WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES

TIMBER NOTICE OF SALE

***SALE NAME**: SHIFT THE PARADIGM* ***AGREEMENT NO**: 30-107760*

AUCTION: December 19, 2024 starting at 10:00 a.m., Pacific Pacific Cascade Region Office, Castle Rock, WA **COUNTY:**

SALE LOCATION: Sale located approximately 20 miles east of Raymond, WA

PRODUCTS SOLD AND SALE AREA: All timber, except leave trees bound by yellow "Leave Tree Area" tags, leave trees marked with blue paint, and all down timber existing 10 years prior to the day of sale, all timber 60 inches DBH and larger, and snags bound by the following;

Unit 1, white "Timber Sale Boundary" tags and pink flagging;

Unit 2, white "Timber Sale Boundary" tags and pink flagging and the HM 2010 rd;

Unit 3, white "Timber Sale Boundary" tags and pink flagging and the HM 2000 rd;

Unit 4 (ROW), orange "Right of Way" tags and orange flagging;

All forest products above located on part(s) of Sections 29, 32 and 33 all in Township 13 North, Range 6 West, W.M., containing 114 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:

	Avg	Ring	Total	MBF by Grade								
Species	DBH	Count	MBF	1P	2P	3P	SM	1S	2S	3S	4S	UT
Douglas fir	27	8	7,359			439	596		5,648	572	84	20
Hemlock	16.4		425						270	115	36	4
Red alder	14.5		376						134	74	166	2
Redcedar	19.2		228							196	31	1
Spruce	45		14						14			
Maple	17.6		11						2	3	6	
Sale Total			8,413									

MINIMUM BID: $2,800,000.00 **BID METHOD:** Sealed Bids

PERFORMANCE SECURITY: $100,000.00 **SALE TYPE:** Lump Sum

EXPIRATION DATE: October 31, 2026 **ALLOCATION:** Export Restricted

BID DEPOSIT: $280,000.00 or Bid Bond. Said deposit shall constitute an opening bid at the appraised price.

HARVEST METHOD: Cable, Cable-Assist, Shovel, and Track skidder. This sale is estimated to be 40 percent ground based harvest and 60 percent cable harvest.

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ROADS: 13.70 stations of required construction. 66.03 stations of optional construction. 427.50 stations of required prehaul maintenance.

Rock used in accordance with the quantities on the ROCK LIST may be obtained from the P&E Extension Quarry located in Section 29, T13N, R6W, W.M. on state land at no charge to the Purchaser.

Rock used in accordance with the quantities on the ROCK LIST may be obtained from the P&E Quarry stockpile in Section 29, T13N, R6W, W.M. on state land at no charge to the Purchaser.

Rock used in accordance with the quantities on the ROCK LIST may be obtained from any commercial source at the Purchaser's expense.

Purchaser shall conduct rock source development and use at the P&E Extension Quarry located in Section 29, T13N, R6W, W.M., in accordance with the written ROCK SOURCE DEVELOPMENT PLAN prepared by the state and included in this road plan. The hauling of forest products will not be permitted from November 1 to April 30 unless authorized in writing by the Contract Administrator.

ACREAGE DETERMINATION

CRUISE METHOD: The sale acres were determined by GPS. The sale area was cruised using a variable plot cruise method.

FEES: $143,000.00 is due on day of sale. $9.00 per MBF is due upon removal. These are in addition to the bid price.

SPECIAL REMARKS: Estimated 439 MBF of Peeler Grade DF, 596 MBF SM DF, 102 MBF of DF Poles, 322 MBF HQ 2 Saw DF, 61 MBF HQ 3 Saw DF. See cruise for further details.

12+62 Stations total of full bench end haul. See road plan for further details.

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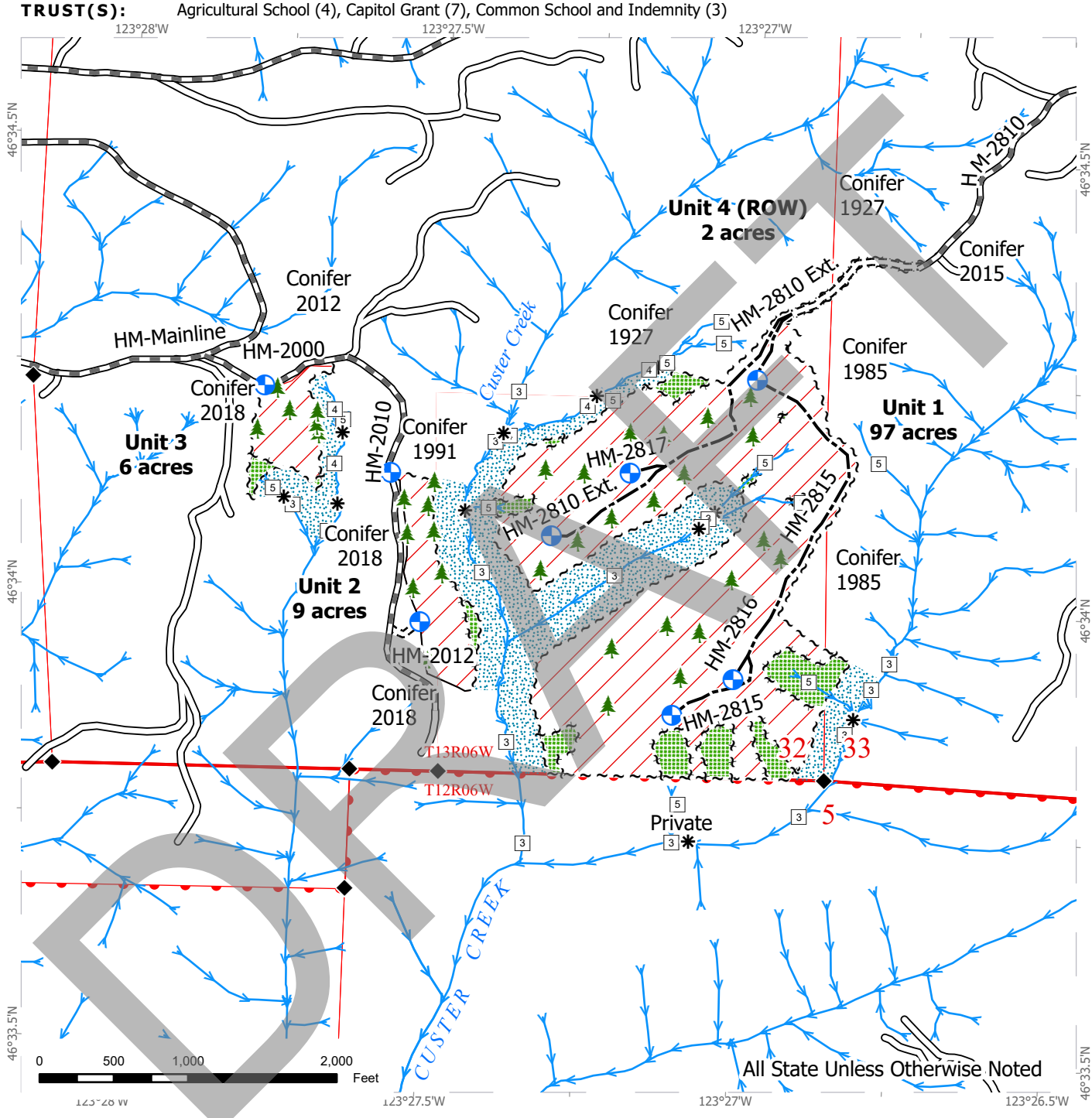
TIMBER SALE MAP

SALE NAME: SHIFT THE PARADIGM
AGREEMENT#: 30-107760
TOWNSHIP(S): T13R6W
TRUST(S): Agricultural School (4), Capitol Grant (7), Common School and Indemnity (3)

REGION: Pacific Cascade Region
COUNTY(S): Pacific
ELEVATION RGE: 640-1160



- Variable Retention Harvest
- Right-of-Way Harvest
- Leave Tree Area
- Special Mgt Area
- Riparian Mgt Zone
- Sale Boundary Tags
- Leave Tree Tags
- Right of Way Tags
- Timber Type Change
- Existing Roads
- Required Pre-Haul Maintenance
- Required Construction
- Optional Construction
- Streams
- Stream Type
- Stream Break
- Leave Tree Area <1/4-acre
- Landing - Proposed
- Survey Monument

N

Prepared By: rfra490
Accessed: 10/01/2024 14:51

Modification Date: rfra490 8/27/2024

DRIVING MAP

SALE NAME: SHIFT THE PARADIGM
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TRUST(S): Agricultural School (4), Capitol Grant (7), Common School and Indemnity (3)

REGION: Pacific Cascade Region
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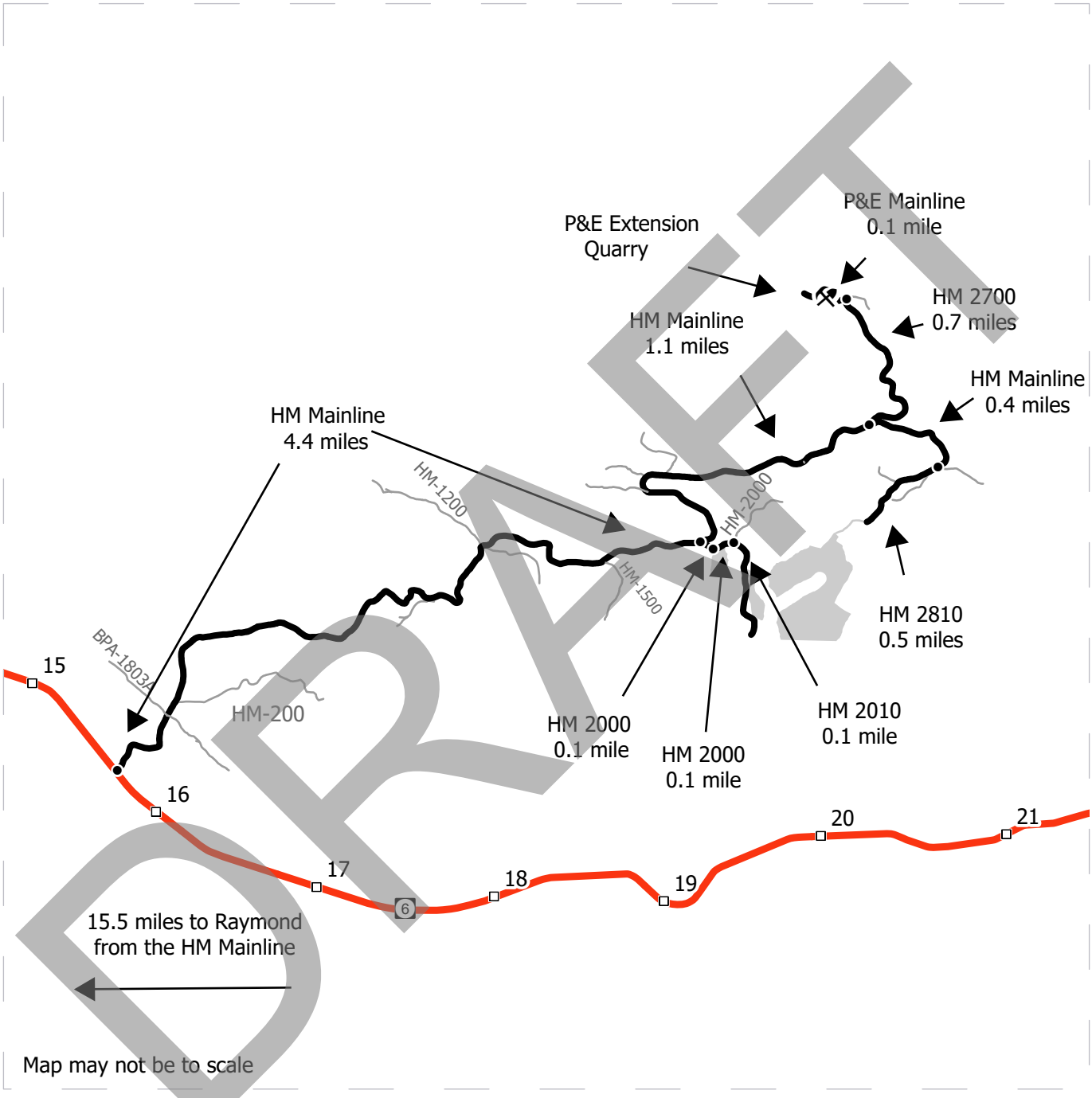

