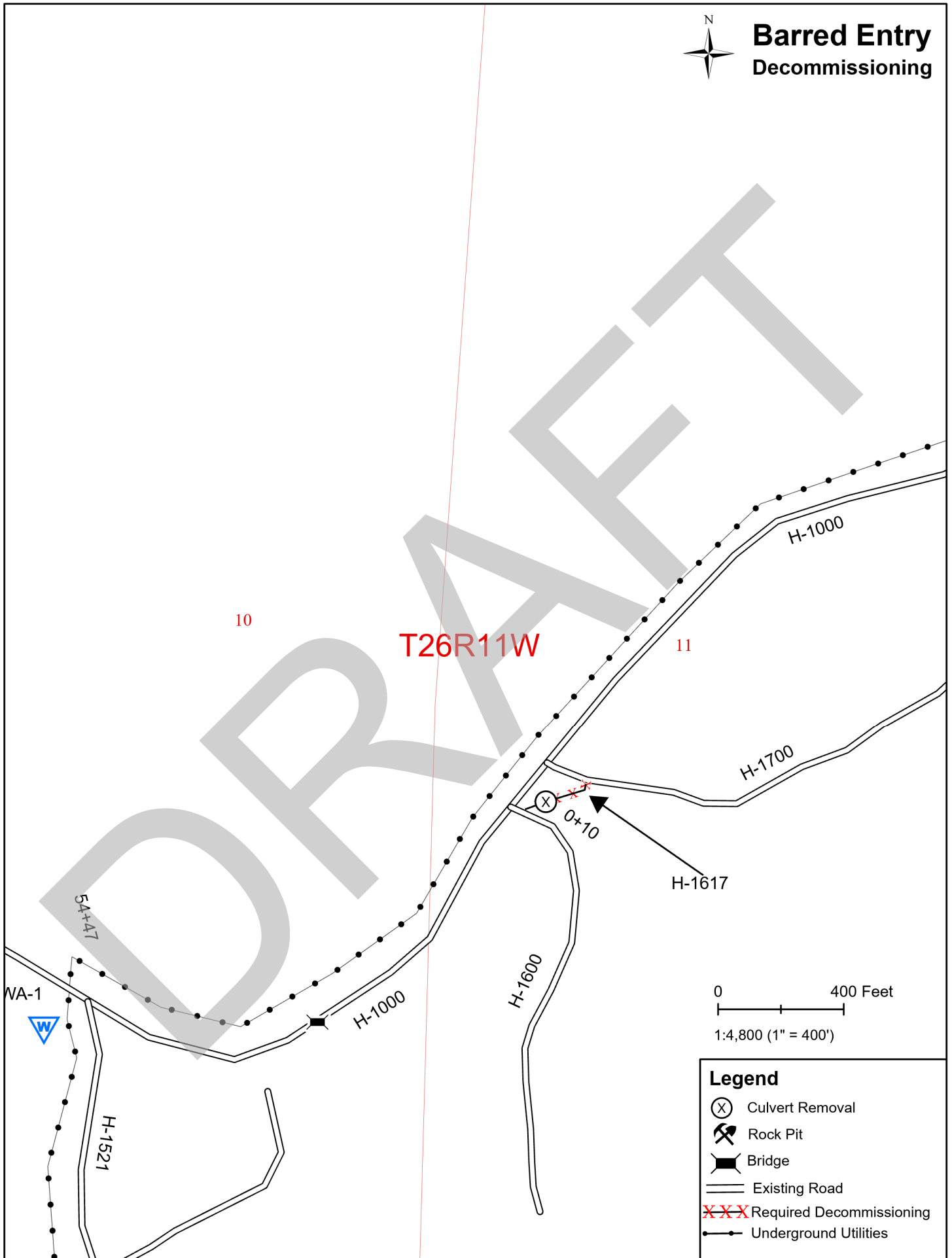
Legend

- (X) Culvert Removal
- Rock Pit
- Bridge
- Existing Road
- XXX Required Decommissioning
- Underground Utilities





Barred Entry Decommissioning



STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

BARRED ENTRY TIMBER SALE ROAD PLAN
JEFFERSON COUNTY
COAST DISTRICT

AGREEMENT NO.: 30-104801

DISTRICT ENGINEER: BILL MEHL

DATE: JANUARY 29TH, 2024

DRAWN & COMPILED BY: MAIJA GRIFFIOEN

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>
H-1000	0+00 – 334+22	Pre-Haul Maintenance
H-1500	0+00 – 18+70	Pre-Haul Maintenance
OLD H-1500	0+00 – 20+30	Pre-Haul Maintenance
H-1520	0+00 – 16+45	Pre-Haul Maintenance
H-1520	7+00 – 8+00	Reconstruction
H-1521	0+00 – 8+84	Pre-Haul Maintenance
H-1600	0+00 – 0+25	Pre-Haul Maintenance
H-1617	0+00 – 4+04	Reconstruction
H-1700	0+00 – 1+75	Pre-Haul Maintenance
H-1060	0+00 – 13+63	Pre-Haul Maintenance
H-1061	0+00 – 20+38	Pre-Haul Maintenance
H-1062	0+00 – 39+55	Pre-Haul Maintenance
H-1062.1	0+00 – 14+64	Pre-Haul Maintenance
H-1800	0+00 – 114+42	Pre-Haul Maintenance
H-1810	0+00 – 13+60	Pre-Haul Maintenance
H-1820	0+00 – 2+60	Pre-Haul Maintenance
1+35 Spur	0+00 – 1+35	Pre-Haul Maintenance
H-1066	0+00 – 10+65	Pre-haul Maintenance
Virginia Falls Pit Road	0+00 – 16+55	Pre-haul Maintenance
H-1009	0+00 – 32+75	Pre-Haul Maintenance

0-3 OPTIONAL ROADS

The specified work on the following roads is not required. Any optional roads built by the Purchaser must meet all the specifications in the road plan.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
27+80 Loop	0+00 – 3+00	Construction
0+80 Spur	0+00 – 0+80	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>
27+80 Loop	0+00 – 3+00	See Below
Total:	3+00	

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>
H-1520	7+00 – 8+00	See Below
H-1617	0+00 – 4+04	See Below
Total:	5+04	

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>
H-1000	0+00 – 334+22	Grade and shape road in accordance with clause 2-5. Apply rock in accordance with Rock List. Compact rock in accordance with Compaction list. Clean culverts in accordance with clause 2-6 and Culvert List. Maintain erosion control structures in accordance with clause 2-8, 8-1 and as directed by Contract Administrator.
H-1500	0+00 – 18+70	Grade and shape road in accordance non-asphalt portions of the road with clause 2-5.
OLD H-1500	0+00 – 20+30	Grade and shape road in accordance with clause 2-5. Apply rock in accordance with Rock List. Compact rock in accordance with Compaction list. Brush road in accordance with Clause 3-1 and Brushing Detail.
H-1520	0+00 – 7+00 8+00 – 16+45	Grade and shape road in accordance with clause 2-5. Clean culverts in accordance with clause 2-6 and Culvert List. Remove all

		vegetative material, dirt, mud, and other debris on existing road surface in accordance with clause 2-9. Apply rock in accordance with Rock List. Compact rock in accordance with Compaction list.
H-1521	0+00 – 16+45	Grade and shape road in accordance with clause 2-5. Apply rock in accordance with Rock List. Compact rock in accordance with Compaction list.
H-1600	0+00 – 0+25	Grade and shape road in accordance with clause 2-5. Apply rock in accordance with Rock List. Compact rock in accordance with Compaction list.
H-1700	0+00 – 1+75	Grade and shape road in accordance with clause 2-5. Apply rock in accordance with Rock List. Compact rock in accordance with Compaction list. Construct flared intersection in accordance with clause 4-23.
H-1060	0+00 – 13+63	Grade and shape road in accordance with clause 2-5. Apply rock in accordance with Rock List. Compact rock in accordance with Compaction list.
H-1061	0+00 – 20+38	Apply rock in accordance with Rock List. Compact rock in accordance with Compaction list. Remove all vegetative material, dirt, mud, and other debris on existing road surface in accordance with clause 2-9. Brush road in accordance with Clause 3-1 and Brushing Detail. Clean ditches, headwalls, and catch basins in accordance with Clause 2-7.
H-1062	0+00 – 39+55	Grade and shape road in accordance with clause 2-5. Clean culverts in accordance with clause 2-6 and Culvert List. Clean ditches, headwalls, and catch basins in accordance with Clause 2-7. Apply rock in accordance with Rock List. Compact rock in accordance with Compaction list. Brush road in accordance with Clause 3-1 and Brushing Detail.
H-1062.1	0+00 – 14+64	Clean culverts in accordance with clause 2-6 and Culvert List. Clean ditches, headwalls, and catch basins in accordance with Clause 2-7. Apply rock in accordance with Rock List. Compact rock in accordance with Compaction list. Brush road in accordance with Clause 3-1 and Brushing Detail.
H-1800	0+00 – 114+42	Grade and shape road in accordance with clause 2-5. Clean culverts in accordance with clause 2-6 and Culvert List. Clean ditches, headwalls, and catch basins in accordance

		with Clause 2-7. Maintain erosion control structures in accordance with clause 2-8, 8-1 and as directed by Contract Administrator. Apply rock in accordance with Rock List. Compact rock in accordance with Compaction list.
H-1810	0+00 – 13+60	Clean culverts in accordance with clause 2-6 and Culvert List. Clean ditches, headwalls, and catch basins in accordance with Clause 2-7. Remove all vegetative material, dirt, mud, and other debris on existing road surface in accordance with clause 2-9. Apply rock in accordance with Rock List. Compact rock in accordance with Compaction list. Brush road in accordance with Clause 3-1 and Brushing Detail.
H-1820	0+00 – 2+60	Clean culverts in accordance with clause 2-6 and Culvert List. Clean ditches, headwalls, and catch basins in accordance with Clause 2-7. Apply rock in accordance with Rock List. Compact rock in accordance with Compaction list. Brush road in accordance with Clause 3-1 and Brushing Detail.
Spur 1+35	0+00 – 1+35	Apply rock in accordance with Rock List. Compact rock in accordance with Compaction list.
H-1066	0+00 – 10+65	Clean culverts in accordance with clause 2-6 and Culvert List. Clean ditches, headwalls, and catch basins in accordance with Clause 2-7. Remove all vegetative material, dirt, mud, and other debris on existing road surface in accordance with clause 2-9. Construct ditch outs in accordance with Clause 4-29 and 4-38. Apply rock in accordance with Rock List. Compact rock in accordance with Compaction list.
Virginia Pit Road	0+00 – 16+55	Grade and shape road in accordance with clause 2-5. Brush road in accordance with Clause 3-1 and Brushing Detail.
H-1009	0+00 – 32+68	Clean culverts in accordance with clause 2-6 and Culvert List. Clean ditches, headwalls, and catch basins in accordance with Clause 2-7. Apply rock in accordance with Rock List. Compact rock in accordance with Compaction list. Brush road in accordance with Clause 3-1 and Brushing Detail.

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.

0-9 DECOMMISSIONING

This project includes, but is not limited to decommissioning listed in Clause 9-20 ROAD DECOMMISSIONING.

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.

1-7 TEMPORARY ROAD CLOSURE

The Purchaser shall notify the Contract Administrator a minimum of 5 calendar days before the closure of any road. Road work shall not close any road for more than 5 consecutive days.

<u>Road</u>	<u>Number of Allowable Closed Days</u>
H-1000	5; After detours are constructed

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.

1-11 FPHP REQUIREMENTS

The following work is subject to requirements under a Forest Practice Hydraulics Project Approval issued by the State of Washington to be completed between July 1st and September 30th of the same calendar year.

<u>FPA Crossing Identifier</u>	<u>Road</u>	<u>Stations</u>	<u>Work Type</u>
C-1	H-1000	31+85 – 32+25	Fish Pipe Replacement
C-2	H-1520	72+05 – 72+25	Temp Pipe Install

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>
H-1000	0+00 – 334+22	Construction Stakes
H-1500	0+00 – 18+70	Construction Stakes
OLD H-1500	0+00 – 20+30	Construction Stakes
H-1520	0+00 – 16+45	Construction Stakes
H-1520	7+00 – 8+00	Construction Stakes
H-1521	0+00 – 8+84	Construction Stakes
H-1600	0+00 – 0+25	Construction Stakes
H-1617	0+00 – 4+04	Construction Stakes
H-1700	0+00 – 1+75	Construction Stakes
H-1060	0+00 – 13+63	Construction Stakes
H-1061	0+00 – 20+38	Construction Stakes
H-1062	0+00 – 39+55	Construction Stakes
H-1062.1	0+00 – 14+64	Construction Stakes
H-1800	0+00 – 114+42	Construction Stakes
H-1810	0+00 – 13+60	Construction Stakes
H-1820	0+00 – 2+60	Construction Stakes
Spur 112+80	0+00 – 1+40	Construction Stakes
H-1066	0+00 – 9+61	Construction Stakes
H-1009	0+00 – 32+68	Construction Stakes
27+80 Loop	0+00 – 3+00	Construction Stakes

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

1-25 ACTIVITY TIMING RESTRICTION

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

<u>Road</u>	<u>Stations</u>	<u>Activity</u>	<u>Closure Period</u>
H-1000	16+50 – 54+47	Culvert Installation	October 1 st – June 30 th
H-1520	7+00 – 8+00	Culvert Installation	October 1 st – June 30 th
H-1000	72+05 – 73+50	Culvert Installation	November 1 st – March 31 st
H-1617	0+00 – 0+20	Culvert Installation	November 1 st – March 31 st
H-1000	195+75 – 209+55 and 221+37 – 232+22	Timber harvest and loading	April 1 st – December 31 st For harvesting units 5 & 6

1-26 OPERATING DURING CLOSURE PERIOD

If permission is granted to operate during a closure period listed in Clause 1-25 Activity Timing Restriction, the Purchaser shall provide a maintenance plan to include further protection of State resources. The Contract Administrator must approve the maintenance plan in writing, and preventative measures shall be put in place, before operation in the closure period. The Purchaser shall be 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 shall be developed. All parties shall follow this plan.

1-27 LIMITED OPERATING PERIOD FOR MARBLED MURRELET

On the following road(s), any road work, right-of-way timber falling and yarding, rock pit operations, or operation of heavy equipment must be performed during the limited operating period if implemented during the nesting season. The limited operating period runs from two hours after sunrise to two hours before sunset between April 1 through September 23. This restriction does not apply to the hauling of timber, rock, or equipment.

<u>Road</u>	<u>Stations</u>
H-1000	174+70 – 185+30

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

1-41 REQUIREMENTS FOR PAVED ROAD APPROACHES

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

1-43 ROAD WORK AROUND UTILITIES

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

<u>Road</u>	<u>Stations</u>	<u>Utility</u>	<u>Utility Contact</u>
H-1520	7+00 – 8+00	PUD No 1 of Clallam County, Overhead Power	811 and 1-800-542-7859
H-1000	72+05 – 73+50	PUD No 1 of Clallam County, Overhead Power	811 and 1-800-542-7859

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>
H-1000	0+00 – 334+22
H-1500	0+00 – 18+70
H-1040	0+00 – 61+65
H-1043	0+00 – 32+32
H-1044	0+00 – 24+90
Winfield Pit Road	0+00 – 4+75
Dry Creek Pit Road	0+00 – 5+25

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>
H-1000	0+00 – 334+22
H-1500	0+00 – 18+70
OLD H-1500	0+00 – 20+30
H-1521	0+00 – 8+84
H-1520	0+00 – 16+45
H-1060	0+00 – 13+63
H-1062	0+00 – 22+58
H-1600	0+00 – 0+92
H-1617	0+00 – 3+35
H-1700	0+00 – 3+06

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>
H-1000	140+50 – 334+22	Grade and shape and compact existing road surface

H-1500	0+00 – 18+70	Grade and shape and compact existing road surface
OLD H-1500	0+00 – 20+30	Grade and shape and compact existing road surface
H-1521	0+00 – 8+84	Grade and shape and compact existing road surface
H-1520	0+00 – 16+45	Grade and shape and compact existing road surface
H-1600	0+00 – 0+92	Grade and shape and compact existing road surface
H-1700	0+00 – 3+06	Grade and shape and compact existing road surface
H-1800	0+00 – 114+42	Grade and shape and compact existing road surface
H-1060	0+00 – 13+63	Grade and shape and compact existing road surface
H-1062	0+00 – 21+12	Grade and shape and 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>
All	See Culvert List

2-7 CLEANING DITCHES, HEADWALLS, AND CATCH BASINS

On the following road(s), Purchaser shall clean and/or construct the ditches, headwalls, and catch basins. Work shall be completed before the start of timber haul and shall be done in accordance with the Typical Section Sheet. Pulling ditch material across the road or mixing in with the road surface will not be allowed. Ditchlines, headwalls, and catch basins shall not encroach into the existing road.

<u>Road</u>	<u>Stations</u>	<u>Left or Right</u>	<u>Comments</u>
H-1800	0+00 – 114+42	L & R	As needed or directed by C/A
H-1810	0+00 – 13+60	L & R	As needed or directed by C/A
H-1820	0+00 – 2+60	L & R	As needed or directed by C/A
H-1061	0+00 – 20+38	L & R	As needed or directed by C/A
H-1062	0+00 – 39+55	L & R	As needed or directed by C/A
H-1062.1	0+00 – 14+64	L & R	As needed or directed by C/A
H-1009	0+00 – 32+68	L & R	As needed or directed by C/A

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>Comments</u>
H-1000	141+00 – 141+40	Silt fences R

H-1800	35+20 – 35+50	Silt fences L
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2-9 REMOVING VEGETATIVE MATERIAL

On the following road(s), Purchaser shall remove all vegetative material, dirt, mud, and other debris on the existing road surface with a minimum loss of rock. Material removed shall be disposed of in accordance with Clause 3-21 through Clause 3-25 and Clause 4-36 through Clause 4-38. Roads to be shaped in accordance with Typical Sheet specifications.

<u>Road</u>	<u>Stations</u>
H-1520	0+00 – 7+00 8+00 – 16+45
H-1617	0+00 – 3+35
H-1061	0+00 – 20+38
H-1066	0+00 – 9+61
H-1810	0+00 – 13+60

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>
OLD H-1500	0+00 – 20+30
H-1810	0+00 – 13+60
H-1820	0+00 – 2+60
H-1061	0+00 – 20+38
H-1062	0+00 – 39+55
H-1062.1	0+00 – 14+64
Virginia Pit Road	0+00 – 16+55
H-1009	0+00 – 32+68

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.

3-13 STUMPS FOR PUNCHEON MATERIAL

On the following road(s), stumps from within the grubbing limits may be overturned and driven flush with the ground surface for use as subgrade puncheon material.

<u>Road</u>	<u>Stations</u>
<u>27+80 Loop</u>	<u>0+00 – 3+00</u>

3-14 STUMPS WITHIN DESIGNATED WASTE AREAS

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

<u>Road</u>	<u>Waste Area</u>	<u>Stations</u>
H-1521	WA1	0+05 – 0+75
Spur 101+85	WA2	0+10 – 0+50
Spur 318+45	WA3	0+10 – 0+50

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.

3-22 DESIGNATED WASTE AREA FOR ORGANIC DEBRIS

Waste areas for organic debris at the following locations shall be located as listed below.

<u>Road</u>	<u>Stations</u>
H-1521	0+05 – 0+75
Spur 101+85	0+10 – 0+50
Spur 318+45	0+10 – 0+50

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.

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.

4-23 SUBGRADE FLARE FOR INTERSECTIONS

The H-1617 intersections shall be constructed/reconstructed to include additional intersection flare.

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>
H-1000	141+55 R
H-1066	0+35 R

SUBSECTION WASTE MATERIAL (DIRT)

4-35 WASTE MATERIAL DEFINITION

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

4-36 DISPOSAL OF WASTE MATERIAL

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

4-37 WASTE AREA LOCATION

Waste material shall be deposited in the listed designated areas. The amount of material to be contained in a waste area shall be at the discretion of the Contract Administrator.

Note: All amount values are estimated bank yards.

<u>Waste Area Location</u>	<u>Waste Generated From Road</u>	<u>Estimated Volume</u>	<u>Waste Area Permitted Vol.</u>
WA1	Culvert Replacement H-1000 Sta 32+05 Detour and Temp Pipe H-1520	350	2,000
WA2	Culvert Replacement H-1000 Sta 72+10	100	2,000
WA3	H-1066	300	1,000

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.

4-59 EXISTING ASPHALT ROAD SAWCUT

On the following road(s), the asphalt surface shall be saw cut before removing for culvert removal and installation. During the reshaping process, asphalt shall be end-hauled to Dry Creek Pit as designated by DNR engineer.

<u>Road</u>	<u>Stations</u>
H-1000	31+95 – 32+15
H-1000	72+06 – 72+12

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.

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>
H-1800	As Directed by C/A

5-3 PUNCHEON PLACEMENT

On the following road(s), puncheon may be utilized in the subgrade on the following road. Puncheon shall consist of logs of at least 4 inches in diameter and shall be at least 17 feet long.

<u>Road</u>	<u>Stations</u>
27+80 Loop	0+00 – 3+00

5-4 PUNCHEON RESTRICTED

At no time shall puncheon be used in the subgrade, unless approved by the Contract Administrator or as listed in Clause 5-3.

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.

5-6 USED CULVERT MATERIAL

The Purchaser may install used culverts on the following roads. All other roads shall have new culverts installed.

<u>Road</u>	<u>Stations</u>
H-1520	7+70
H-1617	0+05

5-7 TEMPORARY STREAM CULVERT INSTALLATION

On the following roads, temporary stream culverts shall be located in the natural channel of the stream. Temporary culverts shall be installed as shown in the Type Ns Np Detail and Temporary Log Fill Stream Crossing Detail. Temporary culverts shall be removed as directed by the Contract Administrator.

<u>Road</u>	<u>Stations</u>
H-1520	7+70
H-1617	0+05

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 Dry Creek Pit or as directed by C/A prior to contract expiration.

<u>Road</u>	<u>Size</u>
As Directed	3 culverts 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.

5-27 ARMORING FOR STREAM CROSSING CULVERTS

At the following culvert(s), rip rap shall be set in place immediately following construction of the embankment. Rock shall be placed on shoulders, slopes, and around culvert inlets and outlets as designated on the Typical Type Ns Np Culvert Installation Detail as directed by the Contract Administrator. Rock shall not restrict the flow of water into culvert inlets or catch basins. Rock shall be set in place by machine. Placement shall be by zero-drop-height method only. No placement by end dumping or dropping of rock shall be allowed.

<u>Road</u>	<u>Stations</u>	<u>Rock Type</u>
H-1000	72+10	Rip Rap as per plan

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>
North Winfield Pit	T27N R12W Sec35	Reject and 1.5" Crushed

Red Creek Pit	T27N R11W Sec34	Quarry Spalls, LL riprap
Dry Creek Pit	T26N R11W Sec15	Pit Run and 4" Jaw Run
Virginia Falls Pit	T27N R10W Sec32	Pit Run

6-3 ROCK SOURCE STATE LAND, EXISTING STOCKPILE

Rock used in accordance with the quantities on the Rock List may be obtained from the following existing stockpile(s) on state land at no charge to the Purchaser. Purchaser shall remove no more than 3,990 cubic yards of 1.5" minus crushed rock, unless authorized by the Contract Administrator.

<u>Source</u>	<u>Location</u>	<u>Quantity (yd³)</u>
North Winfield Pit	T27N R12W Sec35	4,050 yd ³
Red Creek Pit	T27N R11W Sec34	100 yd ³
Dry Creek Pit	T26N R11W Sec15	5,230 yd ³
Virginia Falls Pit	T27N R10W Sec32	410 yd ³

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
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- 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.

SUBSECTION ROCK GRADATIONS

6-25 FINES

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

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

6-29 1 ½-INCH MINUS CRUSHED ROCK

% Passing 1 ½" square sieve	100%
% Passing 1" square sieve	50 - 85%
% Passing U.S. #4 sieve	30 - 50%
% Passing U.S. #40 sieve	16% maximum
% Passing U.S. #200 sieve	5% maximum

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

6-39 4-INCH JAW RUN ROCK

% Passing 6" in one dimension	100%
% Passing 3" square sieve	45 - 65%

Rock shall not contain more than 5% organic debris and trash. All percentages are by weight.

6-43 QUARRY SPALLS

% Passing 12" square sieve	100%
% Passing 8" square sieve	10% maximum

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

6-48 2 1/2-FOOT MINUS ENGINEERED STREAMBED MATERIAL

% Passing 30" square sieve	80 - 95%
% Passing 12" square sieve	70 - 90%
% Passing 5" square sieve	40 - 60%
% Passing 1" square sieve	15 - 35%
% Passing U.S. #4 sieve	5 - 20%
% Passing U.S. #200 sieve	5% maximum

The portion of aggregate retained on the No. 4 sieve may not contain more than 0.2 percent organic debris and/or 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:

<u>At Least/Not More Than</u>	<u>Weight Range</u>	<u>Size Range</u>
20% / 90%	300 lbs. to 1 ton	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.

6-53 REJECT

% Passing U.S. #4 sieve	100%
% Passing U.S. #200 sieve	100%

SUBSECTION ROCK MEASUREMENT

6-55 ROCK APPLICATION MEASURED BY COMPACTED DEPTH

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

SUBSECTION ROCK APPLICATION

6-70 APPROVAL BEFORE ROCK APPLICATION

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.

<u>Road</u>	<u>Stations</u>	<u>Amount yd³</u>
H-1000	140+50 – 334+22	3880
H-1800	0+00 – 114+42	100
H-1060	0+00 – 13+63	20
H-1062	0+00 – 21+12	30

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 SIGNS

7-2 SIGN INSTALLATION (NON-HIGHWAY)

The Purchaser shall be responsible for the purchase, installation, and maintenance of the following road signs. Signs shall be installed a minimum of 7 days before road closure. Signs shall be at least 2 feet in any direction and shall be orange with black lettering.

<u>Road</u>	<u>Station</u>	<u>Sign</u>
H-1000	16+50 and 54+47	Road Closure Detour Ahead
H-1000	72+05 and 73+50	Road Closure Detour Ahead
H-1500	0+00 and 18+70	Detour Ahead
OLD H-1500	20+30	Detour Ahead
H-1521	8+84	Detour Ahead
H-1600	0+25	Detour Ahead
H-1700	1+75	Detour Ahead

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.

SUBSECTION ACCEPTANCE

7-15 DRAWING AND CALCULATION REVIEW FOR ACCEPTANCE

The Purchaser shall prepare and submit three sets of complete design drawings and calculations for the superstructure and substructure, including footings, foundation and bank protection. All drawings and calculations shall be prepared, stamped, and signed by a Registered Professional Engineer in the State of Washington. The superstructure shall be designed by a Professional Structural or Civil Engineer licensed in the state of manufacture. Drawings can be in either electronic or hard copy form and shall be no smaller than 11" X 17" sheets.

Submittals shall be sent to:

Department of Natural Resources
Attn.: Bill Mehl
411 Tillicum Lane
Forks, WA 98331
360-640-2363
Bill.mehl@dnr.wa.gov

Reports and plans will be accepted or rejected within 10 working days of receipt. Delays in work because of the possibility of rejection, revision, and resubmittal of documents are deemed a risk of the Purchaser and shall not be the basis for claims of additional compensation. Within 15 working days of final acceptance, Purchaser shall submit three complete sets of final plans. Any omissions to the plans shall be the responsibility of the Purchaser to correct and resubmit a finalized set of plans.

7-16 STRUCTURE ACCEPTANCE

The District Engineer or their designee will inspect the structure upon delivery. Acceptance will be issued if the structure meets all specifications and certifications.

7-20 REQUIRED NOTIFICATION AND APPROVAL

Purchaser shall provide the District engineer or their designee 5 day notification prior to beginning road work on the H-1000, H-1520, and H-1617. Purchaser shall receive

approval for completed road work on the H-1000, H-1520, and H-1617 roads from the District engineer or their designee prior to log haul on those roads.

SUBSECTION BRIDGE MAINTENANCE

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>
H-1000	All Bridges	Clean off all moss, organic matter, and dirt accumulations from all running surfaces.	N/A

SUBSECTION LARGE CULVERTS

7-55 LARGE CULVERT INSTALLATION

On the following road(s), Purchaser shall install large culverts as specified below. The installation of the culvert shall follow the appropriate detail sheet. Culvert designs shall meet or exceed the following specifications:

<u>Road</u>	H-1000	H-1000
<u>Station</u>	32+05	72+10
<u>Type</u>	Box Culvert	Pipe-arch
<u>Material and Coating Type*</u>	Aluminum	Aluminized steel
<u>Span (in.)</u>	120	64
<u>Rise (in.)</u>	58	43
<u>Length (ft.)</u>	40	30
<u>Depth of Cover Material (ft.)</u>	2.5	1.0
<u>End design</u>	N/A	N/A
<u>Corrugations</u>	yes	yes
<u>Gauge</u>		12
<u>Detail Sheet</u>	See Plan Sheets	See Plan Sheets

* See Clause 10-15 Corrugated Steel Culvert or Clause 10-18 Corrugated Steel Structural Plate

7-56 STEEL PIPE, PIPE ARCH, AND STRUCTURAL PLATE INSTALLATION

Steel pipe, pipe arches, and structural plate culverts shall be installed according to the National Corrugated Pipe Association Installation Manual, and are subject to the inspection and approval of the Contract Administrator before placement and backfill. The latest edition of the NCSPA Installation Manual can be found at www.ncspa.org.

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.

7-58 MATERIAL INSIDE CULVERT

Purchaser shall furnish and install rock in accordance with detail sheets listed below and quantities in the Rock List. Rock shall be placed inside the following culvert(s) as specified in the detail sheets.

<u>Road</u>	<u>Station</u>	<u>Detail Sheet Name</u>
H-1000	32+05	Barred Entry Fish Pipe Install

SUBSECTION GATE CLOSURE

7-70 GATE CLOSURE

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

<u>Road</u>	<u>Station</u>	<u>Comment</u>
H-1800	0+00	Locked after work hours and on weekends

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>
H-1000	141+00 – 141+40	Silt fences R
H-1800	35+20 – 35+50	Silt fences L

8-2 PROTECTION FOR EXPOSED SOIL

Purchaser shall furnish and evenly spread a 3-inch layer of hay 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 STRUCTURES

9-2 CULVERT REMOVAL FROM LIVE STREAM

On the following road(s), Purchaser shall remove existing culverts from live streams and leave the resulting channel open with excavation slope and excavated channel width as specified. Excavated material shall be end hauled to an approved waste area designated in Clause 4-37 Waste Area Location. Culvert removal from live streams shall be in accordance with the Detail Sheets.

<u>Road</u>	<u>Stations</u>	<u>Excavated Channel Width</u>	<u>Slope Ratio</u>	<u>Comments</u>
H-1520	7+70	6	1:1	Activity Timing Restriction applies
H-1617	0+10	3	1:1	Standard culvert removal, see detail sheet

9-3 REMOVAL OF CULVERT MATERIAL FROM STATE LAND

Culvert material removed from roads becomes the property of the Purchaser and must be removed from state land.

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
H-1000	140+50 – 334+22	Apply post haul rock as per Clause 6-72. Clean bridge deck
H-1000	All Bridges	Perform maintenance as per Clause 7-30.
H-1800	0+00 – 114+42	Apply post haul rock as per Clause 6-72.
H-1060	0+00 – 13+63	Apply post haul rock as per Clause 6-72.
H-1062	0+00 – 21+12	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.

SUBSECTION DECOMMISSIONING AND ABANDONMENT

9-20 ROAD DECOMMISSIONING

The following road(s) shall be decommissioned by the Purchaser before the termination of this contract.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
H-1520	0+00 – 16+15	Light
H-1617	0+00 – 4+04	Light

9-22 LIGHT DECOMMISSIONING

Decommissioning shall consist of:

1. Remove all culverts. Resulting back slopes shall be 1:1 or shallower for cross drains and 1.5:1, or as specified in approved drawings, for all live stream culvert removals. Material removed shall be placed on the roadbed and compacted, with slopes of 2:1 or shallower, or end-hauled to designated waste areas. Culverts removed shall become the property of the Purchaser and removed from State land.
2. Construct non-drivable water bars as directed by the Contract Administrator. On grades in excess of 3%, non-drivable water bars shall be skewed 30 degrees from the perpendicular of the road centerline.
3. Restore all ditchouts to drain water.
4. Repair or construct ditchlines.
5. Remove any berms, except as directed.
6. Restoration of natural stream channels across road prism, as directed by the Contract Administrator.
7. Removing all fill material as approved by the Contract Administrator.
8. All material from fill removals, culvert removals, and bridge removals shall be placed on roadbed and compacted, except that material listed in Clause 4-37.
9. Purchaser shall furnish and apply grass seed to all areas of exposed soil, including but not limited to: water bars, waste piles, and culvert removal sites. Grass seed shall be applied at a rate of 60 pounds per acre.
10. Block road to vehicular traffic using logs, slash, and stumps, as directed by the Contract Administrator.

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>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).

10-16 CORRUGATED ALUMINUM CULVERT

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

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.

10-19 CORRUGATED ALUMINUM STRUCTURAL PLATE

Structural plate culverts shall be aluminum alloy meeting AASHTO M-219 (ASTM A-746) specifications.

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.

10-23 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.