- Harvest Unit
- Highway
- Haul Route
- Other Route
- Milepost Marker
- Distance Indicator
- Rock Pit

DRIVING DIRECTIONS:

Units: Between Mile Marker 15 and 16 on State Route 6, turn onto the HM-ML. Continue on the HM ML 4.4 miles to the HM 2000. Take the HM 2000 0.1 miles to Unit 3, continue another 0.1 miles to the HM 2010. Take the HM 2010 0.1 miles to Unit 2. To Unit 4 ROW and Unit 1, continue 1.1 miles on the HM ML from the HM ML and HM 2000 intersection to the HM 2700. Continue on the HM ML for 0.4 miles to the HM 2810. Continue on the HM 2810 for 0.5 miles to Unit 4 ROW which will lead you to Unit 1.
Rock Quarries: From the intersection of the HM ML and the HM 2700. Take the HM 2700 for 0.7 miles to the P and E ML. Take the P and E ML for 0.1 miles to the P and E Extension Quarry.

N

Prepared By: rfra490
Accessed: 10/01/2024 14:51

Modification Date: rfra490 8/27/2024

Timber Sale Cruise Report
Shift The Paradigm

Sale Name: SHIFT THE PARADIGM

Sale Type: LUMP SUM

Region: PACIFIC CASC

District: LEWIS

Lead Cruiser: Dillon Adair

Other Cruisers: Dylan Buchanan , Blake Warnstadt

Cruise Narrative:
Location: Shift the Paradigm is located approximately 2 miles northeast of Frances. It can be accessed from the HM mainline located between mile marker 15 and 16 on highway 6 east of Raymond. Continue on the HM mainline about 4 and a half miles to the HM 2000. Unit 3 is located about 0.1 miles down the HM 2000. Continue past Unit 3 another 0.1 miles down to the HM 2010. Take the HM 2010 another 0.1 miles to reach unit 2. Continue past the HM 2000 on the HM mainline about 1 and a half miles to the HM 2810. Continue down the 2810 another half mile and you will reach unit 4 ROW that will take you to unit 1.

Cruise Design: Units 1, 2, and 3 were cruised using variable radius plots with a 62.5 BAF, while unit 4 ROW was cruised using a fixed 1/20th acre plot radius. Sight height is 4.5 feet for all units. Unit 1 was cruised using a 2:1 count to measure plot ratio, while units 2, 3, and 4 had all plots measured. Trees were measured with a 40' preferred log length for conifers and 30' for hardwoods. Boles heights were measured using a 40% break point of the diameter at 16'.

Timber Quality: Shift the Paradigm is DF dominated with a good amount of high quality A and B mixed with the domestic logs. There are minimal DF poles available. Big trees, high quality lower logs with some oversized branching and small epicormic branching in middle logs. Conks on a few live DF stems were observed in the sale. A secondary component of WH, RC and RA, with a trace amount of MA and SS. Average DBHs for this sale are: DF 27", WH 16.4", RA 14.5", RC 19.2", SS 45", and MA 17.6".

Unit 1 has a 2-3 acre area in the northeast part of the stand that consists of younger age timber. The southeast part of the stand around the leave tree areas consist heavily of RC and RA.

Unit 2 Cedar has heavy branching but low defect. Heavy blowdown around plots 4, 5, and 6. There is a trace amount of WH and SS but it is not represented in unit 2 data.

Unit 4 ROW is similar in age and structure to the rest of the sale but has about 1/4 acre of younger timber included at the north end.

Logging and Stand Conditions: Consists of moderately steep sloped ground with some lightly steep areas. Estimated to be logged using 40% ground based logging and 60% uphill cable.

General Remarks:

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Timber Sale Notice Volume (MBF)

				MBF Volume by Grade						
Sp	DBH	Rings/In	Age	All	Peeler	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	27.0	8.5		7,359	439	596	5,648	572	84	20
WH	16.4			424			270	115	36	4
RA	14.5			376			134	74	166	2
RC	19.2			228				196	31	1
SS	45.0			14			14			
MA	17.6			11			2	3	6	
ALL	21.3	8.5		8,412	439	596	6,067	960	323	27

Timber Sale Notice Weight (tons)

	Tons by Grade						
Sp	All	Peeler	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	43,893	2,307	3,344	32,423	4,890	781	149
WH	3,545			1,927	1,193	393	32
RA	3,146			948	613	1,574	12
RC	2,081				1,726	343	12
MA	179			49	54	76	
SS	97			97			
ALL	52,942	2,307	3,344	35,443	8,477	3,167	204

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 (%)
343.5	3.9	214.6	2.8	73,788	4.7

Timber Sale Unit Cruise Design

Unit	Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
SHIFT THE PARADIGM U1	B1C: VR, 1 BAF (62.5) Measure/ Count Plots, Sighting Ht = 4.5 ft	97.0	106.0	96	38	1
SHIFT THE PARADIGM U2	B1: VR, 1 BAF (62.5) Measure All, Sighting Ht = 4.5 ft	9.0	9.4	9	9	0
SHIFT THE PARADIGM U3	B1: VR, 1 BAF (62.5) Measure All, Sighting Ht = 4.5 ft	6.0	6.7	5	5	0
SHIFT THE PARADIGM U4	FX: FR plots (20 tree / acre expansion)	2.0	1.4	3	3	0

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Unit	Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
All		114.0	123.5	113	55	1

Timber Sale Log Grade x Sort Summary

Sp	Status	Grade	Sort	Dia	Len	BF Gross	BF Net	Defect %	Tons	MBF Net
DF	LIVE	2 SAW	Domestic	18.7	40	47,623	45,843	3.7	29,892.4	5,226.1
DF	LIVE	2 SAW	HQ-A	19.2	40	847	828	2.1	576.8	94.4
DF	LIVE	2 SAW	HQ-B	18.5	40	2,046	1,993	2.6	1,299.5	227.3
DF	LIVE	2 SAW	Pole	16.4	40	919	879	4.4	654.3	100.2
DF	LIVE	3 PEELER	Domestic	26.8	40	3,851	3,851	0.0	2,306.6	439.0
DF	LIVE	3 SAW	Domestic	9.8	36	4,625	4,468	3.4	4,382.6	509.3
DF	LIVE	3 SAW	HQ-B	9.8	40	545	536	1.7	487.9	61.1
DF	LIVE	3 SAW	Pole	7.0	40	15	14	6.9	19.6	1.6
DF	LIVE	4 SAW	Domestic	5.9	30	793	741	6.5	780.6	84.5
DF	LIVE	CULL	Cull	10.3	7	369	0	100.0	0.0	0.0
DF	LIVE	SPECIAL MILL	HQ-A	20.6	40	5,307	5,225	1.5	3,344.0	595.7
DF	LIVE	UTILITY	Pulp	7.7	13	189	175	7.2	148.8	20.0
MA	LIVE	2 SAW	Domestic	16.2	30	43	15	65.0	48.5	1.7
MA	LIVE	3 SAW	Domestic	10.6	40	33	28	15.0	54.3	3.2
MA	LIVE	4 SAW	Domestic	5.0	29	55	51	8.5	76.2	5.8
MA	LIVE	CULL	Cull	8.0	3	1	0	100.0	0.0	0.0
RA	LIVE	2 SAW	Domestic	13.5	30	1,251	1,173	6.2	947.6	133.7
RA	LIVE	3 SAW	Domestic	10.8	31	807	650	19.4	613.2	74.1
RA	LIVE	4 SAW	Domestic	6.1	28	1,528	1,458	4.6	1,573.7	166.2
RA	LIVE	CULL	Cull	10.0	4	47	0	100.0	0.0	0.0
RA	LIVE	UTILITY	Pulp	5.0	13	18	18	0.0	12.0	2.0
RC	LIVE	3 SAW	Domestic	11.0	39	1,805	1,719	4.8	1,725.7	196.0
RC	LIVE	4 SAW	Domestic	5.2	30	279	269	3.5	343.2	30.7
RC	LIVE	CULL	Cull	6.5	4	21	0	100.0	0.0	0.0
RC	LIVE	UTILITY	Pulp	6.8	14	11	11	0.0	11.6	1.2
SS	LIVE	2 SAW	Domestic	24.5	40	168	120	28.1	97.4	13.7
SS	LIVE	CULL	Cull	14.5	1	0	0	100.0	0.0	0.0
WH	LIVE	2 SAW	Domestic	16.3	40	2,424	2,364	2.5	1,926.8	269.5
WH	LIVE	3 SAW	Domestic	8.9	39	1,073	1,007	6.2	1,193.2	114.8
WH	LIVE	4 SAW	Domestic	5.3	27	316	314	0.7	393.2	35.7
WH	LIVE	CULL	Cull	6.3	7	33	0	100.0	0.0	0.0
WH	LIVE	UTILITY	Pulp	5.9	12	45	37	17.2	32.1	4.3

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Timber Sale Log Sort x Diameter Bin Summary