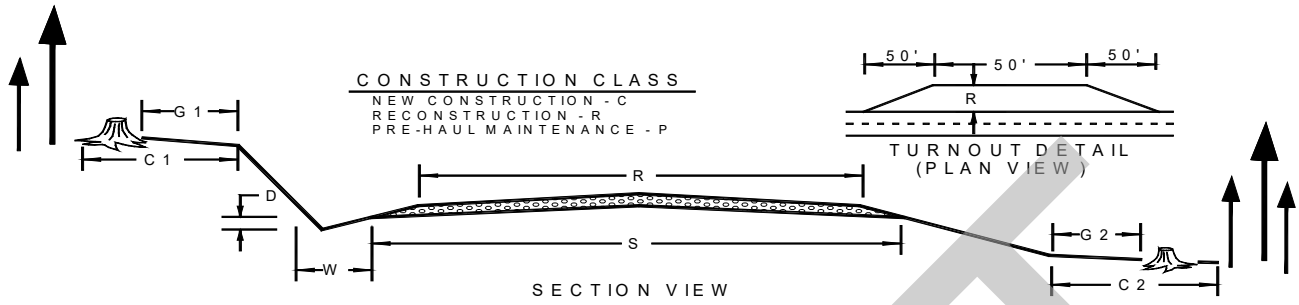
10-24 GAGE AND CORRUGATION

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"

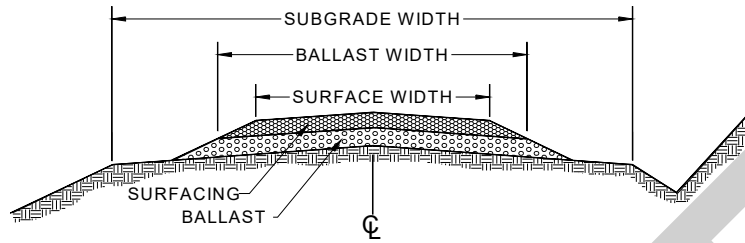
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TYPICAL SECTION SHEET



ROAD NAME	START STATION	END STATION	CONSTRUCTION CLASS	SUBGRADE WIDTH (S)	ROAD WIDTH (R)	CROWN AT CL (in)	DITCH WIDTH (W)	DITCH DEPTH (D)	GRUBBING CUT BANK (G1)	GRUBBING FILL TOE (G2)	ROAD CUT CLEARING (C1)	ROAD FILL CLEARING (C2)
H-1000	0+00	334+22	P		16'	3"	3'	1'				
H-1500	0+00	18+70	P		14'	3"	3'	1'				
OLD H-1500	0+00	20+30	P		14'	3"	3'	1'				
H-1520	0+00	16+45	P		14'	3"	3'	1'				
H-1520	7+00	8+00	R	17'	12'	3"	3'	1'	5'	5'	10'	5'
H-1521	0+00	8+84	P		14'	3"	3'	1'				
H-1600	0+00	0+25	P		14'	3"	3'	1'				
H-1617	0+00	4+04	R	17'	12'	3"	3'	1'	5'	5'	10'	5'
H-1700	0+00	1+75	P		14'	3"	3'	1'				
H-1060	0+00	13+63	P		14'	3"	3'	1'				
H-1061	0+00	20+38	P		14'	3"	3'	1'				
H-1062	0+00	39+55	P		14'	3"	3'	1'				
H-1062.1	0+00	14+64	P		14'	3"	3'	1'				
H-1800	0+00	114+42	P		14'	3"	3'	1'				
H-1810	0+00	13+60	P		14'	3"	3'	1'				
H-1820	0+00	2+60	P		14'	3"	3'	1'				
H-1066	0+00	9+61	P		14'	3"	3'	1'				
Virginia Fall Pit	0+00	16+55	P		14'	3"	3'	1'				
H-1009	0+00	32+68	P		14'	3"	3'	1'				
27+80 Loop	0+00	3+00	C	17'	12'	3"	3'	1'	5'	5'	10'	5'

ROCK LIST SHEET

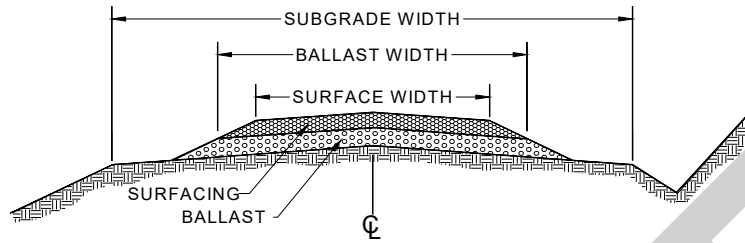


SECTION VIEW

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: North Winfield Pit Reject, 2: North Winfield Pit 1.5" Crushed, 3: Red Creek Pit 2' Spalls, 4: Red Creek Pit LL Riprap, 5: Dry Creek Pit Pitrun, 6: Dry Creek Pit 4" Jawrun, 7: Virginia Falls Pit Pitrun

ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (#)	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)
H-1000															
Misc	140+50	334+22	5				200								
Culvert Replace	31+85	32+25	1;5				140;40		2				35	3;4	90;20
Culvert Replace	72+05	72+25	5				30		2				40		
Ditch out	141+55								6				10		
Landing	195+75		5				30								
Landing	202+95		5				30								
Landing	209+55		5				30								
Landing	221+10		5				30								
Landing	224+22		5				30								
Landing	228+62		5				30								
Spot Patch	292+16		7				20								
Turnaround	321+15		7				30								
Post-Haul	140+50	334+22							2	12	4	20	3880		
H-1500															
Misc	0+00	18+70	5				50								
H-1500 OLD															
Misc	0+00	20+30	5				100								
H-1520															
Lift	0+00	16+45							2	12	6	35	580		
Totals:								790					4545		110

ROCK LIST SHEET CONTINUED

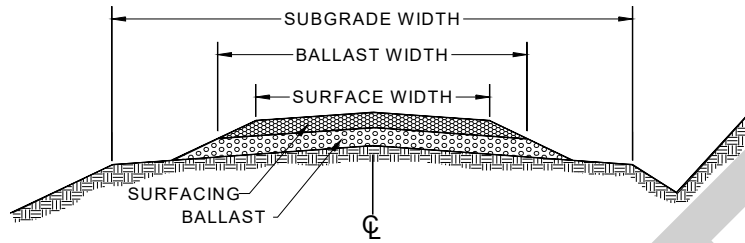


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ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd³/sta)	Pitrun SUBTOTAL(yd³)	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd³/sta)	Crushed Subtotal(yd³)	Oversize/ Rip rap Source	Oversize/Rip Rap Quantity(yd³)
H-1520															
Temp Culvert	7+70								6				20		
H-1521															
Misc	0+00	8+84		5				110							
H-1600															
Misc	0+00	0+25		5				10							
H-1617															
Lift	0+00	4+04							2	12	12	70	280		
Culvert	0+10								6				20		
Intersection	0+00			5				50							
Intersection	4+04			5				50							
H-1700															
Misc	0+00	1+75		5				30							
H-1060															
Misc	0+00	13+63		5				20							
Post-Haul	0+00	13+63							2				20		
H-1061															
Lift	0+00	20+38		5	12	6	35	700							
H-1062															
Misc	0+00	21+12		5				100							
Lift	21+12	39+55		5	12	6	35	700							
Totals:								1770					340		

ROCK LIST SHEET CONTINUED

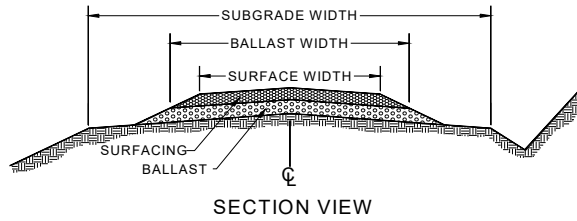


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ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd ³ /sta)	Pitrun SUBTOTAL(yd ³)	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd ³ /sta)	Crushed Subtotal(yd ³)	Oversize/ Rip rap	Oversize/Rip Rap Quantity(yd ³)
H-1062															
Culvert Install	35+47								6				30		
Post-Haul	0+00	21+12							2				30		
H-1800															
Lift	0+00	114+42							6	12	4	20	2280		
Culvert Replace	0+05								6				40		
Landing	7+10								6				20		
Landing	17+10								6				20		
Culvert Replace	19+10								6				20		
Landing	26+50								6				20		
Culvert Install	35+90								6				20		
Landing	36+25								6				40		
Spot Patch	38+00								6				30		
Culvert Install	41+93								6				30		
Culvert	43+06								6				30		
Landing	54+40								6				30		
Culvert Replace	55+45								6				30		
Landing	57+95								6				30		
Landing	75+04								6				30		
Landing	78+90								6				30		
Totals:													2760		

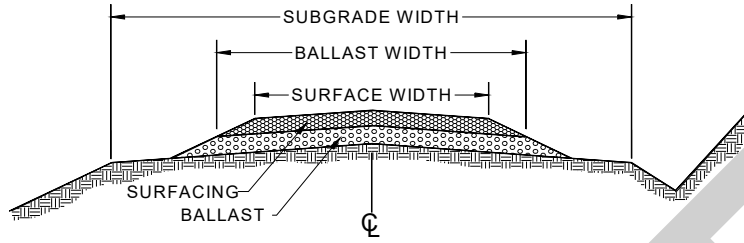
ROCK LIST SHEET CONTINUED



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ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH	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)
H-1800															
Culvert Replace	85+56							6					30		
Landing	88+55							6					30		
Landing	96+00							6					30		
Culvert Replace	99+10							6					20		
Landing	103+85							6					30		
Culvert Replace	104+10							6					20		
Post-Haul	0+00	114+42						2					100		
H-1810															
Lift	0+00	13+60						6	12	10	55	750			
Culvert Replace	0+05							6					20		
Landing	4+95							6					30		
Landing	13+60							6					30		
H-1820															
Lift	0+00	2+10						6	12	6	35	75			
Culvert Replace	0+05							6					20		
Culvert Replace	0+65							6					20		
Landing	2+10							6					30		
1+35 Spur															
Lift								6	12	8	45	60			
Landing								6					30		
H-1066															
Lift	0+00	10+65		7	12	12	70	680							
Culvert Install	0+05								6				30		
Culvert Install	4+45								6				20		
Totals:								680					1375		

ROCK LIST SHEET CONTINUED



1. Rock quantities, subtotals and totals are “truck measure” estimates. Rock shall be applied to at least the depths listed.
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3. Rock slopes shall be 1½ (H) : 1 (V).
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ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd ³ /sta)	Pitrun SUBTOTAL(yd ³)	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity (yd ³ /sta)	Crushed Subtotal(yd ³)	Oversize/ Rip rap Source	Oversize/Rip Rap Quantity(yd ³)	
H-1066																
Culvert Install	7+45								6				20			
Landing	9+65								6				30			
Turnaround	9+65								6				50			
H-1009																
Misc	0+00	32+68		7				50								
Culvert Install	25+30			7				30								
27+80 Loop																
Lift	0+00	3+00		7	12	18	110	330								
0+80 Spur																
Misc	0+00	0+80		5				30								
H-1062.1																
Lift	0+00	14+64		5	12	6	35	515								
Culvert Install									6				20			
Contingency Culverts																
									6				60			
Totals:								955				160				

ROCK LIST SHEET GRAND TOTAL

Source	Quantity (yd ³)
1: North Winfield Pit Reject	60
2: North Winfield Pit 1.5" Crush	4,965
3: Red Creek 2' Spalls	90
4: Red Creek Pit LL Riprap	20
5: Dry Creek Pit Run	2,915
6: Dry Creek Jaw Run 4"	4,205
7: Virginia Falls Pit Run	1,090

CULVERT LIST

ROAD NAME	STATION	CULVERT DIAMETER (in)	CULVERT LENGTH (ft)	FLUME LENGTH (ft)	DOWNSPOUT LENGTH (ft)	RIP RAP - INLET (cy)	RIP RAP - OUTLET (cy)	BACKFILL MATERIAL	NOTES
H-1000*	32+05	4'10"x10'	40			30	30	JR	Aluminum Box Culvert Replacement for Fish Pipe
H-1000*	72+10	54" (64"x43")	30			20	20	JR	Squash Pipe
H-1520*	7+70	36	40						Temp Culvert Install
H-1617*	0+10	24	40						Temp Culvert Install
H-1066	0+05	24	40					JR	Cross-drain Culvert Install
H-1066	4+45	18	30					JR	Cross-drain Culvert Install
H-1066	7+45	18	30					JR	Cross-drain Culvert Install
H-1009	5+00	18	30						Culvert Maint, Clean Inlet, and outlet
H-1009	9+65	18	30						Culvert Maint, Clean Inlet, and outlet
H-1009	13+05	18	30						Culvert Maint, Clean Inlet, and outlet
H-1009	25+30	24	30						Cross-drain Culvert Install
H-1062.1	9+70	18	30					JR	Cross-drain Culvert Install
H-1062	35+47	18	30					JR	Cross-drain Culvert Install
H-1800*	0+05	36	30					JR	Culvert Replacement
H-1800	9+00	18	30						Culvert Maint, Clean Inlet
H-1800*	12+15	18	30	30					Culvert Maint. Clean Inlet, replace flume
H-1800*	16+05	18	30						Culvert Maint, Clean Inlet
H-1800*	19+10	24	30					JR	Culvert Replacement
H-1800*	21+10	24	30						Culvert Maint, Clean Inlet
H-1800*	22+90	18	30						Culvert Maint, Clean Inlet
H-1800	23+10	24	30						Culvert Maint, Clean Inlet
H-1800	23+35	18	30						Culvert Maint, Clean Inlet
H-1800	26+28	18	30						Culvert Maint, Clean Inlet
H-1800*	32+85	36	30						Culvert Maint, Clean Inlet
H-1800	35+90	18	30					JR	Cross-drain Culvert Install
H-1800	36+90	24	30						Culvert Maintenance

CULVERT LIST Continued

ROAD NAME	STATION	CULVERT DIAMETER (in)	CULVERT LENGTH (ft)	FLUME LENGTH (ft)	DOWNPOUT LENGTH (ft)	RIP RAP - INLET (cy)	RIP RAP - OUTLET (cy)	BACKFILL MATERIAL	NOTES
H-1800	38+60	18	30						Culvert Maintenance
H-1800*	41+93	24	50					JR	Culvert Install
H-1800*	43+06	24	50					JR	Culvert Install
H-1800	47+45	18	30						Culvert Maintenance
H-1800*	50+20	30	30						Culvert Maintenance
H-1800*	52+30	24	30						Culvert Maintenance
H-1800	55+45	18	40						Cross-drain Culvert Replacement
H-1800	67+80	18	30						Culvert Maintenance
H-1800*	73+67	18	30						Culvert Maintenance
H-1800*	77+35	18	30						Culvert Maintenance
H-1800*	85+56	36	40	30					Culvert and Flume Replacement
H-1800	92+75	24	30						Culvert Maintenance
H-1800	99+10	18	30						Cross-drain Culvert Replacement
H-1800	104+10	24	30						Cross-drain Culvert Replacement
H-1800	111+50	18	30						Culvert Maintenance
H-1810	0+05	12	40						Cross-drain Culvert Replacement
H-1820	0+05	12	40						Cross-drain Culvert Replacement
H-1820	0+65	18	30						Cross-drain Culvert Replacement
Contingency	xxx	18	30					JR	
Contingency	xxx	18	30					JR	
Contingency	xxx	18	30					JR	

All rip rap shall be Oversize unless specified in the Rock List, or in the field.
All backfill shall be native material (NT) unless specified otherwise. CR= 1 ¼"- crushed rock, PR = pit run JR = 4" Jaw Run. * = Typed Water.

SUMMARY - Road Development Costs		REGION: Olympic		DISTRICT: Olympic		TOTAL																															
SALE NAME: Barred Entry	CONTRACT#: 30-104801	REGION: Olympic	DISTRICT: Olympic																																		
LEGAL DESCRIPTION: 128911W Sec11																																					
ROAD NAME:	27+80 Loop	H-1520	H-1617	H-1000	H-1500	OLD H-1500	H-1520	H-1521	H-1600	H-1700	H-1060	TOTAL:	SHEET #2-4																								
ROAD TYPE:	Construction	Recon.	Recon.	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul																										
NUMBER OF STATIONS:	3	1	4	334	19	20	15	9	0	2	14	421.18	640																								
SIDE SLOPE:	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0																								
CLEARING AND GRUBBING:	171	0	0	0	0	0	0	0	0	0	0	\$171	0																								
ROAD BRUSHING:	0	27	110	0	0	0	420	0	0	0	0	\$557	487																								
EXCAVATION AND FILL:	339	0	0	0	0	0	0	0	0	0	0	\$339	0																								
ROAD GRADING:	0	21	84	9,091	388	421	320	183	0	0	283	\$10,791	11,270																								
DITCH CLEARING/CONSTRUCTION:	0	0	0	0	0	0	0	0	0	0	532	\$532	10,911																								
ROCK TOTALS (Cu, Yds./) ROCK CD	0	0	0	0	0	0	0	0	0	0	0	0	0																								
Ballast:	13093	4,065	330	283	620	50	576	50	20	30	20	\$2,114	10,979																								
Surface:	260	9,195	2,944	648	4,850	7,843	360	4,462	423	225	298	\$132,589.04	150																								
Oversize:	160	110	0	0	0	0	0	0	0	0	0	\$160	0																								
CULVERTS AND FLUMES:	0	0	1,170	1,200	0	0	0	0	0	0	0	\$2,370	16,841																								
STRUCTURES:	0	0	0	87,000	0	0	0	0	0	0	0	\$87,000	0																								
MISC. EXPENSES:	18	2,520	250	2,953	109	119	90	52	0	0	80	\$6,190	5,271																								
OVERHEAD:	417	439	795	8,646	63	101	447	53	18	24	89	\$11,097	14,864																								
TOTAL COSTS:	3,888	4,824	8,747	116,724	925	1,359	6,041	710	243	321	1,204	\$144,965	194,092																								
COST PER STATION:	1,296	4,824	2,165	349	49	67	391	80	972	184	88	\$344	303																								
MOBILIZATION:			\$7,400																																		
ROAD DEACTIVATION AND ABANDONMENT COSTS:			\$0																																		
Pk Work			\$0																																		
<table border="1"> <tr> <td>Road Standard Const.</td> <td>Reconst</td> <td>Prehaul</td> <td>Posthaul</td> <td>TOTAL (All Roads) =</td> </tr> <tr> <td>Total Costs = \$5,737.69</td> <td>\$15,420.30</td> <td>\$268,705.02</td> <td>\$59,141.65</td> <td>SALE VOLUME MBF = 6,303</td> </tr> <tr> <td>Total Sta. = 3</td> <td>5</td> <td>680</td> <td>680</td> <td>TOTAL COST PER MBF = \$54.97</td> </tr> <tr> <td>Cost per Sta. = \$1,912.56</td> <td>\$3,059.58</td> <td>\$394.90</td> <td>\$86.92</td> <td>TOTAL COST PER STATION = \$328.45</td> </tr> <tr> <td>Completed by: 0</td> <td></td> <td></td> <td></td> <td>Date: 01/00/00</td> </tr> </table>													Road Standard Const.	Reconst	Prehaul	Posthaul	TOTAL (All Roads) =	Total Costs = \$5,737.69	\$15,420.30	\$268,705.02	\$59,141.65	SALE VOLUME MBF = 6,303	Total Sta. = 3	5	680	680	TOTAL COST PER MBF = \$54.97	Cost per Sta. = \$1,912.56	\$3,059.58	\$394.90	\$86.92	TOTAL COST PER STATION = \$328.45	Completed by: 0				Date: 01/00/00
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Completed by: 0				Date: 01/00/00																																	
NOTE: This appraisal has no allowance for profit and risk.																																					
Sheet 1 of 5																																					
Plans to be furnished by:																																					