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	5 - 7	LIVE	Domestic	5.7	33	864	5.1	922.8	98.5
DF	5 - 7	LIVE	Pulp	5.7	13	62	2.0	53.4	7.0
DF	5 - 7	LIVE	Cull	6.6	6	0	100.0	0.0	0.0
DF	5 - 7	LIVE	Pole	7.0	40	14	6.9	19.6	1.6
DF	8 - 11	LIVE	Pulp	9.4	14	80	11.5	69.8	9.2
DF	8 - 11	LIVE	Domestic	9.9	35	4,219	3.5	4,146.6	481.0
DF	8 - 11	LIVE	Cull	10.1	6	0	100.0	0.0	0.0
DF	8 - 11	LIVE	HQ-B	10.3	40	536	1.7	487.9	61.1
DF	12 - 15	LIVE	Cull	12.9	6	0	100.0	0.0	0.0
DF	12 - 15	LIVE	Pulp	12.9	14	33	5.3	25.6	3.8
DF	12 - 15	LIVE	HQ-A	13.7	40	264	0.0	209.8	30.1
DF	12 - 15	LIVE	Domestic	13.8	39	7,289	2.7	5,886.7	831.0
DF	12 - 15	LIVE	Pole	14.2	40	421	8.7	348.9	48.0
DF	12 - 15	LIVE	HQ-B	15.0	40	377	0.0	257.3	43.0
DF	16 - 19	LIVE	HQ-B	16.9	40	484	3.1	327.9	55.2
DF	16 - 19	LIVE	Domestic	17.9	40	9,594	3.9	6,251.9	1,093.7
DF	16 - 19	LIVE	HQ-A	18.1	40	1,525	1.4	1,038.7	173.9
DF	16 - 19	LIVE	Pole	19.0	40	458	0.0	305.5	52.3
DF	20+	LIVE	Cull	22.4	20	0	100.0	0.0	0.0
DF	20+	LIVE	HQ-A	22.8	40	4,265	1.8	2,672.3	486.2
DF	20+	LIVE	HQ-B	23.7	40	1,132	3.2	714.3	129.1
DF	20+	LIVE	Domestic	24.2	40	32,937	3.5	20,154.2	3,754.9
MA	5 - 7	LIVE	Domestic	5.2	28	51	8.5	76.2	5.8
MA	8 - 11	LIVE	Cull	8.0	3	0	100.0	0.0	0.0
MA	8 - 11	LIVE	Domestic	10.6	40	28	15.0	54.3	3.2
MA	16 - 19	LIVE	Domestic	16.2	30	15	65.0	48.5	1.7
RA	5 - 7	LIVE	Pulp	5.0	13	18	0.0	12.0	2.0
RA	5 - 7	LIVE	Cull	5.2	3	0	100.0	0.0	0.0
RA	5 - 7	LIVE	Domestic	5.5	28	1,007	4.3	1,098.0	114.8
RA	8 - 11	LIVE	Cull	9.0	5	0	100.0	0.0	0.0
RA	8 - 11	LIVE	Domestic	9.9	31	1,101	14.1	1,088.9	125.5
RA	12 - 15	LIVE	Domestic	13.3	30	984	4.0	799.3	112.2
RA	16 - 19	LIVE	Domestic	18.1	30	77	0.0	49.6	8.8
RA	20+	LIVE	Cull	20.3	5	0	100.0	0.0	0.0
RA	20+	LIVE	Domestic	22.6	34	112	25.1	98.7	12.7
RC	5 - 7	LIVE	Domestic	5.5	32	408	3.6	568.9	46.5
RC	5 - 7	LIVE	Cull	5.6	4	0	100.0	0.0	0.0

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Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
RC	5 - 7	LIVE	Pulp	6.8	14	11	0.0	11.6	1.2
RC	8 - 11	LIVE	Domestic	9.4	39	397	1.6	508.6	45.2
RC	8 - 11	LIVE	Cull	9.6	4	0	100.0	0.0	0.0
RC	12 - 15	LIVE	Domestic	13.7	40	402	5.8	409.8	45.9
RC	16 - 19	LIVE	Domestic	18.5	40	337	2.0	232.0	38.4
RC	20+	LIVE	Domestic	23.7	40	444	8.8	349.6	50.6
SS	12 - 15	LIVE	Cull	14.5	1	0	100.0	0.0	0.0
SS	12 - 15	LIVE	Domestic	15.1	40	12	34.9	14.3	1.3
SS	20+	LIVE	Domestic	29.3	40	109	27.3	83.1	12.4
WH	5 - 7	LIVE	Pulp	5.0	13	28	6.5	24.4	3.2
WH	5 - 7	LIVE	Domestic	5.6	30	463	2.4	615.5	52.8
WH	5 - 7	LIVE	Cull	6.1	6	0	100.0	0.0	0.0
WH	8 - 11	LIVE	Pulp	8.6	12	0	100.0	0.0	0.0
WH	8 - 11	LIVE	Domestic	9.3	39	857	6.2	970.8	97.7
WH	8 - 11	LIVE	Cull	11.8	9	0	100.0	0.0	0.0
WH	12 - 15	LIVE	Pulp	12.2	13	10	0.0	7.7	1.1
WH	12 - 15	LIVE	Domestic	13.8	40	864	3.4	819.6	98.5
WH	16 - 19	LIVE	Domestic	17.5	40	658	3.5	543.6	75.0
WH	20+	LIVE	Domestic	24.7	40	843	0.6	563.5	96.1

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Cruise Unit Report
SHIFT THE PARADIGM U1

Unit Sale Notice Volume (MBF): SHIFT THE PARADIGM U1

				MBF Volume by Grade						
Sp	DBH	Rings/In	Age	All	Peeler	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	26.9	8.5		6,195	326	521	4,803	454	77	15
WH	16.4			421			270	113	34	4
RA	13.6			316			95	65	154	2
RC	20.7			147				137	10	
SS	45.0			14			14			
MA	14.8			9				3	5	
ALL	21.0	8.5		7,102	326	521	5,181	773	280	21

Unit Cruise Design: SHIFT THE PARADIGM U1

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (62.5) Measure/Count Plots, Sighting Ht = 4.5 ft	97.0	106.0	96	38	1

Unit Cruise Summary: SHIFT THE PARADIGM U1

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	136	381	4.0	2
WH	21	45	0.5	0
RA	26	55	0.6	0
RC	18	31	0.3	0
SS	1	1	0.0	0
MA	3	4	0.0	0
ALL	205	517	5.4	2

Unit Cruise Statistics: SHIFT THE PARADIGM U1

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
DF	248.0	68.3	7.0	257.5	25.6	2.2	63,870	73.0	7.3
WH	29.3	195.7	20.0	148.2	54.0	11.8	4,342	203.0	23.2
RA	35.8	205.3	21.0	90.9	34.6	6.8	3,254	208.3	22.0
RC	20.2	248.1	25.3	75.3	67.8	16.0	1,519	257.2	29.9
SS	0.7	979.8	100.0	217.5	0.0	0.0	142	979.8	100.0

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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 (%)
MA	2.6	482.1	49.2	34.0	15.5	8.9	88	482.3	50.0
ALL	336.6	40.7	4.2	217.5	45.0	3.1	73,215	60.7	5.2

Unit Summary: SHIFT THE PARADIGM U1

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	136	ALL	26.9	101	133	66,480	63,870	3.9	62.9	248.0	47.8	6,195.4
MA	LIVE	CUT	3	ALL	14.8	31	38	99	88	10.6	2.2	2.6	0.7	8.6
RA	LIVE	CUT	26	ALL	13.6	49	61	3,649	3,254	10.8	35.5	35.8	9.7	315.6
RC	LIVE	CUT	18	ALL	20.7	48	59	1,610	1,519	5.7	8.6	20.2	4.4	147.3
SS	LIVE	CUT	1	ALL	45.0	125	162	197	142	28.3	0.1	0.7	0.1	13.7
WH	LIVE	CUT	21	ALL	16.4	57	74	4,540	4,342	4.4	20.0	29.3	7.2	421.2
ALL	LIVE	CUT	205	ALL	21.9	75	98	76,576	73,215	4.4	129.3	336.6	70.0	7,101.9
ALL	ALL	CUT	205	ALL	21.9	75	98	76,576	73,215	4.4	129.3	336.6	70.0	7,101.9

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Cruise Unit Report
SHIFT THE PARADIGM U2

Unit Sale Notice Volume (MBF): SHIFT THE PARADIGM U2

				MBF Volume by Grade					
Sp	DBH	Rings/In	Age	All	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	26.7			499	38	399	55	5	2
RA	18.7			35		25	3	6	
RC	14.5			32			18	13	1
ALL	21.4			566	38	424	76	25	3

Unit Cruise Design: SHIFT THE PARADIGM U2

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1: VR, 1 BAF (62.5) Measure All, Sighting Ht = 4.5 ft	9.0	9.4	9	9	0

Unit Cruise Summary: SHIFT THE PARADIGM U2

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	31	36	4.0	0
RA	4	4	0.4	0
RC	10	10	1.1	0
ALL	45	50	5.6	0

Unit Cruise Statistics: SHIFT THE PARADIGM 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	250.0	83.9	28.0	221.6	29.5	5.3	55,411	88.9	28.4
RA	27.8	163.5	54.5	138.4	17.3	8.6	3,843	164.4	55.2
RC	69.4	105.0	35.0	51.7	37.3	11.8	3,589	111.4	36.9
ALL	347.2	54.1	18.0	181.0	50.3	7.5	62,844	73.9	19.5

Unit Summary: SHIFT THE PARADIGM U2

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	31	ALL	26.7	96	122	57,948	55,411	4.4	64.3	250.0	48.4	498.7
RA	LIVE	CUT	4	ALL	18.7	69	83	3,911	3,843	1.7	14.6	27.8	6.4	34.6

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Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
RC	LIVE	CUT	10	ALL	14.5	39	51	3,681	3,589	2.5	60.6	69.4	18.2	32.3
ALL	LIVE	CUT	45	ALL	21.4	68	87	65,540	62,844	4.1	139.5	347.2	73.0	565.6
ALL	ALL	CUT	45	ALL	21.4	68	87	65,540	62,844	4.1	139.5	347.2	73.0	565.6

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Cruise Unit Report
SHIFT THE PARADIGM U3

Unit Sale Notice Volume (MBF): SHIFT THE PARADIGM U3

				MBF Volume by Grade						
Sp	DBH	Rings/In	Age	All	Peeler	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	28.6			566	113	24	384	40	1	4
RC	17.7			48				41	7	
RA	20.5			23			13	6	4	
MA	29.0			2			2		0	
ALL	24.8			639	113	24	399	87	12	4

Unit Cruise Design: SHIFT THE PARADIGM U3

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1: VR, 1 BAF (62.5) Measure All, Sighting Ht = 4.5 ft	6.0	6.7	5	5	0

Unit Cruise Summary: SHIFT THE PARADIGM U3

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	28	28	5.6	0
RC	6	6	1.2	0
RA	3	3	0.6	0
MA	1	1	0.2	0
ALL	38	38	7.6	0