SALE NAME: Barred Entry		CONTRACT#: 30-104801		SUMMARY - Road Development Costs										REGION: Olympic		DISTRICT: Olympic			
LEGAL DESCRIPTION: T6R11W Sec11																			
ROAD NAME:	H-1061	H-1062	H-1062.1	H-1800	H-1810	H-1820	H-1066	La Falls Pl	H-1009	J+80 Spur	1+35 Spur	H-1000	H-1800	H-1060	H-1062				
ROAD TYPE:	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Posthaul	Posthaul	Posthaul				
NUMBER OF STATIONS:	20	40	15	114	14	3	11	17	33	1	1	194	144	14	21				
SIDELOPE:	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%				
CLEARING AND GRUBBING:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
ROAD BRUSHING:	0	0	0	0	0	0	0	\$450.16	0	0	\$36.72	0	0	0	0				
EXCAVATION AND FILL:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
ROAD GRADING:	0	\$820.27	0	\$2,373.07	0	0	0	\$343.25	0	0	0	\$4,017.75	\$2,995.27	\$282.69	\$438.03				
DITCH CLEANING/CONSTRUCTION:	\$1,589.64	\$3,084.90	\$1,141.92	\$4,462.38	\$530.40	\$101.40	0	0	0	0	0	0	0	0	0				
ROCK TOTALS (Cu. Yds.)/ROCK COS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Ballast:	100	800	0	3,310	1,578	219	742	0	80	30	91	3,880	100	20	30				
Surface:	\$1,160.00	\$9,504.00	0	\$41,573.60	\$23,796.24	\$3,417.34	\$8,087.80	0	\$676.00	\$232.50	\$1,495.56	\$40,623.60	\$1,358.00	\$262.40	\$402.00				
Over-size:	0	0	0	0	0	0	\$1,860.00	0	0	0	0	0	0	0	0				
CULVERTS AND FLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
STRUCTURES:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
MISC. EXPENSES:	\$0.00	\$231.37	0	\$1,149.36	0	0	\$1,636.56	\$0.00	\$72.00	0	0	\$1,133.26	\$844.86	\$79.74	\$123.55				
OVERHEAD:	\$219.97	\$1,165.27	\$153.75	\$4,793.46	\$1,965.33	\$363.10	\$1,147.58	\$63.47	\$122.24	\$18.60	\$122.58	\$4,119.72	\$467.83	\$56.23	\$86.72				
TOTAL COSTS:	\$2,969.61	\$15,704.10	\$2,075.67	\$64,711.66	\$26,531.97	\$4,901.84	\$15,492.35	\$856.88	\$1,650.24	\$251.10	\$1,654.86	\$49,894.33	\$5,665.96	\$681.06	\$1,050.30				
COST PER STATION:	\$145.71	\$397.07	\$141.78	\$565.36	\$1,950.88	\$1,885.32	\$1,454.68	\$51.78	\$50.39	\$313.88	\$1,225.82	\$257.56	\$39.23	\$49.97	\$49.73				
Total																			
Costs \$194,092																			
Stations 640.18																			
Cost/station \$303.18																			

FISH STREAM WORK PROVISIONS

1. TIMING LIMITATIONS: The fish culvert project may begin July 1 and shall be completed by September 30.
2. Work shall conform to plans and specifications in the road plan.
3. Prior to the commencement of in-stream work, the Purchaser shall isolate the work area in a manner that fish cannot enter the work area, capture and safely move fish and other fish life from the work area. The Purchaser shall have fish capture and transportation equipment ready and on the job site. Captured fish shall be immediately and safely transferred to free-flowing water downstream of the work area.

TEMPORARY STREAM FLOW BYPASS

4. All in-stream work shall be conducted in the dry or in isolation from the stream flow by the installation of a bypass flume/pipe or by pumping the flow around the work area, back into the stream below the work area. Waste water pumped from within the work area shall terminate on the forest floor, sufficient distance from the stream to filter sediment prior to entering the stream.
5. The temporary bypass to divert flow around the work area shall be in place prior to initiation of other work in the wetted perimeter.
6. A sandbag revetment or similar device shall be installed at the bypass inlet to divert the entire flow through the bypass.
7. The bypass shall be of sufficient size to pass all flows and debris for the duration of the project.
8. If a pump is used for diverting water from the stream where fish are present, as per RCW 77.57.010 and 77.57.070, the pump intake shall be equipped with a fish guard to prevent passage of fish into the diversion pump. The pump intake shall be screened with 1/8 inch mesh to prevent fish from entering the pump. Velocity through the screened intake shall be less than 0.4 feet per second. Screens shall be maintained to prevent injury or entrapment of juvenile fish.

WATER QUALITY

9. Extreme care shall be taken to ensure that no petroleum products, hydraulic fluid, chemicals, or any other toxic or deleterious materials are allowed to enter or leach into the stream.

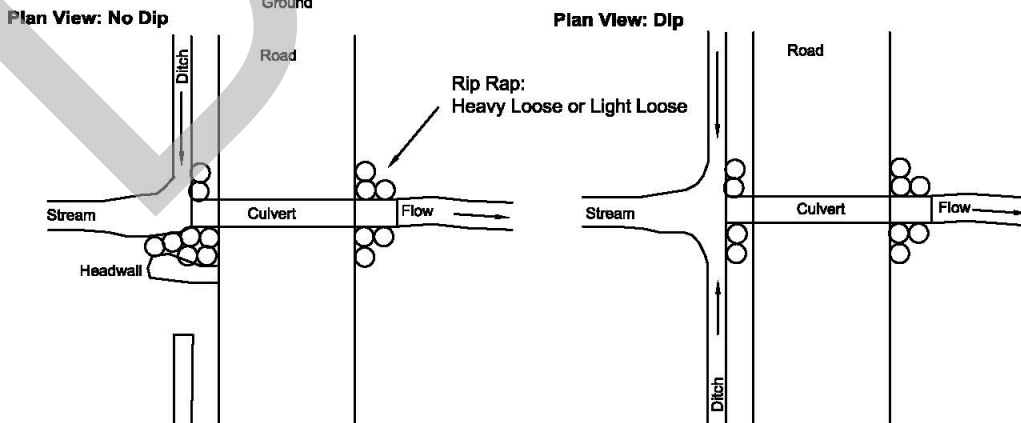
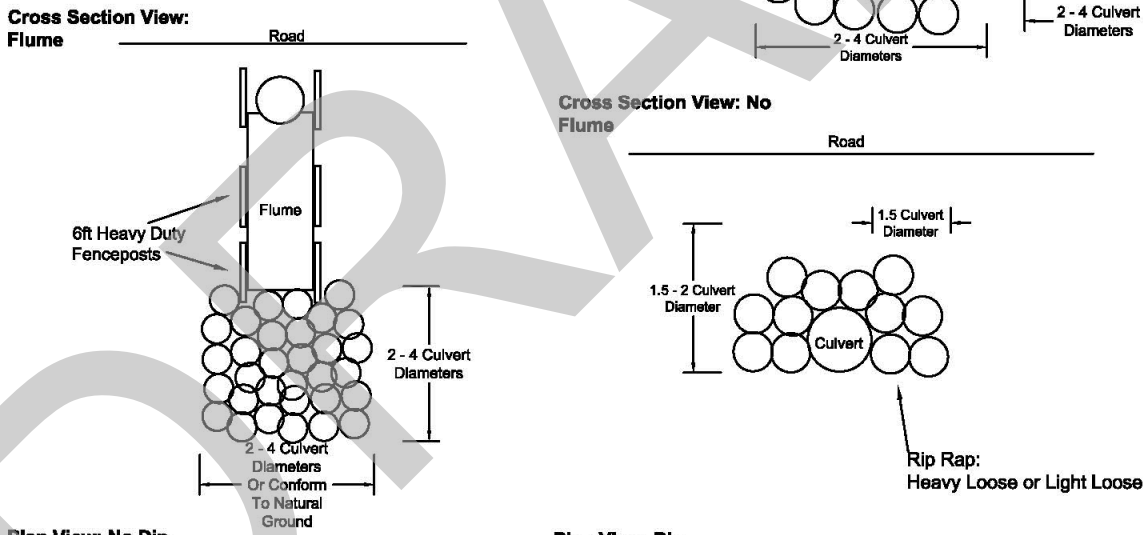
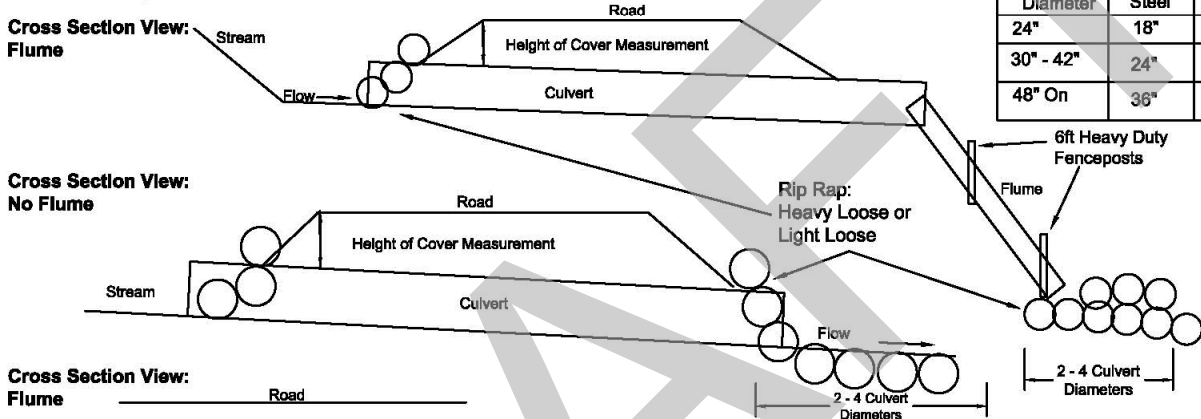
COMPACTION LIST

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		

Typical Type Ns, Np Culvert Installation Detail Sheet.

- Water shall be diverted away from the work site before any "in stream" work begins, and shall continue until culvert installation is complete.
- Culvert lay shall match stream gradient up to 5%.
- Flumes longer than 10ft shall be staked on both sides at maximum intervals of 10ft with 6ft heavy duty steel fence posts, and fastened securely to the posts with No. 10 galvanized smooth wire or bolted to the fence posts.
- Rip rap shall be placed using a "zero height drop method", and shall be set in conjunction with the culvert installation.
- Rip rap shall be placed at headwalls, along the fill at the inlet, and at the end off flumes in accordance with this Detail. On culverts with no flume rip rap shall be placed along the fill at the outlet, unless there is stream drop or it is called for in the Road Plan, at which point it will be installed as an energy dissipater at the end of the culvert as specified in this Detail. All rip rap distance to be determined by the Contract Administrator or the District Engineer.
- Backfill compaction shall be achieved using a jumping jack, walk behind vibratory roller, or plate compactor on lifts not to exceed 8in. 3 complete passes per lift is required for compaction. Backfill shall be placed and compacted evenly on both sides of the culvert. Care shall be taken to ensure adequate compaction of backfill material under the haunches of the pipe. Excavation trench width shall be at least culvert diameter plus 3 times the width of the compactor footprint used.

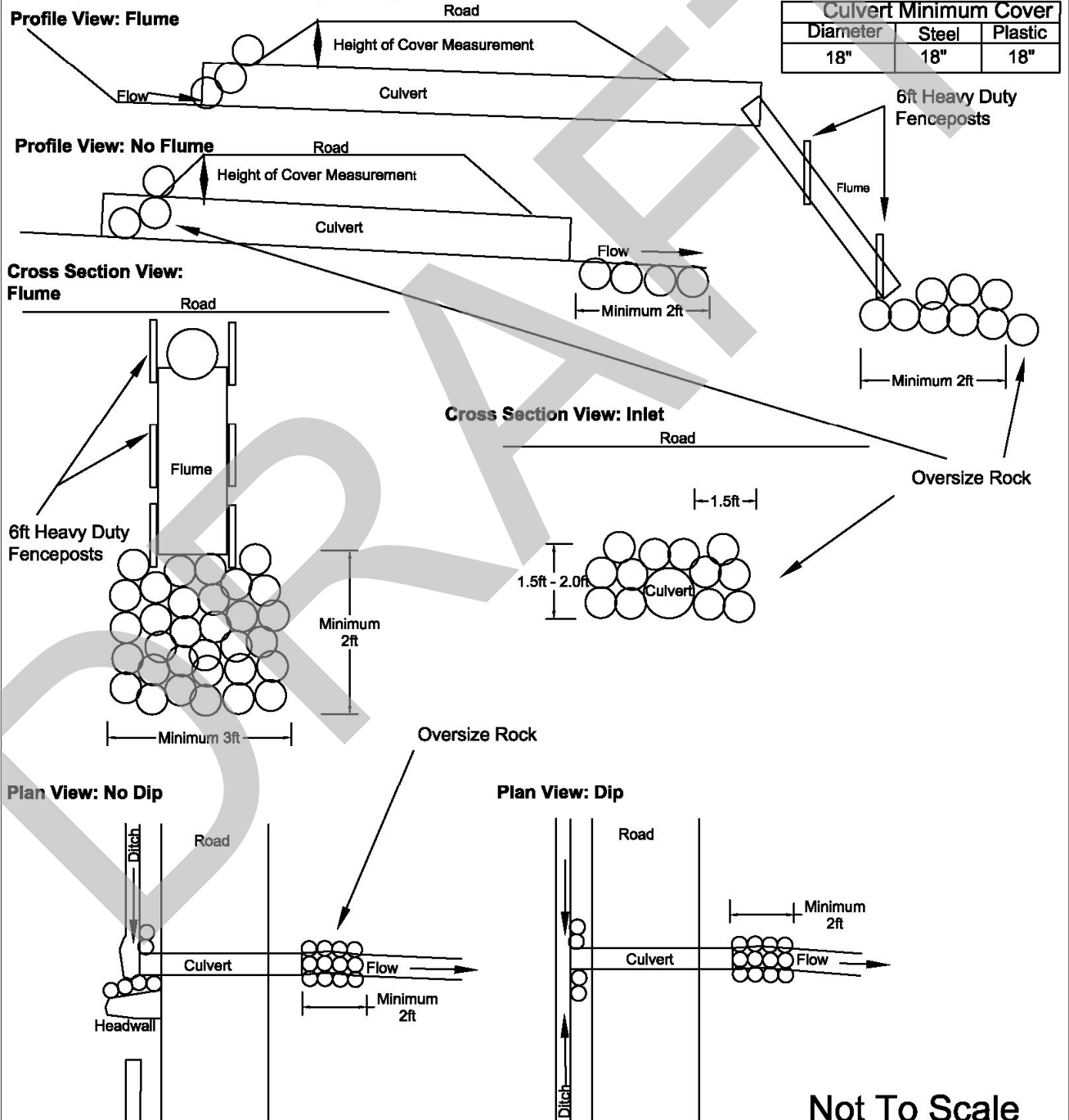
Culvert Minimum Cover		
Diameter	Steel	Plastic
24"	18"	24"
30" - 42"	24"	24"
48" On	36"	36"