Unit Cruise Statistics: SHIFT THE PARADIGM U3

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
DF	350.0	53.0	23.7	269.4	26.5	5.0	94,303	59.2	24.2
RC	75.0	108.7	48.6	107.1	41.9	17.1	8,031	116.5	51.5
RA	37.5	223.6	100.0	102.2	33.9	19.6	3,834	226.2	101.9
MA	12.5	223.6	100.0	28.1	0.0	0.0	352	223.6	100.0
ALL	475.0	23.9	10.7	224.3	44.8	7.3	106,520	50.7	12.9

DRAFT

Unit Summary: SHIFT THE PARADIGM U3

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	28	ALL	28.6	111	143	95,741	94,303	1.5	78.5	350.0	65.4	565.8
MA	LIVE	CUT	1	ALL	29.0	55	67	919	352	61.7	2.7	12.5	2.3	2.1
RA	LIVE	CUT	3	ALL	20.5	59	71	3,964	3,834	3.3	16.4	37.5	8.3	23.0
RC	LIVE	CUT	6	ALL	17.7	47	62	8,627	8,031	6.9	43.9	75.0	17.8	48.2
ALL	LIVE	CUT	38	ALL	24.8	84	108	109,251	106,520	2.5	141.5	475.0	93.9	639.1
ALL	ALL	CUT	38	ALL	24.8	84	108	109,251	106,520	2.5	141.5	475.0	93.9	639.1

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Accessed: 10/01/2024 14:51

Cruise Unit Report
SHIFT THE PARADIGM U4

Unit Sale Notice Volume (MBF): SHIFT THE PARADIGM U4

				MBF Volume by Grade					
Sp	DBH	Rings/In	Age	All	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	27.5	10.0		99	12	62	23	2	
WH	13.4			3			2	1	0
RA	12.0			3				3	
ALL	21.5	10.0		105	12	62	25	6	0

Unit Cruise Design: SHIFT THE PARADIGM U4

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
FX: FR plots (20 tree / acre expansion)	2.0	1.4	3	3	0

Unit Cruise Summary: SHIFT THE PARADIGM U4

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	8	8	2.7	1
WH	4	4	1.3	0
RA	4	4	1.3	0
ALL	16	16	5.3	1

Unit Cruise Statistics: SHIFT THE PARADIGM U4

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
DF	220.8	103.2	59.6	224.9	30.3	10.7	49,653	107.6	60.6
WH	26.0	91.1	52.6	60.0	40.5	20.3	1,560	99.7	56.4
RA	21.0	114.7	66.2	67.6	19.5	9.8	1,420	116.4	67.0
ALL	267.8	85.2	49.2	196.5	40.2	10.1	52,633	94.2	50.2

Unit Summary: SHIFT THE PARADIGM U4

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	8	ALL	27.5	97	125	53,993	49,653	8.0	53.5	220.8	42.1	99.3
RA	LIVE	CUT	4	ALL	12.0	46	59	1,540	1,420	7.8	26.8	21.0	6.1	2.8
WH	LIVE	CUT	4	ALL	13.4	40	50	1,600	1,560	2.5	26.5	26.0	7.1	3.1
ALL	LIVE	CUT	16	ALL	21.4	70	90	57,133	52,633	7.9	106.8	267.8	55.3	105.3

DRAFT

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
ALL	ALL	CUT	16	ALL	21.4	70	90	57,133	52,633	7.9	106.8	267.8	55.3	105.3

DRAFT

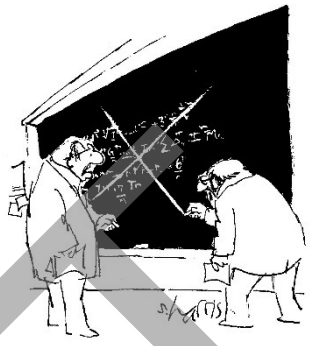
FPHP NEEDED (Y/N) N

Is abandonment of existing road required? (Y/N) N

PACIFIC CASCADE REGION - ENGINEERING

ROAD PLAN PEER REVIEW CHECKLIST

PROJECT: SHIFT THE PARADIGM



"That's it? That's peer review?"

This project has been reviewed for the following:

Initials:

____ ____ **CONTRACT CLAUSES –** Selection of proper clauses. Clauses adequately describe desired work. Clauses do not conflict with maps, details, pit plans, etc. Punctuation, syntax, grammar and organization is correct.

____ ____ **TYPICAL SECTION SHEET, ROCK LIST, & CULVERT LIST –** Sheets match clauses and maps. Requirements and quantities make sense. Rock List adds up correctly.

____ ____ **MAPS –** All roads listed in Section 1 are shown on maps. Maps identify locations of all culverts, landings, waste areas, endhaul/overhaul areas, etc. Legend, north arrow and scale are shown. Line types are easy to identify. Map is at a legible scale.

____ ____ **DETAIL SHEETS** – All detail sheets referred to in the clauses are included. Detail sheets have been edited as necessary.

____ ____ **PIT PLANS –** Selection of proper clauses. Map clearly shows all areas of development, wasting, stockpiling, reclamation, etc. Development plan appears logical for long term use of pit. Development plan allows for safe operation in the pit.

____ ____ **ROAD COST SPREADSHEET –**All cost elements captured. Material costs used are current. Summary cells are adding correctly. No conflicts exist between pages. Stationing, culverts and rock volume match the road plan.

____ ____ **EXCISE TAX SHEET** – Totals match road plan.

____ ____ **LOGGING PLAN –** Plan matches road plan clauses and maps.

I certify that I have reviewed this project for the elements initialed above and have found that it meets or exceeds Department and Regional Standards to the best of my knowledge.

GRANT GERRITSEN — Originator of Project — 07/02/2024 — Date

REVIEWED
By Rich Wallmow at 12:42 pm, Jul 17, 2024

Peer Reviewer — Date

Comments:

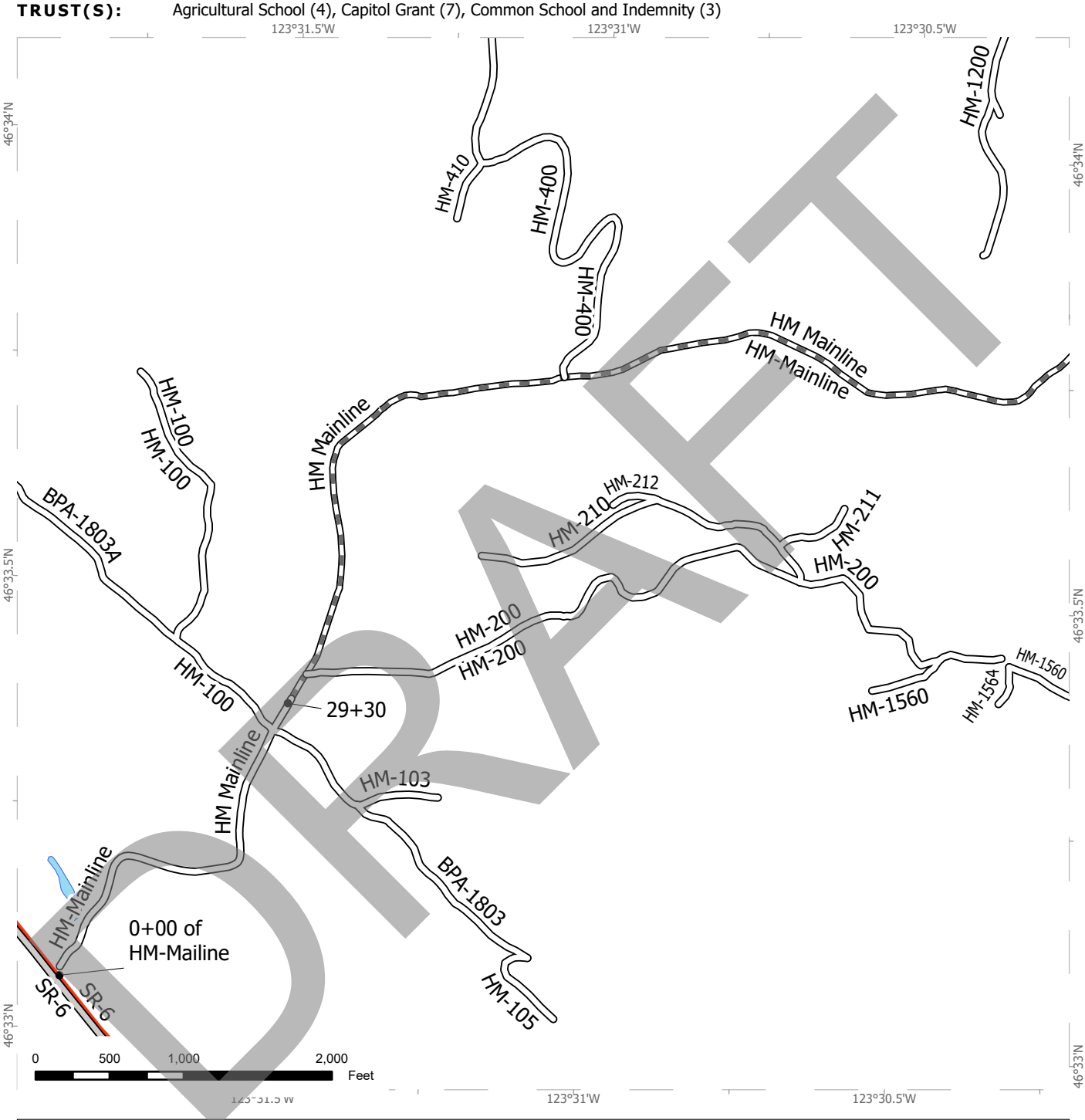
DRAFT

Accessed: 10/01/2024 14:51

ROAD PLAN MAP

SALE NAME: SHIFT THE PARADIGM
AGREEMENT#: 30-107760
TOWNSHIP(S): T13R6W
TRUST(S): Agricultural School (4), Capitol Grant (7), Common School and Indemnity (3)