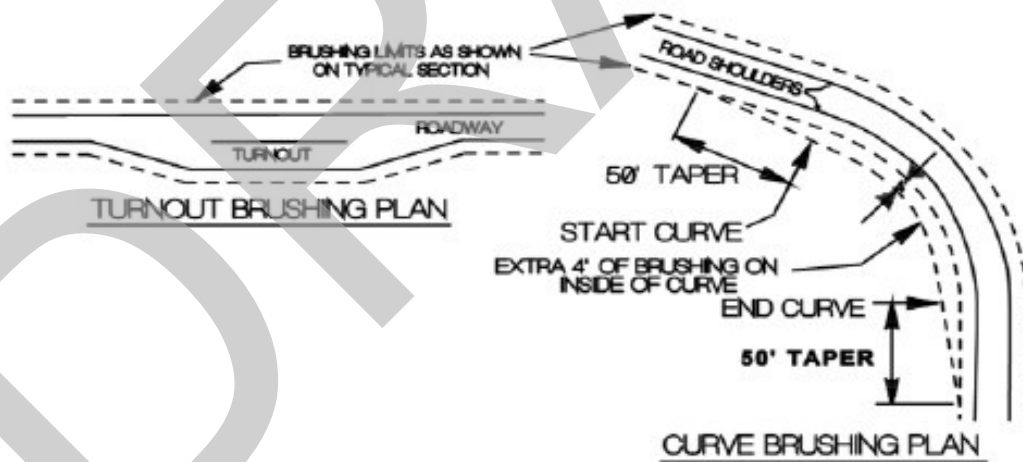
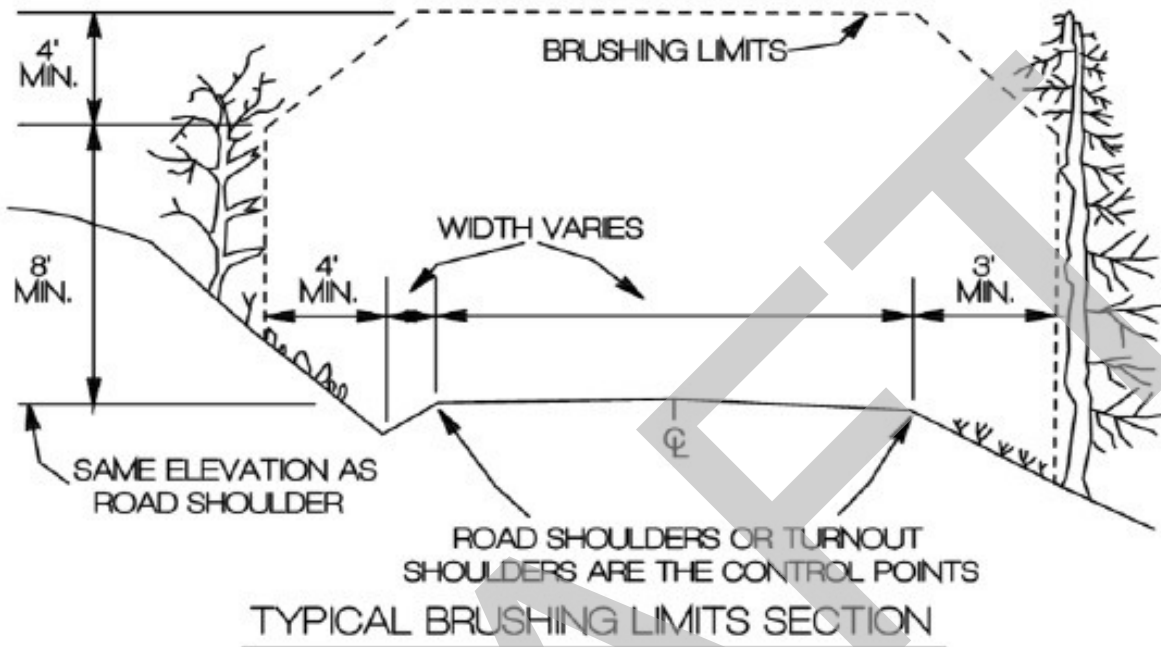
Not To Scale

Typical Cross Drain Culvert Installation Detail Sheet

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

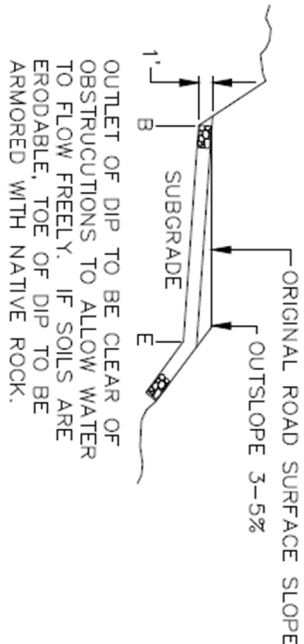
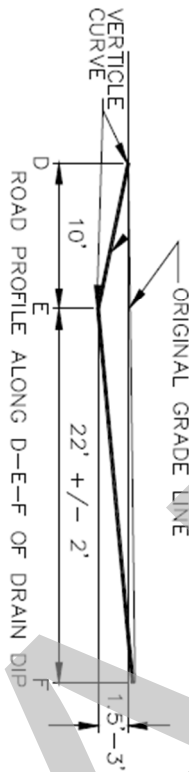
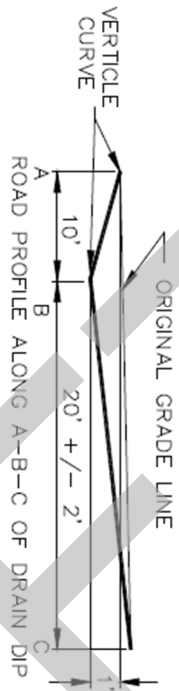


BRUSHING DETAIL

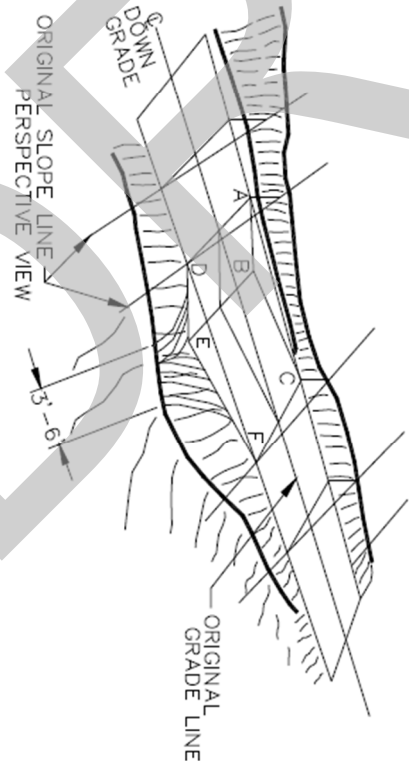


- 1) ALL VEGETATION WITHIN THE BRUSHING LIMITS SHALL BE CUT TO WITHIN 8' OF THE GROUND, UNLESS OTHERWISE DIRECTED BY THE CONTRACT ADMINISTRATOR.
- 2) ALL BRUSH, TREES, LIMBS, ETC. SHALL BE REMOVED FROM THE ROAD SURFACE.
- 3) ALL BRUSH, TREES, LIMBS, ETC. THAT MAY RESTRICT THE FLOW OF WATER SHALL BE REMOVED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

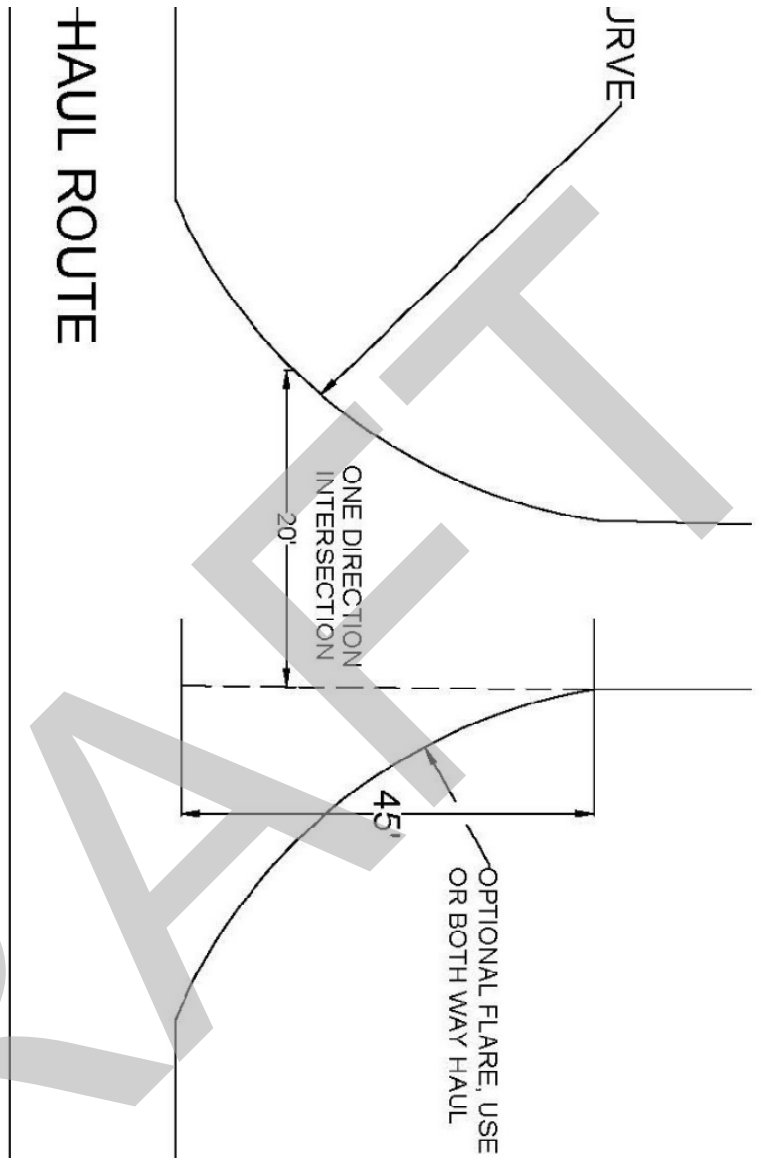
ROLLING DIP DETAIL



NOTE: PLAN OF DIP SHOWN IS FOR OUTSLOPED ROLLING DIP. DIPS MAY BE EITHER INSLOPED OR OUTSLOPED. WHEN INSLOPED, DIPS SHALL DRAIN FREELY INTO DITCHES OR CULVERT INLETS, WHEN OUTSLOPED, THEY SHALL DRAIN FREELY ONTO NATURAL GROUND. WHERE SOILS ARE ERODABLE, OUTLET SHALL BE ARMORED WITH NATIVE ROCK. THE MINIMUM CROSS GRADE FROM "B" TO "E" IS 4% GREATER THAN THE ROAD SURFACE SLOPE. SKEW LINE B-E TO FIT LOW POINT IN DRAW, IF LOCATED IN NATURAL DRAIN.



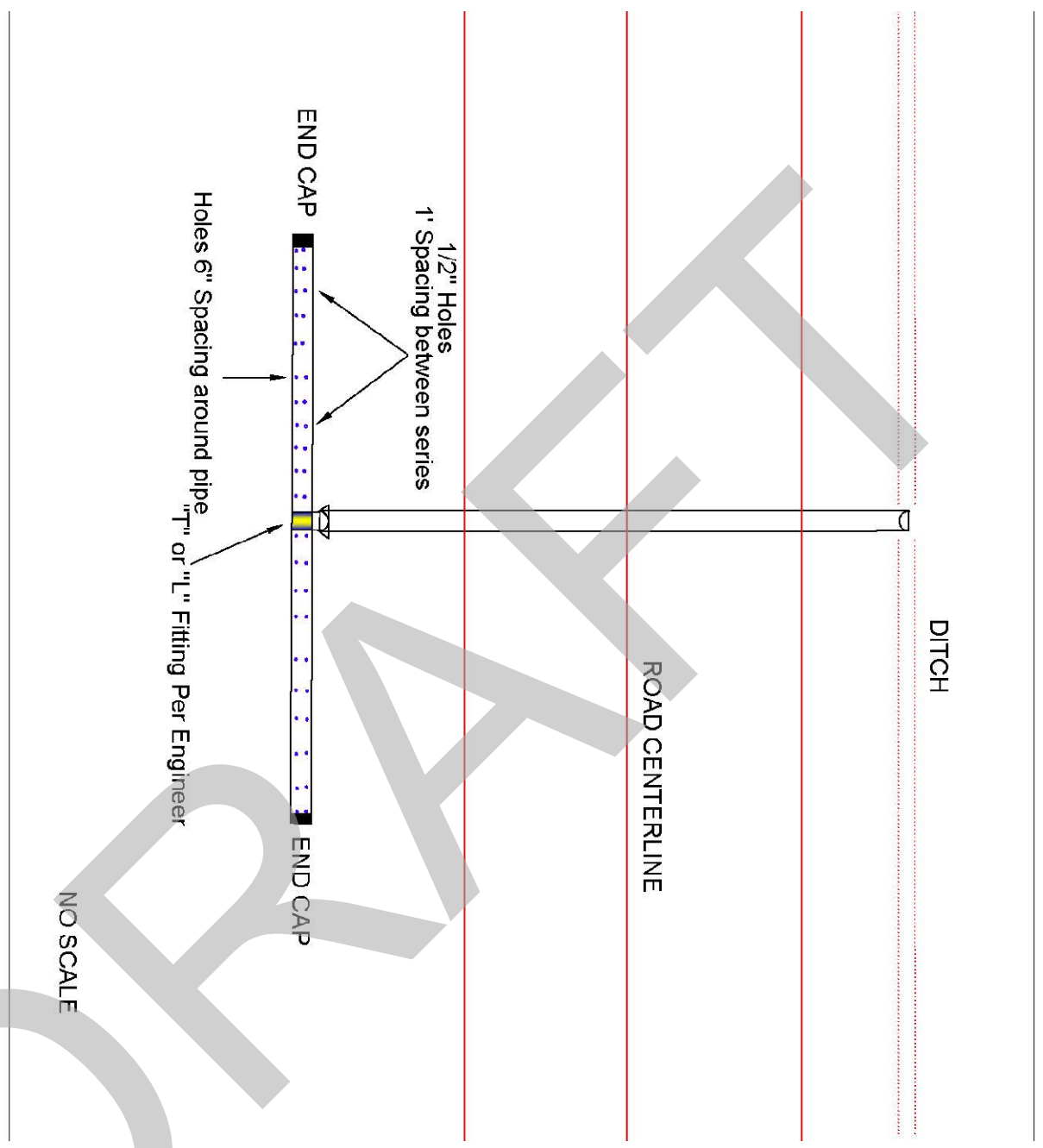
TYPICAL INTERSECTION



NOT TO SCALE

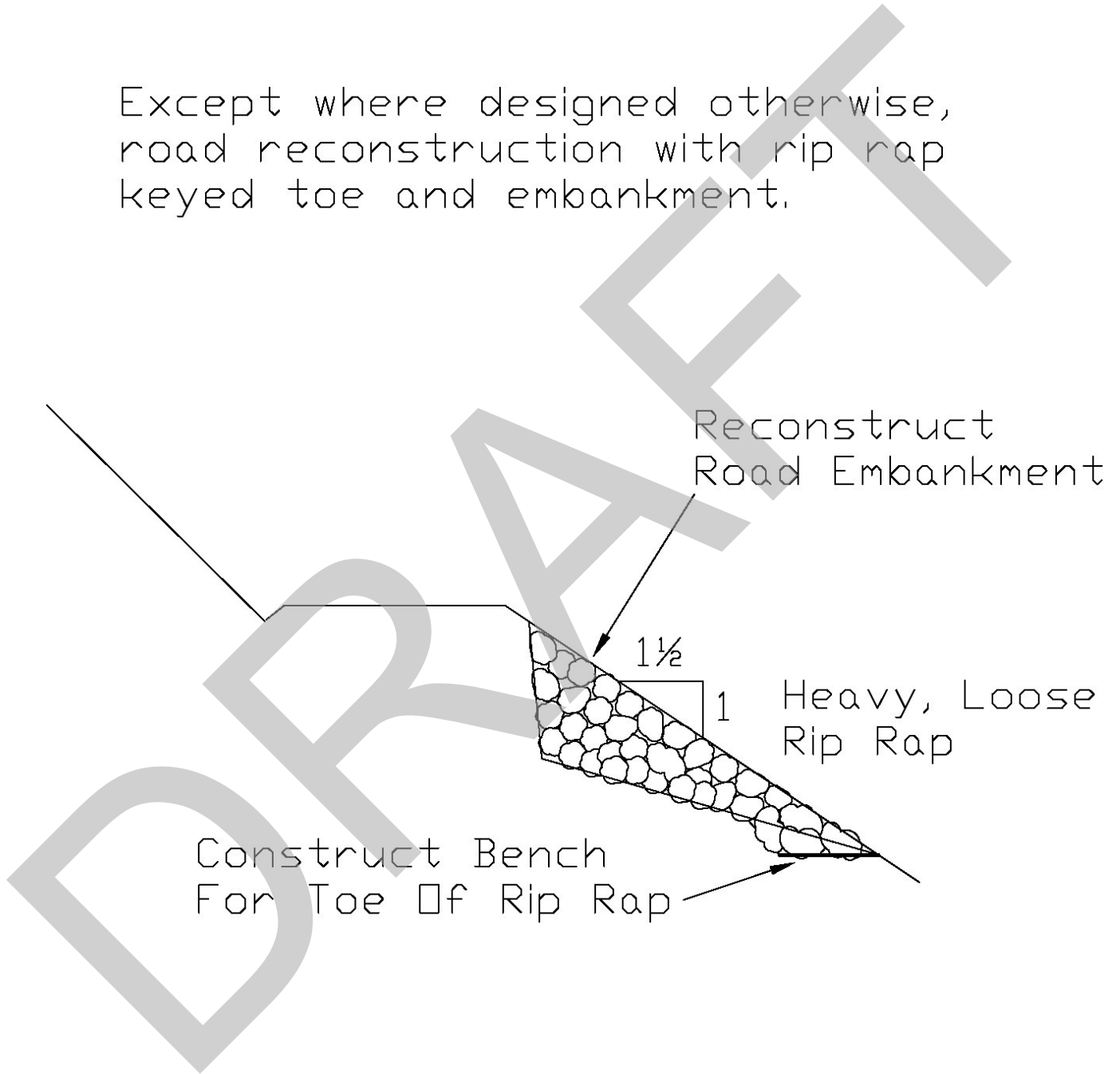
DR

TYPICAL PERFORATED PIPE INSTALLATION



Typical Embankment Key Detail

Except where designed otherwise, road reconstruction with rip rap keyed toe and embankment.



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

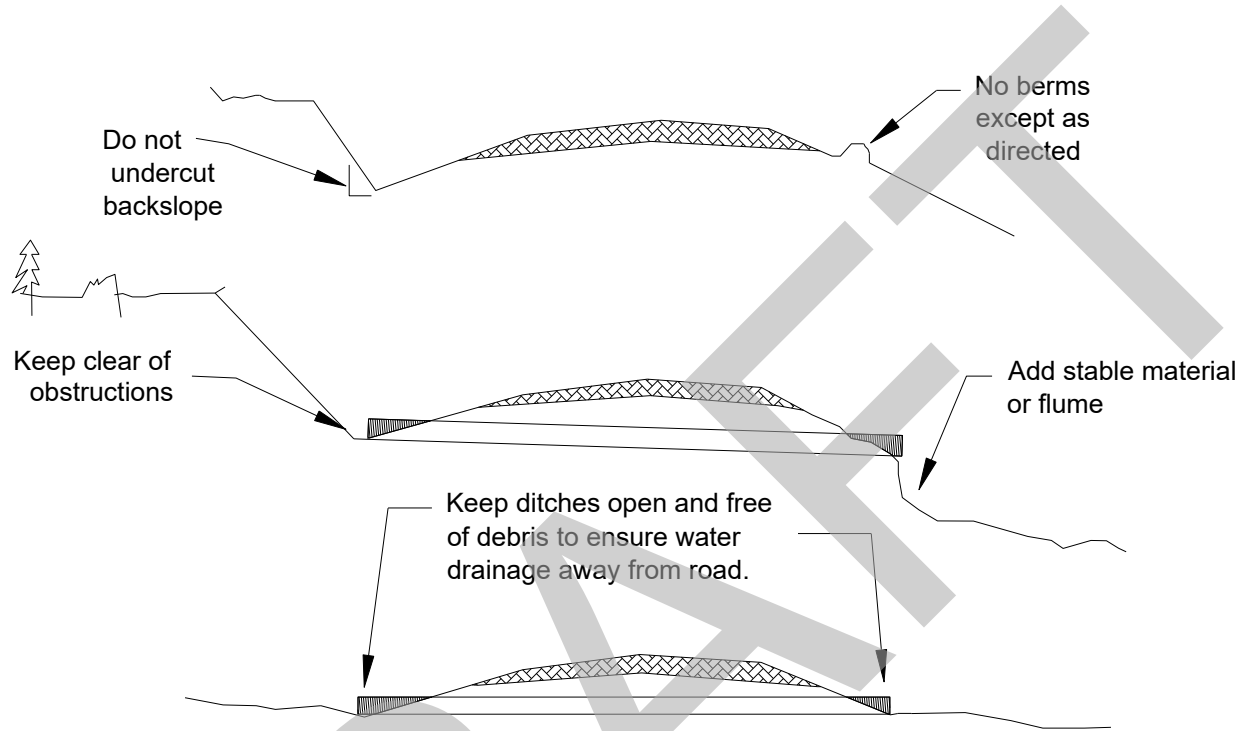
Perform preventative maintenance work to safeguard against storm damage, such as blading to ensure correct runoff, ditch and culvert cleaning, and waterbar maintenance.

Termination of Use or End of Season

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

Debris

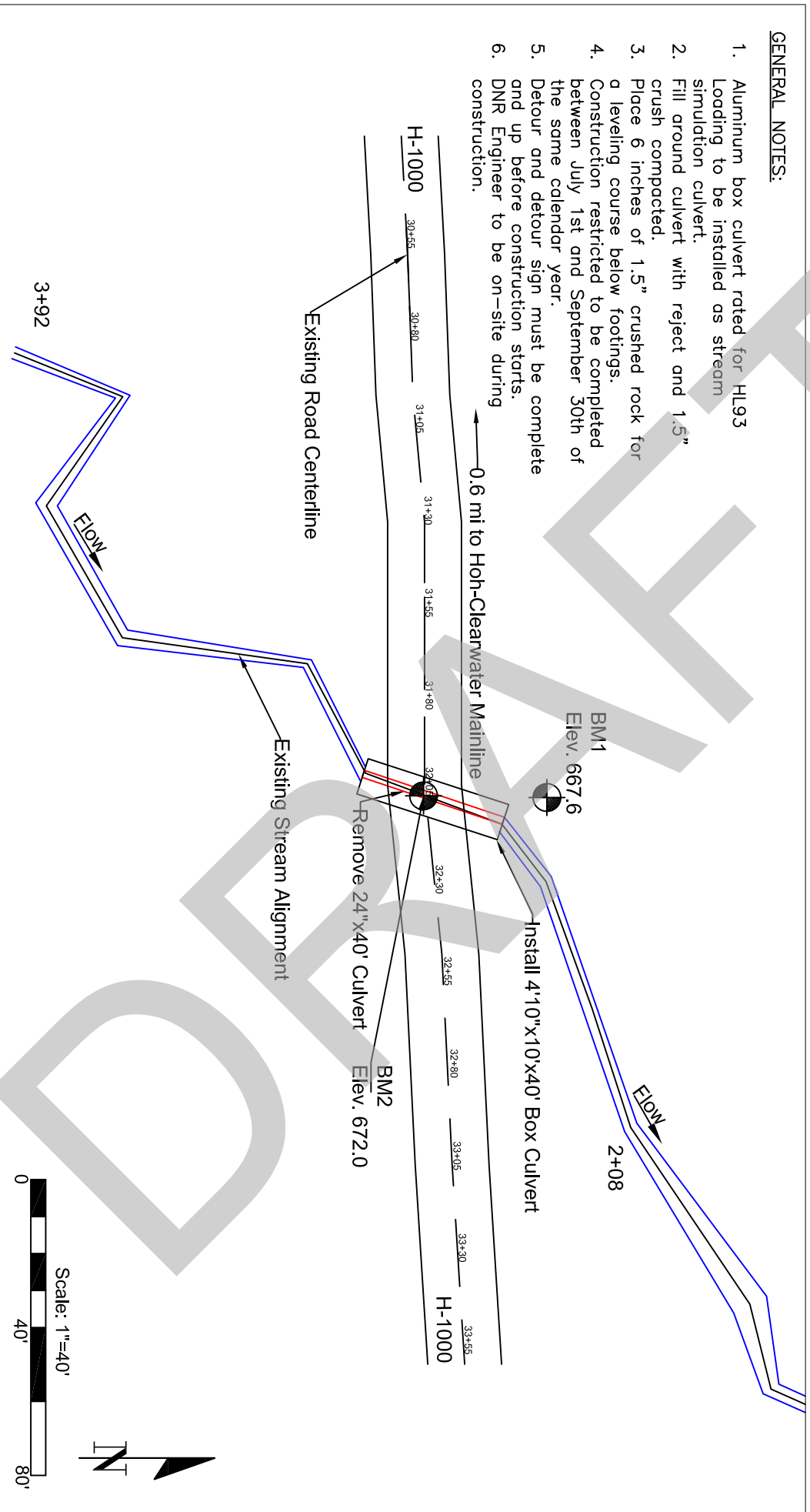
Remove fallen timber, limbs, and stumps from the slopes, roadway, ditchlines, and culvert inlets.



Barred Entry Fish Pipe Install Sta 32+05 Plan View

GENERAL NOTES:

1. Aluminum box culvert rated for HL93 Loading to be installed as stream simulation culvert.
2. Fill around culvert with reject and 1.5" crush compacted.
3. Place 6 inches of 1.5" crushed rock for a leveling course below footings.
4. Construction restricted to be completed between July 1st and September 30th of the same calendar year.
5. Detour and detour sign must be complete and up before construction starts.
6. DNR Engineer to be on-site during construction.

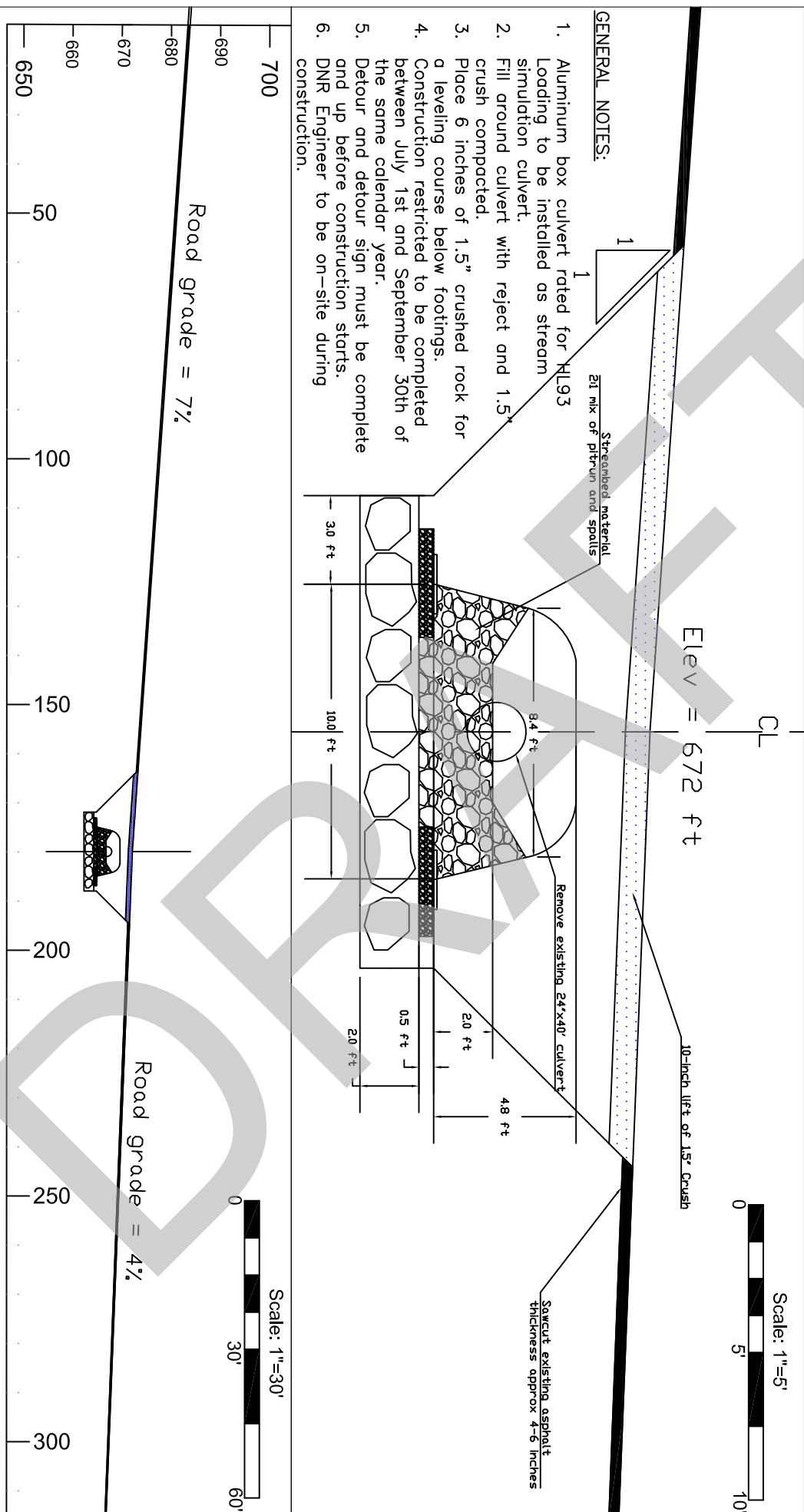


Location:	124112582W, 47772521N
T66R11V5ec11	Drawn by: Malja Griffin
Average Channel Bed Width of 5 ft	Crossing 1



FIGURE 1 of 3
Date Drawn: 01/22/2024

Barred Entry Fish Pipe Install Cross-Section View

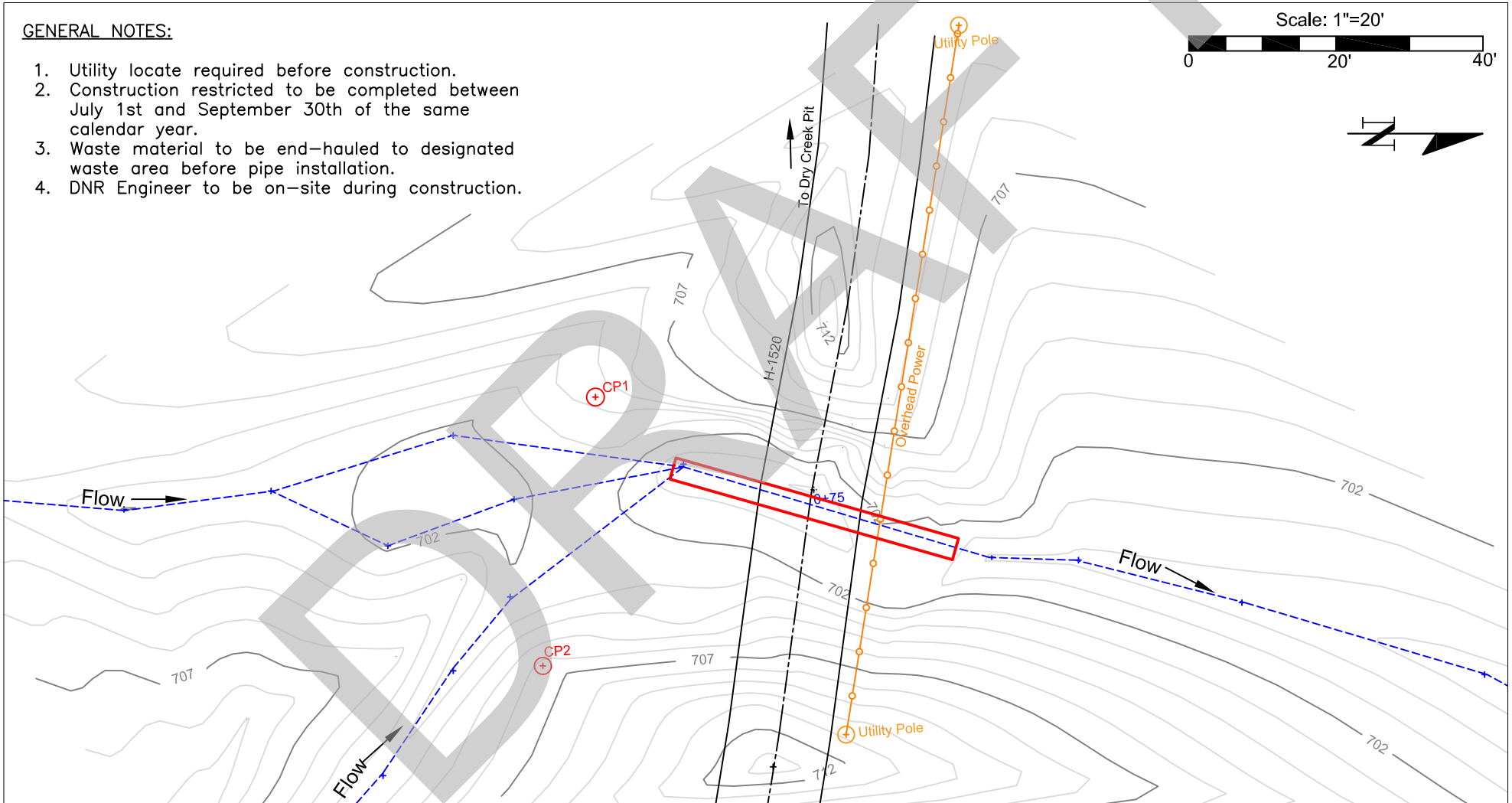
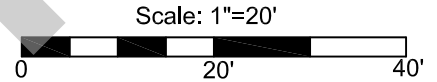


Location: T24112528W_47725251N T26811VSec11 Average Channel Bed Width of 5 ft	Drawn by: Malia Griffithen Crossing CI	<p>WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES</p>	<p>FIGURE 2 of 3</p> <p>Date Drawn: 01/22/2024</p>

Barred Entry Dry Creek Temporary Crossing Plan View

GENERAL NOTES:

1. Utility locate required before construction.
2. Construction restricted to be completed between July 1st and September 30th of the same calendar year.
3. Waste material to be end-hauled to designated waste area before pipe installation.
4. DNR Engineer to be on-site during construction.