REGION: Pacific Cascade Region
COUNTY(S): Pacific
ELEVATION RGE: 640-1160



County Road
Existing Roads
Required Pre-Haul Maintenance

N

Prepared By: accc490
Accessed: 10/01/2024 14:51

Modification Date: accc490 9/11/2024

ROAD PLAN MAP

SALE NAME: SHIFT THE PARADIGM
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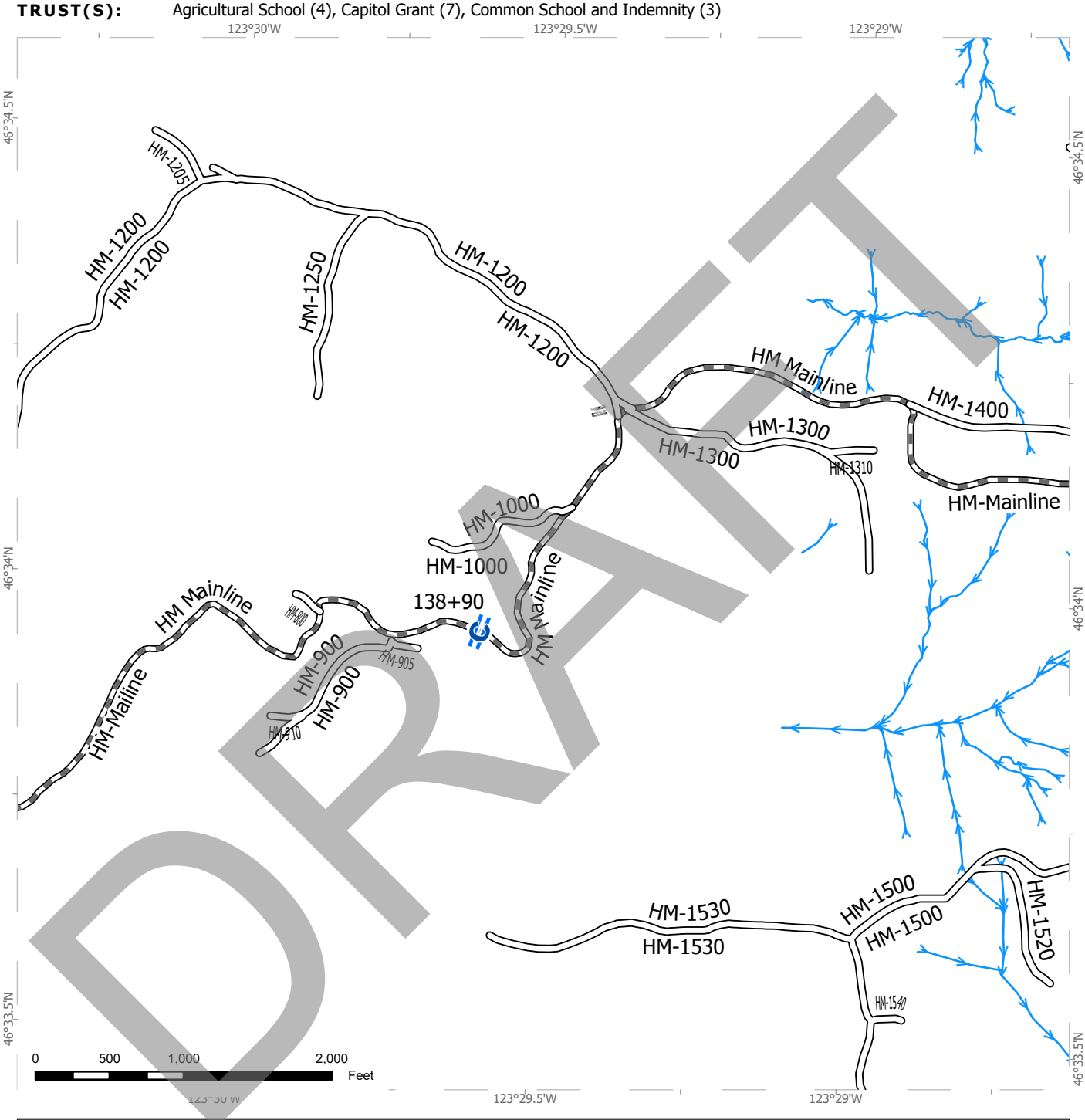

Existing Roads
Required Pre-Haul Maintenance
Crossdrain Culvert
Streams

N

Prepared By: accc490
Accessed: 10/01/2024 14:51

Modification Date: accc490 9/11/2024

ROAD PLAN MAP

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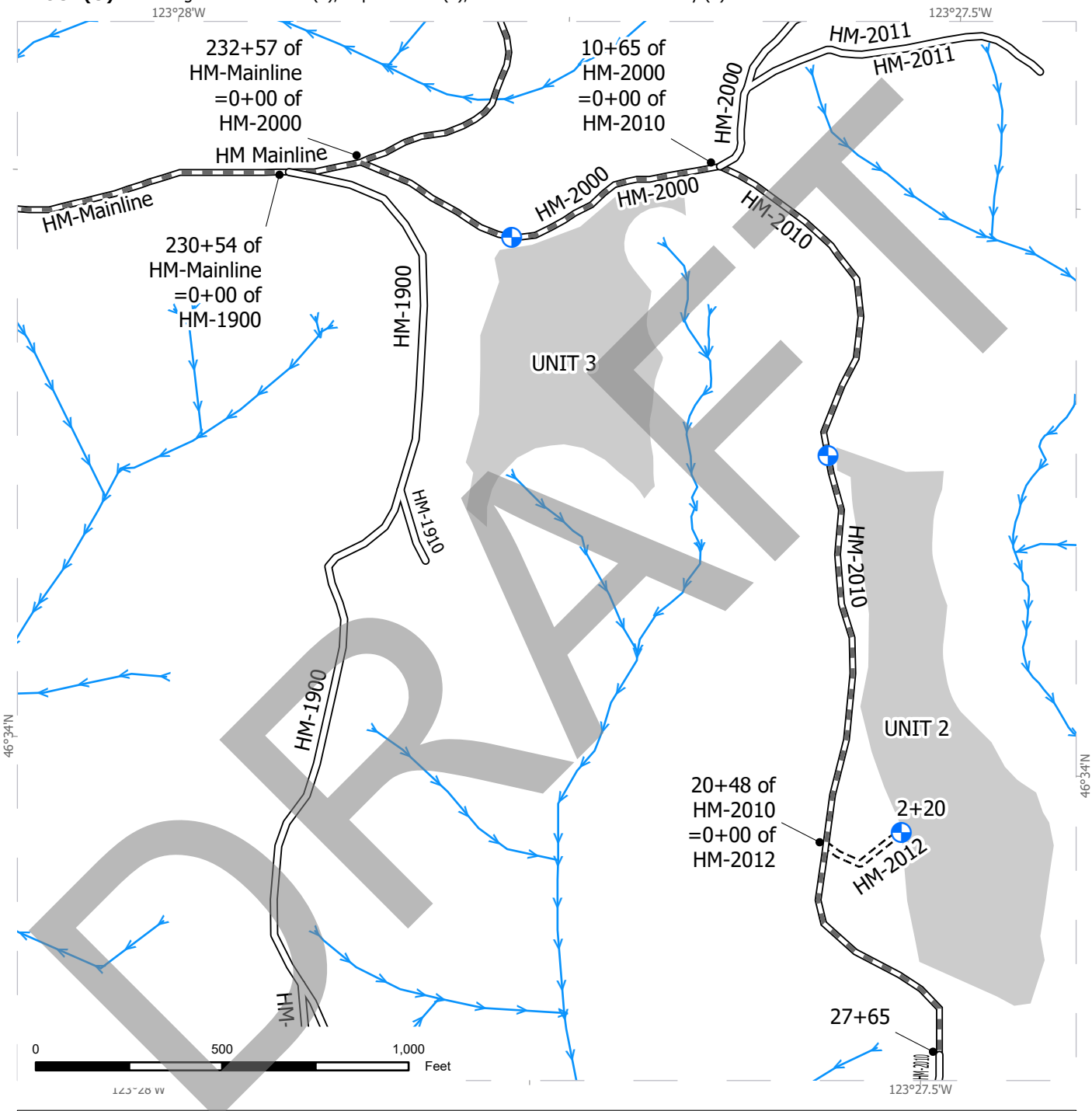

DRAFT

Existing Roads
Required Pre-Haul Maintenance
Required Construction
Landing - Proposed
Harvest Unit
Streams

N

Prepared By: accc490
Modification Date: accc490 9/11/2024
Accessed: 10/01/2024 14:51

ROAD PLAN MAP

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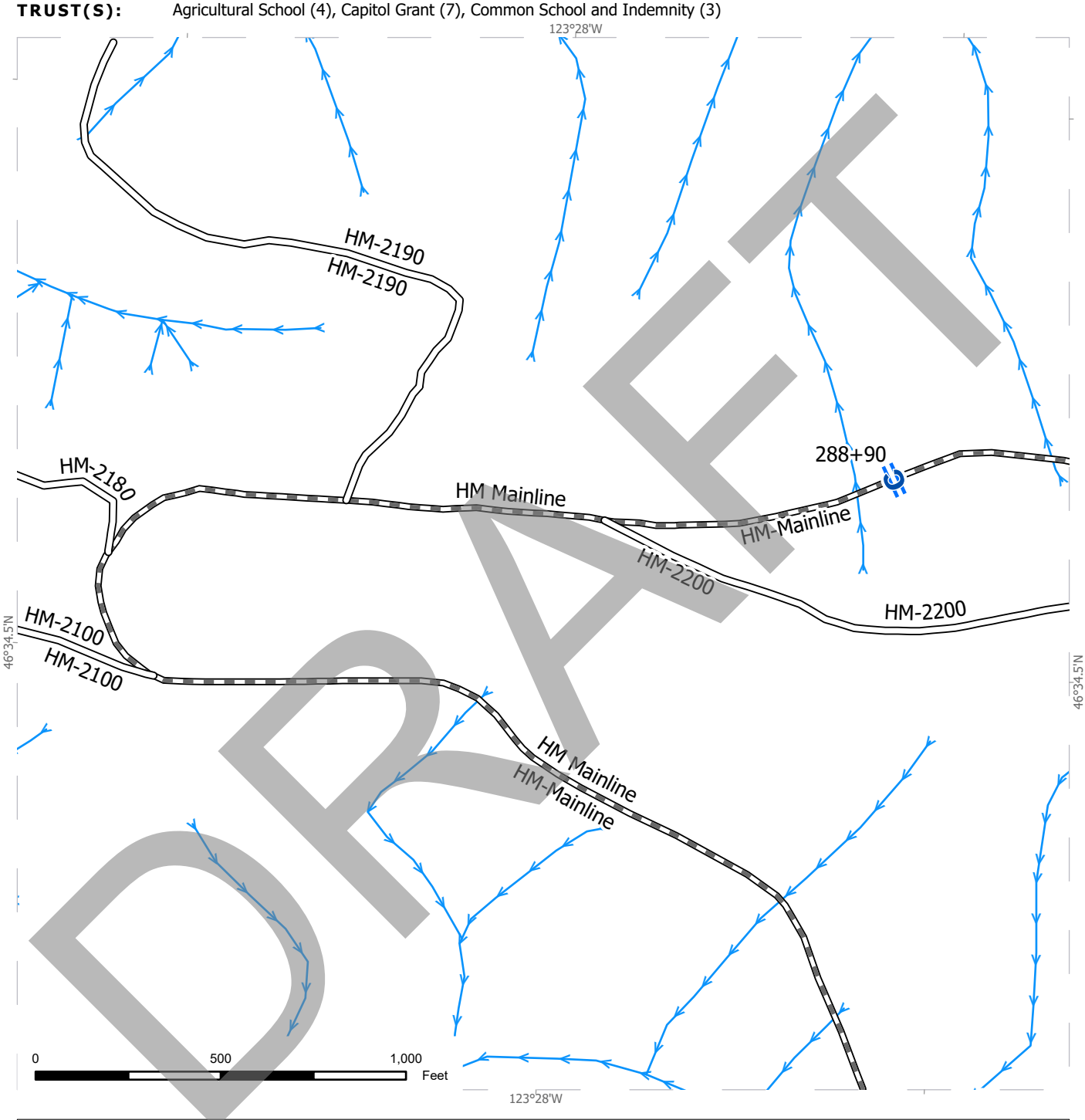

Existing Roads
Required Pre-Haul Maintenance
Crossdrain Culvert
Streams

N

Prepared By: accc490
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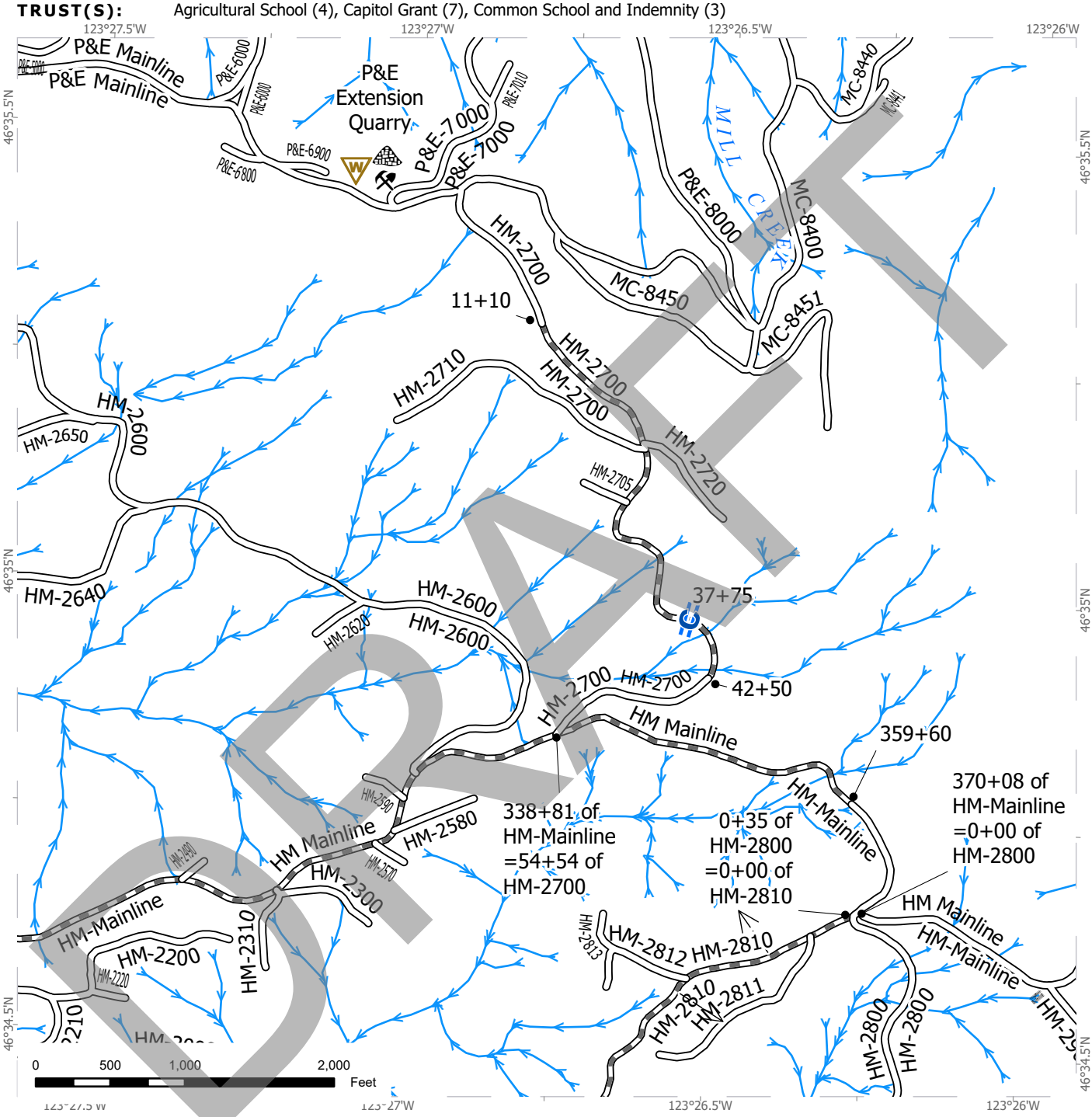

Existing Roads
Required Pre-Haul Maintenance
Rock Pit
Stockpile
Waste Area
Crossdrain Culvert
Ditchout
Streams

N

Prepared By: accc490
Accessed: 10/01/2024 14:51

Modification Date: accc490 9/11/2024

ROAD PLAN MAP

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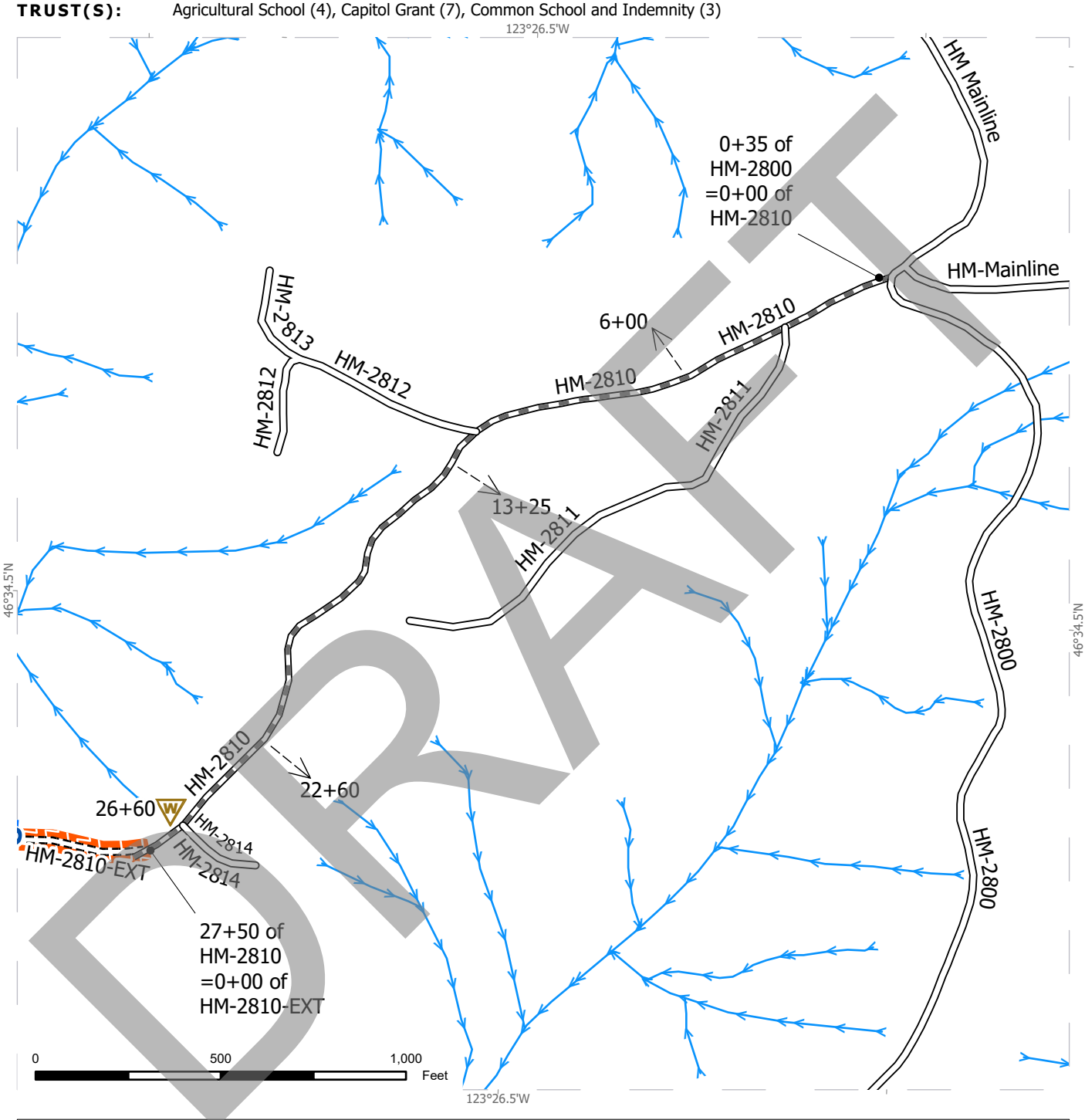

DRAFT

Existing Roads
Required Pre-Haul Maintenance
Required Construction
Waste Area
Crossdrain Culvert
Ditchout
Right-of-Way Harvest
Streams