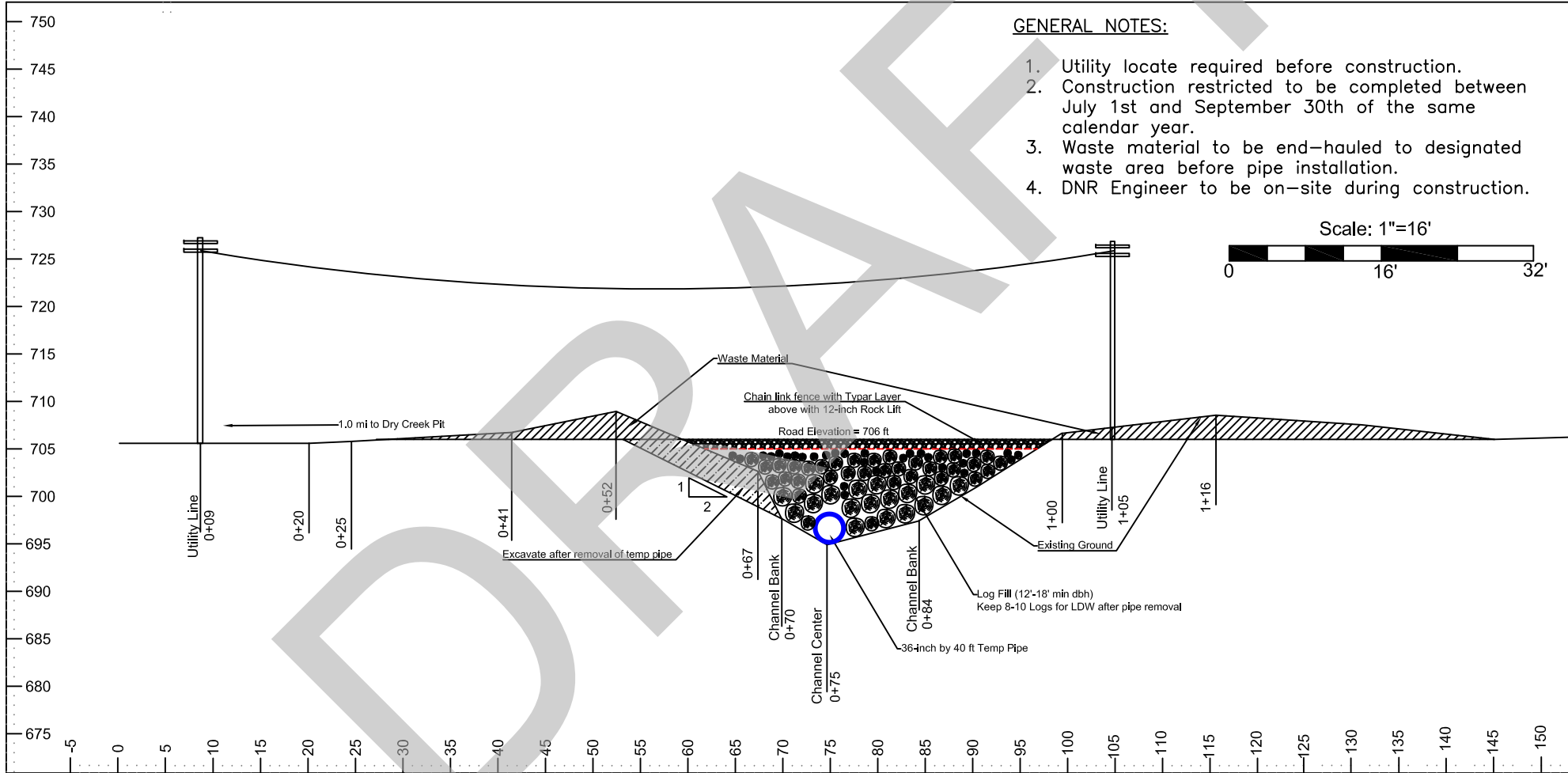


Location:	124.1056813W, 47.766942N
Average Channel Bed Width of:	6 ft
Contract No.:	30-105801
No changes to road or stream alignment	

Drawn by:	Malja Griffioen
Crossing C3	



Barred Entry Dry Creek Temporary Crossing Cross-Section View

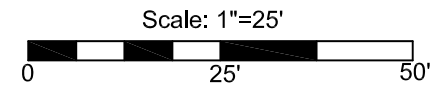
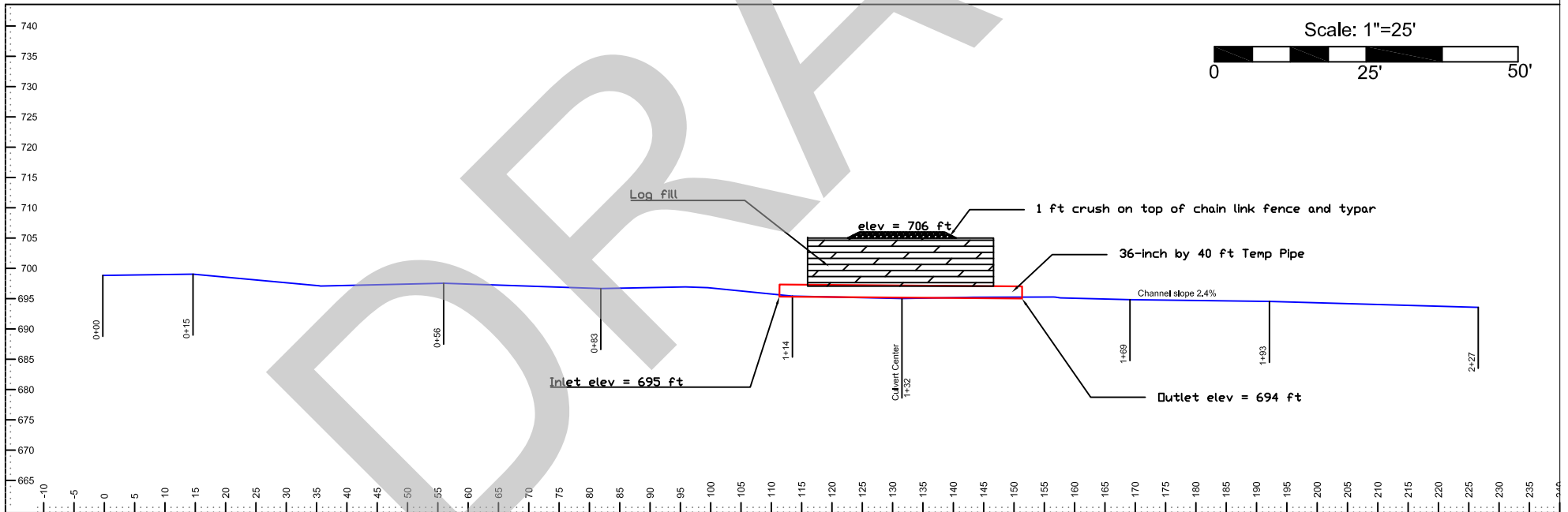


Location:	
124.1056813W, 47.766942N	Drawn by: Malja Griffioen
T26R11WSec10	
Average Channel Bank Width:	Crossing C3
No changes to channel plan sheet	

Barred Entry Dry Creek Temporary Crossing Profile View

GENERAL NOTES:

1. Utility locate required before construction.
2. Construction restricted to be completed between July 1st and September 30th of the same calendar year.
3. Waste material to be end-hauled to designated waste area before pipe installation.
4. DNR Engineer to be on-site during construction.

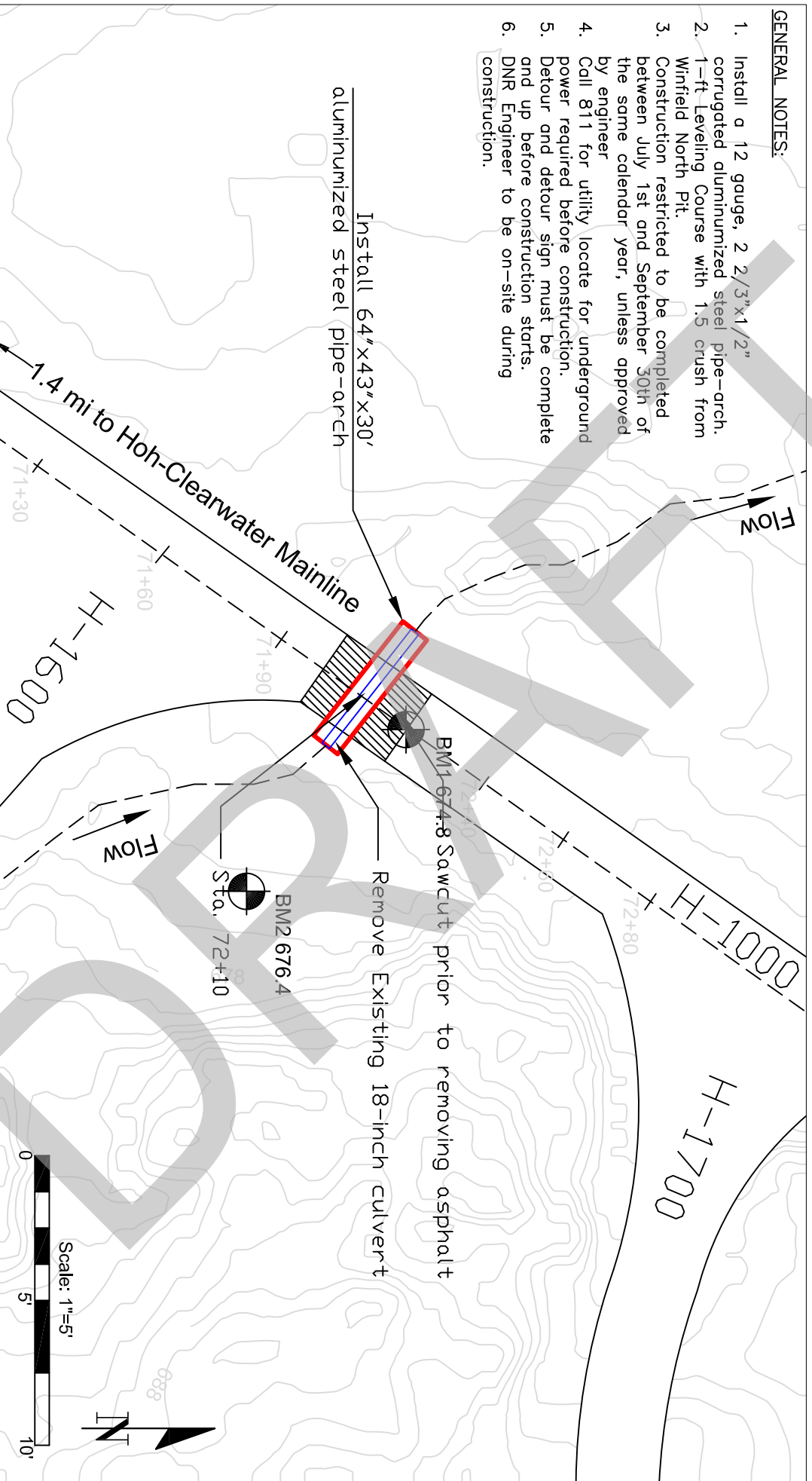



Location: 124.1056813W, 47.766942N	Drawn by: Malja Griffioen
T26R11WSec10 Barred Entry Timber Sale	
Average Channel Bed Width of 6 ft	Crossing C3
No changes to road or stream alignment	



Barred Entry Sta 72+10 Culvert Install Plan View

- GENERAL NOTES:**
1. Install a 12 gauge, 2 2/3"x1/2" corrugated aluminumized steel pipe-arch.
 2. 1-ft Leveling Course with 1.5 crush from Winfield North Pit.
 3. Construction restricted to be completed between July 1st and September 30th of the same calendar year, unless approved by engineer
 4. Call 811 for utility locate for underground power required before construction.
 5. Detour and detour sign must be complete and up before construction starts.
 6. DNR Engineer to be on-site during construction.



Location: 124.0975085V, 47.7724982N	Drawn by: Malja Griffioen	 <p>WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES</p>
726R11V/Sec11	Crossing: C2	
Q100 = 38 cfs Max Culvert Capacity = 70 cfs		

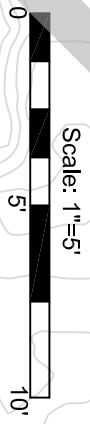
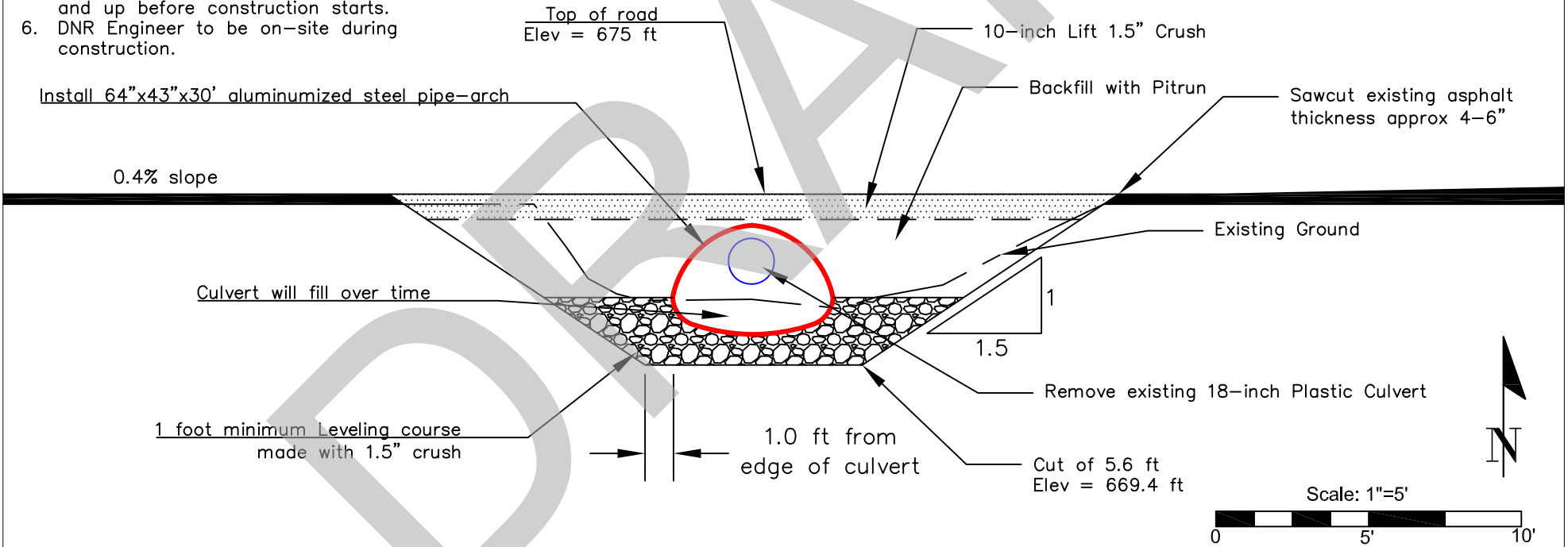



FIGURE 1 of 3
Date Drawn: 02/15/2024

Barred Entry Sta 72+10 Culvert Install Cross-Section View

GENERAL NOTES:

1. Install a 12 gauge, 2 2/3"x1/2" corrugated aluminumized steel pipe-arch.
2. 1-ft Leveling Course with 1.5 crush from Winfield North Pit.
3. Construction restricted to be completed between July 1st and September 30th of the same calendar year, unless approved by engineer
4. Call 811 for utility locate for underground power required before construction.
5. Detour and detour sign must be complete and up before construction starts.
6. DNR Engineer to be on-site during construction.

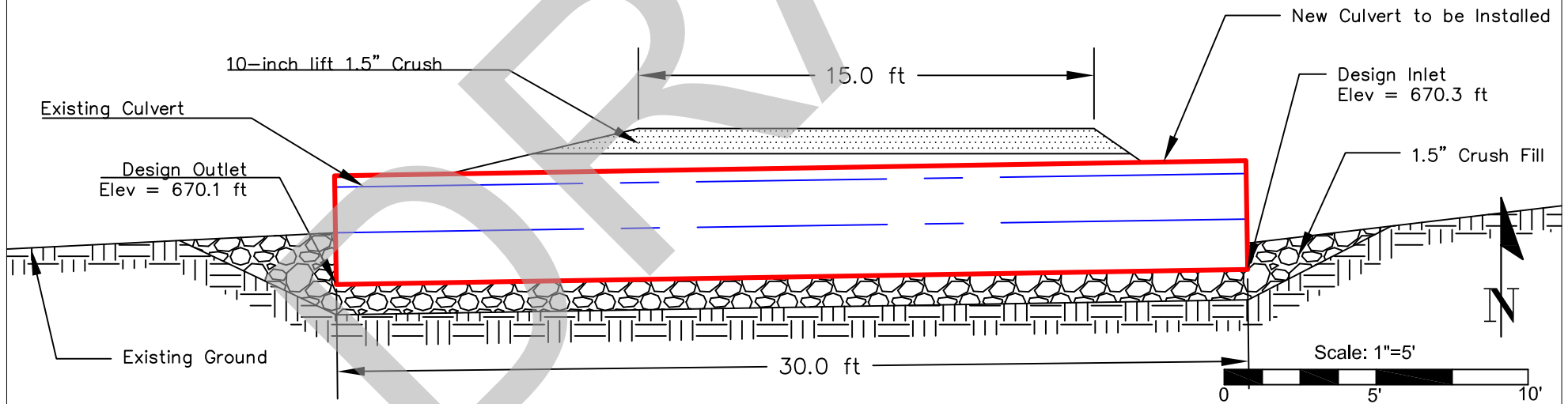
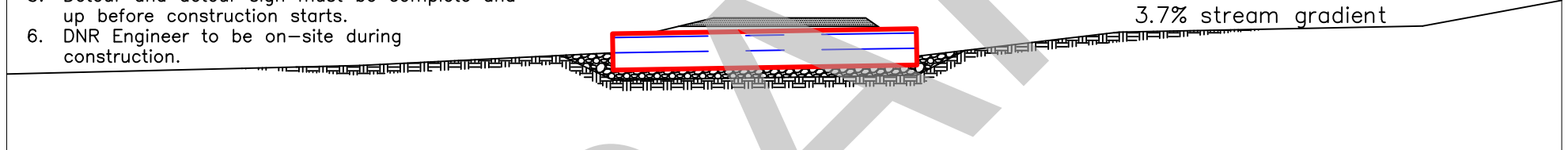
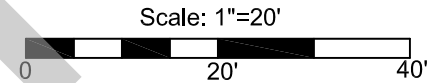


Location: 124.0975085W, 47.7724982N	Drawn by: Majja Griffioen	 WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES	FIGURE 2 of 3 Date Drawn: 02/15/2024
T26R11WSec11	Looking Downstream		
Q100 = 38 cfs			
Max Culvert Capacity = 70 cfs	Crossing C2		

Barred Entry Sta 72+10 Culvert Install Stream Profile View

GENERAL NOTES:

1. Install a 12 gauge, 2 2/3"x1/2" corrugated aluminumized steel pipe-arch.
2. 1-ft Leveling Course with 1.5 crush from Winfield North Pit.
3. Construction restricted to be completed between July 1st and September 30th of the same calendar year, unless approved by engineer.
4. Call 811 for utility locate for underground power required before construction.
5. Detour and detour sign must be complete and up before construction starts.
6. DNR Engineer to be on-site during construction.