N

Prepared By: accc490
Accessed: 10/01/2024 14:51

Modification Date: accc490 9/11/2024

ROAD PLAN MAP

SALE NAME: SHIFT THE PARADIGM
AGREEMENT#: 30-107760
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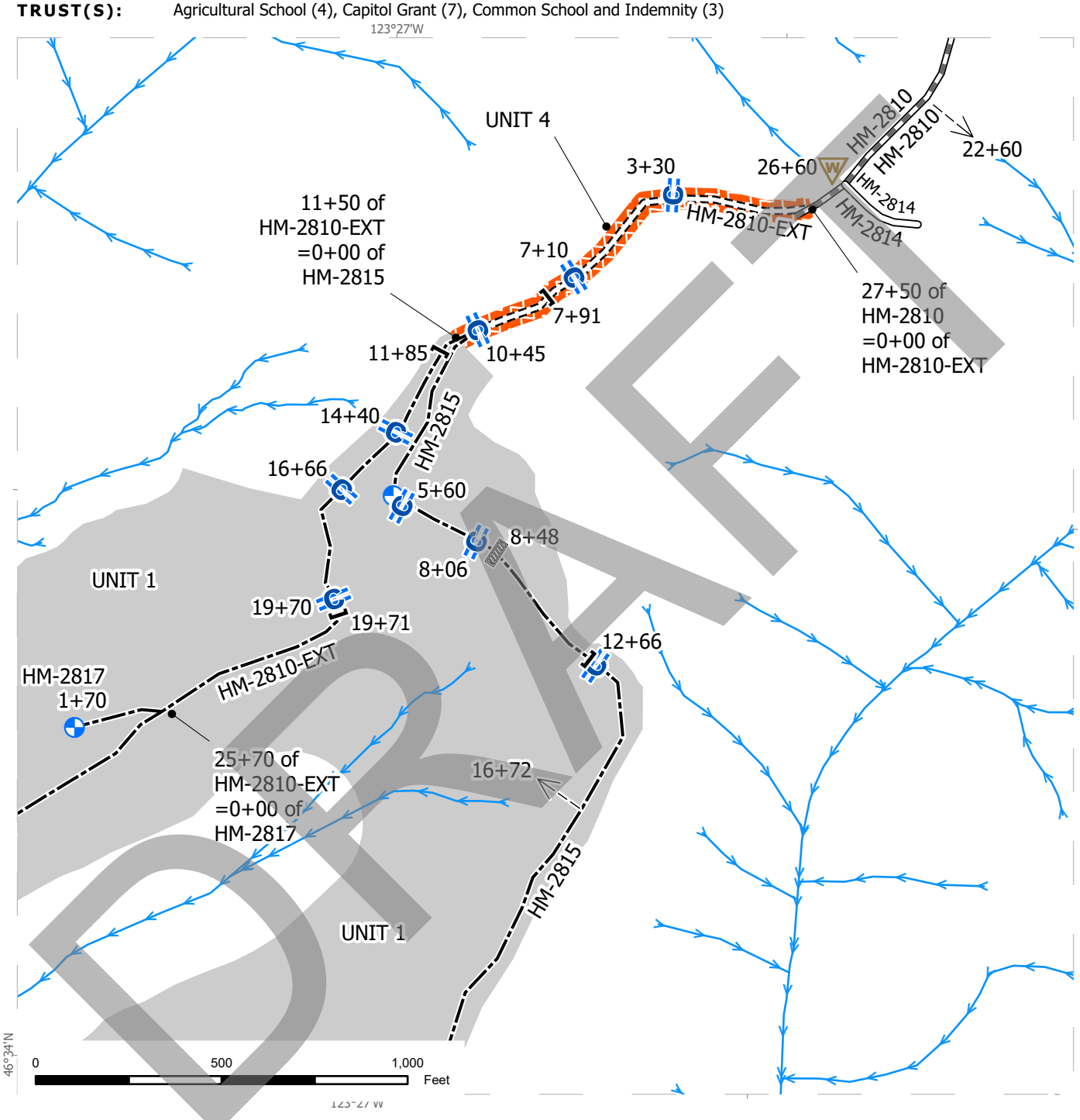

Existing Roads
Required Pre-Haul Maintenance
Required Construction
Optional Construction
Culvert
Landing - Proposed
Waste Area
Crossdrain Culvert
Ditchout
Full Bench Construction
Harvest Unit
Right-of-Way Harvest
Streams
N

Prepared By: accc490
Accessed: 10/01/2024 14:51

Modification Date: accc490 9/11/2024

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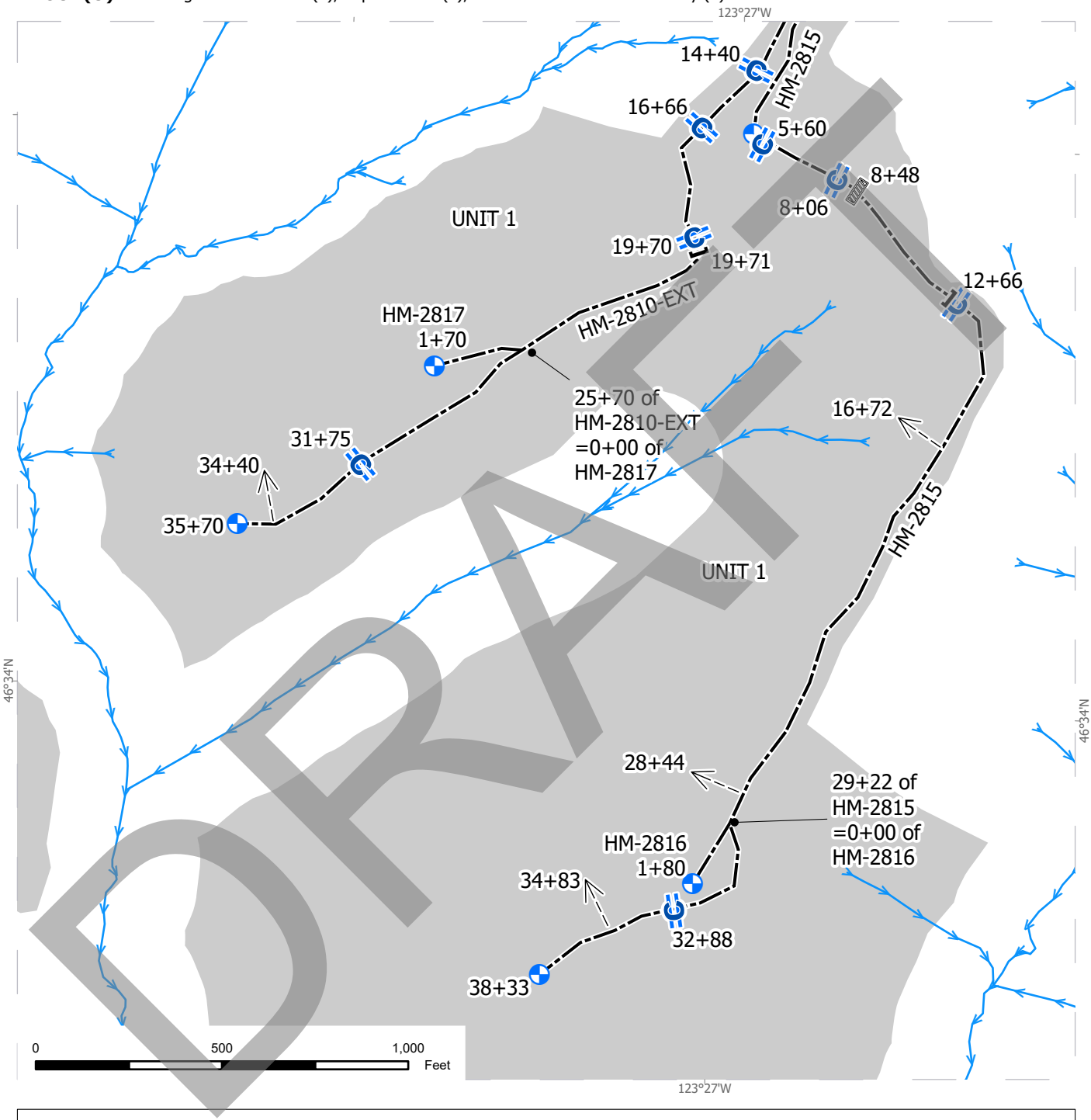

- Optional Construction
- Culvert
- Landing - Proposed
- Crossdrain Culvert
- Ditchout
- Full Bench Construction
- Harvest Unit
- Streams

N

Prepared By: accc490
Accessed: 10/01/2024 14:51

Modification Date: accc490 9/11/2024

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

SHIFT THE PARADIGM TIMBER SALE ROAD PLAN
PACIFIC COUNTY
LEWIS DISTRICT
PACIFIC CASCADE REGION

AGREEMENT NO.: 30-107760 STAFF ENGINEER: GRANT GERRITSEN

DRAWN & COMPILED BY: ALICIA COMPTON

SECTION 0 – SCOPE OF PROJECT

DRAFT

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.

Road	Stations	Type
HM-Mainline	29+30 to 359+60	Pre-Haul Maintenance
HM-2000	0+00 to 10+65	Pre-Haul Maintenance
HM-2010	0+00 to 27+65	Pre-Haul Maintenance
HM-2012	0+00 to 2+20	Construction
HM-2700	11+10 to 42+50	Pre-Haul Maintenance
HM-2810	0+00 to 27+50	Pre-Haul Maintenance
HM-2810-EXT	0+00 to 11+50	Construction

0-3 OPTIONAL ROADS

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

Road	Stations	Type
HM-2810-EXT	11+50 to 35+70	Construction
HM-2815	0+00 to 38+33	Construction
HM-2816	0+00 to 1+80	Construction
HM-2817	0+00 to 1+70	Construction

0-4 CONSTRUCTION

Construction includes, but is not limited to: clearing; grubbing; right-of-way debris disposal; excavation and/or embankment to and compaction of subgrade; construction and compaction of waste areas; end haul and compaction of waste; landing construction; acquisition and installation of drainage structures; manufacture, application and compaction of rock.

0-6 PRE-HAUL MAINTENANCE

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

Road	Stations	Requirements
HM-Mainline	29+30 to 359+60	Maintenance grading, clean culverts, install culverts, clean ditches, brushing, apply and compact rock
HM-2000	0+00 to 10+65	Maintenance grading, construct and reconstruct turnouts
HM-2010	0+00 to 27+65	Maintenance grading, clean culverts, apply and compact rock, construct ditchouts
HM-2700	11+10 to 42+50	Clean ditches, apply and compact rock
HM-2810	0+00 to 27+50	Maintenance grading, clean culverts, clean ditches, reconstruct turnarounds

0-7 POST-HAUL MAINTENANCE

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

0-12 DEVELOP ROCK SOURCE

Purchaser may develop an existing rock source. Rock source development will involve clearing, stripping, end haul and compaction of waste, drilling, shooting and manufacture of rock. Work for developing rock sources is listed in Section 6 ROCK AND SURFACING and is subject to the requirements of the ROCK SOURCE DEVELOPMENT PLAN.

SECTION 1 – GENERAL

1-1 ROAD PLAN CHANGES

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

1-2 UNFORESEEN CONDITIONS

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

1-3 ROAD DIMENSIONS

Purchaser shall perform road work in accordance with the dimensions shown on the TYPICAL SECTION SHEET and the specifications within this road plan, unless controlled by construction stakes or design data (plan, profile, and cross-sections).

DRAFT

1-4 ROAD TOLERANCES

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

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

1-6 ORDER OF PRECEDENCE

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

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

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

1-8 REPAIR OR REPLACEMENT OF DAMAGED MATERIALS

Purchaser shall repair or replace all materials, roadway infrastructure, and road components damaged during road work or operation activities. The Contract Administrator will direct repairs and replacements. Repairs to structural materials must be made in accordance with the manufacturer's recommendation and may not begin without written approval from the Contract Administrator.

1-9 DAMAGED METALLIC COATING

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

1-15 ROAD MARKING

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

- Road centerline marked with construction stakes, orange flagging, orange paint and RPs for new construction.
- Road centerline marked with orange flagging, orange paint and RPs for reconstruction.
- Pre-haul maintenance marked with wooden stakes and/or painted trees, orange flagging and orange paint.

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1-16 CONSTRUCTION STAKES SET BY STATE

Purchaser shall perform work on the following road(s) in accordance with the construction stakes and reference points set in the field for grade and alignment.

Road	Stations	Type
HM-2810-EXT	9+70 to 22+46	Slope Stakes and/or RP's
HM-2815	0+00 to 12+66	

1-18 REFERENCE POINT DAMAGE

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

1-21 HAUL APPROVAL

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

1-23 ROAD WORK PHASE APPROVAL

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

- Subgrade construction, drainage installation and subgrade compaction;
- Rock application and compaction.