Location:	
T24.0975085W, 47.7724982N	Drawn by: Maija Griffioen
T26R11WSec11	
Q100 = 38 cfs	Crossing C2
Max Culvert Capacity = 70 cfs	





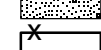


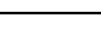


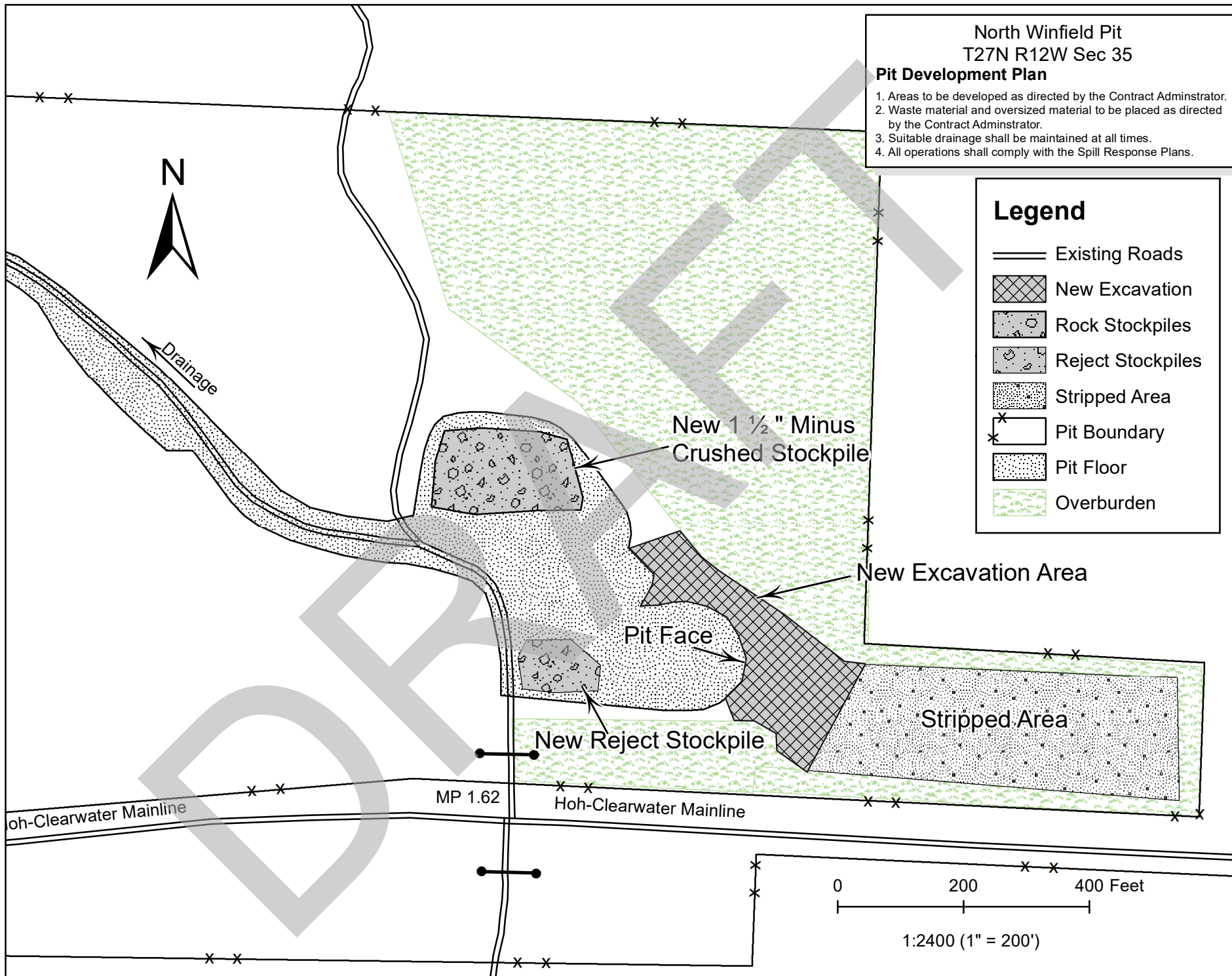
FIGURE 3 of 3
Date Drawn: 02/15/2024
Revised May 2024

North Winfield Pit
T27N R12W Sec 35
Pit Development Plan

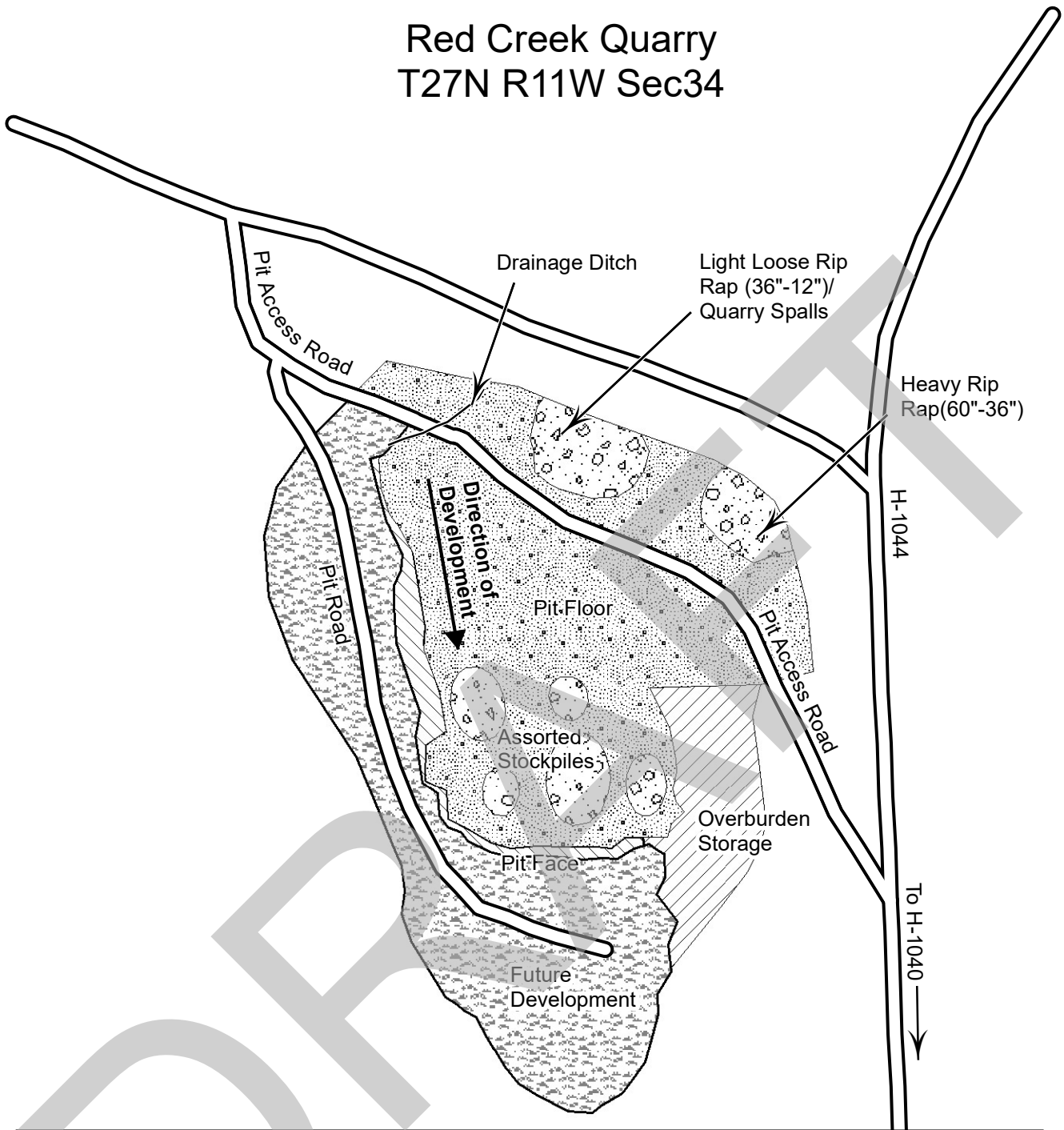
1. Areas to be developed as directed by the Contract Administrator.
2. Waste material and oversized material to be placed as directed by the Contract Administrator.
3. Suitable drainage shall be maintained at all times.
4. All operations shall comply with the Spill Response Plans.

Legend

-  Existing Roads
-  New Excavation
-  Rock Stockpiles
-  Reject Stockpiles
-  Stripped Area
-  Pit Boundary
-  Pit Floor
-  Overburden

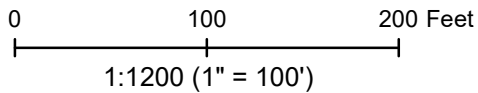


Red Creek Quarry T27N R11W Sec34



Rock Source Development Plan

1. Areas to be developed as directed by the Contract Administrator.
2. Waste material and oversize material shall be placed as directed by the Contract Administrator.
3. Suitable drainage shall be maintained at all times.
4. Pit floor shall slope down 2% toward pit entrance.
5. Removal from existing stockpiles shall be as directed by the Contract Administrator.



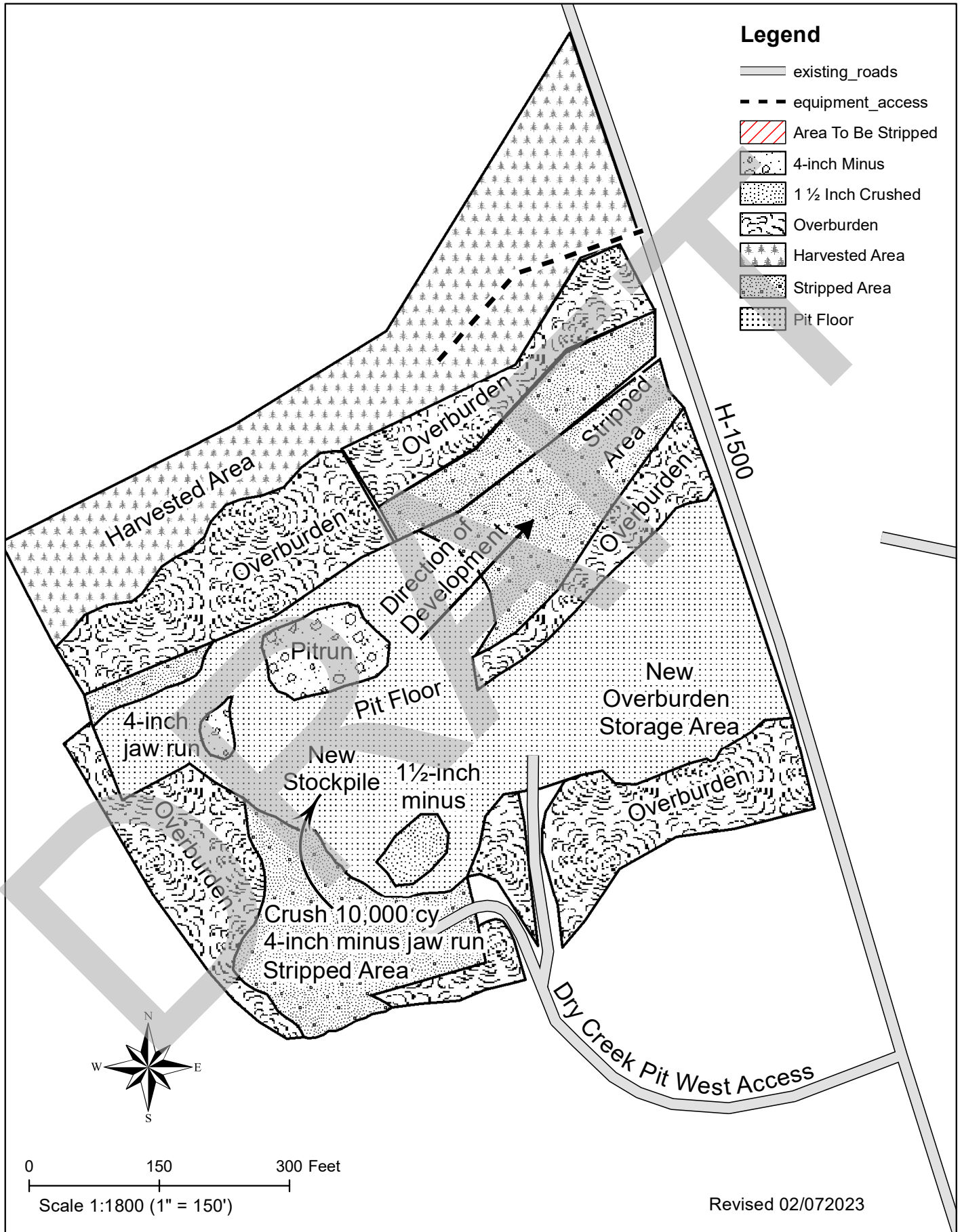
Legend

- Pit Access Road
- Stockpiles
- Pit Face
- Overburden Storage
- Unsorted Stockpile
- Future Development
- Pit Floor



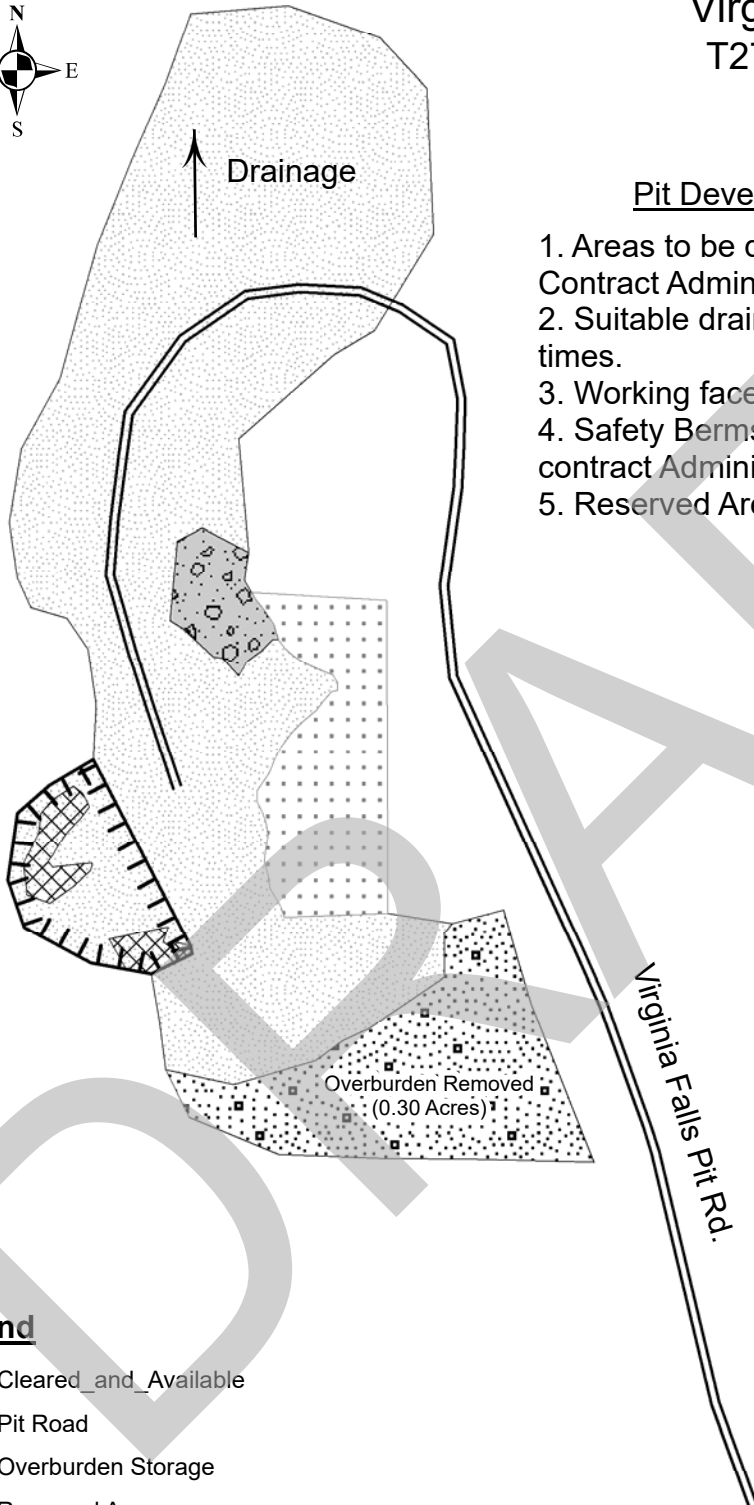
Dry Creek Pit Plan

Sec.15, T26N, R11W



Virginia Fall Pit Plan

T27N R10W Sec. 32

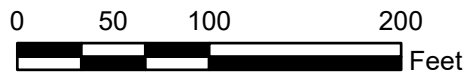


Pit Development Plan

1. Areas to be developed as directed by the Contract Administrator.
2. Suitable drainage shall be maintained at all times.
3. Working face height shall not exceed 15 feet.
4. Safety Berms shall be installed as directed by contract Administrator.
5. Reserved Area shall not be used.

Legend

- Cleared and Available
- Pit Road
- Overburden Storage
- Reserved Area
- Waste Piles
- Drain Rock
- Pit Floor



1:1200 (1"=100')

K. Wyatt 12/2020