1-25 ACTIVITY TIMING RESTRICTION

The specified activities are not allowed during the listed closure period(s) unless authorized in writing by the Contract Administrator.

Roads	Stations	Activity	Closure Period
All Roads	All Stations	Pre-Haul Maintenance, Construction	October 1st through April 30th

1-26 OPERATING DURING CLOSURE PERIOD

If permission is granted to operate during a closure period listed in Clause 1-25 ACTIVITY TIMING RESTRICTION, Purchaser shall comply with a maintenance plan to include further protection of state resources. Purchaser shall put preventative measures in place before operating during the closure period. Purchaser is required to maintain all haul roads at their own expense. If other operators are using, or desire to use these roads, a joint operating plan must be developed. All parties shall follow this plan.

1-29 SEDIMENT RESTRICTION

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

DRAFT

1-30 CLOSURE TO PREVENT DAMAGE

In accordance with Contract Clause G-220 STATE SUSPENDS OPERATION, the Contract Administrator will suspend road work or hauling right-of-way timber, forest products, or rock under the following conditions:

- Wheel track rutting exceeds 6 inches on jaw run, pit run or native surface roads.
- Wheel track rutting exceeds 2 inches on crushed rock roads.
- Surface or base stability problems persist.
- When, in the opinion of the Contract Administrator excessive road damage or rutting may occur.

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

1-32 BRIDGE SURFACE RESTRICTION

The use of metal tracked equipment is not allowed on bridge surfaces at any time. If Purchaser must run equipment on bridge surfaces, then rubber tired equipment or other methods, approved in writing by Contract Administrator, must be used.

If tracked equipment is used on bridge surfaces, Purchaser shall immediately cease all road construction and hauling operations. Purchaser shall remove any dirt, rock, or other material tracked or spilled on the bridge surface(s) and have surface(s) evaluated by the Region Engineer or their designee for any damage caused by transporting equipment. Any damage to the surface(s) will be repaired, at the Purchaser's expense, as directed by the Contract Administrator.

Purchaser shall have bridges load rated by a Registered Professional Engineer licensed in the State of Washington. All load rating reports, calculations, or drawings must be stamped by the licensed engineer and submitted to the Contract Administrator prior to allowing any work to continue. All damage to the bridge from transporting equipment will be repaired at the Purchaser's expense.

1-33 SNOW PLOWING RESTRICTION

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

1-40 ROAD APPROACHES TO COUNTY ROADS AND STATE HIGHWAYS

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

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

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2-1 GENERAL ROAD MAINTENANCE

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

2-2 ROAD MAINTENANCE – PURCHASER MAINTENANCE

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

2-3 ROAD MAINTENANCE – DESIGNATED MAINTAINER

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

2-4 PASSAGE OF LIGHT VEHICLES

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

2-5 MAINTENANCE GRADING – EXISTING ROAD

On the following road(s), Purchaser shall use a grader to shape the existing surface before timber haul. Purchaser shall accomplish all grading using a motor grader with a minimum of 175 horsepower.

Road	Stations	Requirements
HM-Mainline	29+30 to 30+30	Grade and shape prior to rock application
	50+40 to 64+70	
	75+00 to 77+00	
	90+40 to 92+40	
	214+45 to 216+45	
	357+60 to 359+60	
HM-2000	6+20 to 8+20	
HM-2010	12+00 to 14+00	
HM-2810	2+60 to 4+60	
	16+40 to 27+50	

2-6 CLEANING CULVERTS

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

Road	Stations
HM-Mainline	97+20, 127+25, 238+50
HM-2010	0+00 to 27+65
HM-2700	11+10 to 42+50
HM-2810	3+55, 18+80

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2-7 CLEANING DITCHES, HEADWALLS, AND CATCH BASINS

On the following road(s), Purchaser shall clean ditches, headwalls, and catchbasins. Work must be completed before timber haul and must be done in accordance with the TYPICAL SECTION SHEET and CULVERT AND DRAINAGE SPECIFICATION DETAIL. Pulling ditch material across the road or mixing in with the road surface is not allowed.

Road	Stations
HM-Mainline	96+15 to 106+85
	113+40 to 116+75
	120+90 to 127+30
	131+35 to 135+65
	140+30 to 144+30
	155+55 to 157+50
	164+90 to 167+15
	176+80 to 191+65
	216+95 to 221+35
	238+55 to 242+60
	246+05 to 253+50
HM-2000	0+00 to 10+65
HM-2700	11+10 to 14+40
	27+40 to 42+50
HM-2810	3+10 to 27+50

SECTION 3 – CLEARING, GRUBBING, AND DISPOSAL

3-1 BRUSHING

On the following road(s), Purchaser shall cut vegetative material up to 4 inches in diameter, including limbs, as shown on the ROADSIDE BRUSHING DETAIL. Brushing must be achieved by mechanical cutting of brush, trees, and branches. Root systems and stumps of cut vegetation may not be disturbed unless directed by the Contract Administrator. Purchaser shall remove brushing debris from the road surface, ditchlines, and culvert inlets and outlets.

Road	Stations
HM-Mainline	238+55 to 253+50
	273+80 to 306+70

3-2 BRUSHING RESTRICTION

Pulling, digging, pushing over, and other non-cutting methods used for vegetation removal may not be used for brushing.

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3-5 CLEARING

Purchaser shall fall all vegetative material larger than 2 inches DBH or over 4 feet high between the marked right-of-way boundaries and within waste and debris areas, or if not marked in the field, between the clearing limits specified on the TYPICAL SECTION SHEET. Clearing must be completed before starting excavation and embankment.

3-8 PROHIBITED DECKING AREAS

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

- Within the grubbing limits.
- Within 50 feet of any stream.
- In locations that interfere with the construction of the road prism.
- In locations that impede drainage.
- On slopes greater than 45%.
- Against standing trees, unless approved by the contract administrator.

3-10 GRUBBING

Purchaser shall remove all stumps between the grubbing limits specified on the TYPICAL SECTION SHEET. Purchaser shall also remove stumps with undercut roots outside the grubbing limits. Grubbing must be completed before starting excavation and embankment.

3-12 STUMP PLACEMENT

Purchaser shall place grubbed stumps adjacent to the road shoulder and in compliance with all other clauses in this road plan.

3-14 STUMPS WITHIN DESIGNATED WASTE AREAS

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

3-20 ORGANIC DEBRIS DEFINITION

Organic debris is defined as all components of a tree that remain as by-products after the manufacture of logs, including but not limited to tree tops, branches, limbs, needles, leaves, and stumps that are larger than one cubic foot in volume within the grubbing and brushing area limits as shown on the TYPICAL SECTION SHEET and ROADSIDE BRUSHING DETAIL.

3-21 DISPOSAL COMPLETION

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

3-22 DESIGNATED WASTE AREA FOR ORGANIC DEBRIS

Waste areas for organic debris are located within the cleared right-of-way or in natural openings as designated or at areas approved in writing by the Contract Administrator.

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3-23 PROHIBITED DISPOSAL AREAS

Purchaser shall not place organic debris in the following areas:

- Within 50 feet of a cross drain culvert.
- Within 100 feet of a live stream, or wetland.
- On road subgrades, or excavation and embankment slopes.
- On slopes greater than 45%.
- Within the operational area for cable landings where debris may shift or roll.
- On locations where brush can fall into the ditch or onto the road surface.
- Against standing timber.

3-24 BURYING ORGANIC DEBRIS RESTRICTED

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

3-25 SCATTERING ORGANIC DEBRIS

Purchaser shall scatter organic debris outside of the grubbing limits and in natural openings unless otherwise detailed in this road plan**.** Where natural openings are unavailable or restrictive, alternate debris disposal methods are subject to the written approval of the Contract Administrator.

SECTION 4 – EXCAVATION

4-1 EXCAVATOR CONSTRUCTION

On the following roads, Purchaser shall use a track mounted hydraulic excavator for construction work, unless authorized in writing by the Contract Administrator.

Road	Stations
HM-2810-EXT	11+85 to 19+71
HM-2815	0+74 to 12+66

4-2 PIONEERING

Pioneering may not extend past construction that will be completed during the current construction season. In addition, the following actions must be taken as pioneering progresses:

- Drainage must be provided on all uncompleted construction.
- Road pioneering operations may not undercut the final cut slope or restrict drainage.
- Culverts at live stream crossings must be installed during pioneering operations prior to embankment.

4-3 ROAD GRADE AND ALIGNMENT STANDARDS

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

- Grade and alignment must have smooth continuity, without abrupt changes in direction.
- Maximum grades may not exceed 18 percent favorable and 15 percent adverse.
- Minimum curve radius is 60 feet at centerline.
- Maximum grade change for sag vertical curves is 5% in 100 feet.
- Maximum grade change for crest vertical curves is 4% in 100 feet.

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4-5 CUT SLOPE RATIO

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

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

4-6 EMBANKMENT SLOPE RATIO

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

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

4-7 SHAPING CUT AND FILL SLOPE

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

4-8 CURVE WIDENING

The minimum widening placed on the inside of curves is:

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

4-9 EMBANKMENT WIDENING

The minimum embankment widening is:

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

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

4-12 FULL BENCH CONSTRUCTION

On the following road(s), and where side slopes exceed 45%, Purchaser shall use full bench construction for the entire subgrade width. Purchaser shall dispose of waste material as specified in Clause 4-36 DISPOSAL OF WASTE MATERIAL.

Road	Full Bench Location	Comments
HM-2810-EXT	11+85 to 19+71	6750cy
HM-2815	0+74 to 12+66	8800cy

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4-21 TURNOUTS

Purchaser shall construct turnouts as designated on the ROCK LIST. Location changes are subject to written approval by the Contract Administrator. Minimum dimensions are shown on the TYPICAL SECTION SHEET.

4-22 TURNAROUNDS

Purchaser shall construct turnarounds as designated on the ROCK LIST. Turnarounds must be no larger than 30 feet long and 30 feet wide. Location changes are subject to written approval by the Contract Administrator.

4-25 DITCH CONSTRUCTION AND RECONSTRUCTION

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

4-27 DITCH WORK – MATERIAL USE PROHIBITED

Purchaser shall not pull ditch material across the road or mix in with the road surface. Excavated material must be disposed of as specified in Clause 4-36 DISPOSAL OF WASTE MATERIAL.

4-28 DITCH DRAINAGE

Ditches must drain to cross-drain culverts or ditchouts.

4-29 DITCHOUTS

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

4-35 WASTE MATERIAL DEFINITION

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

4-36 DISPOSAL OF WASTE MATERIAL

Purchaser may sidecast waste material on side slopes up to 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.

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4-37 WASTE AREA LOCATION

Purchaser shall deposit waste material in the listed designated areas. Additional waste areas may also be identified or approved by the Contract Administrator. The amount of material allowed in a waste area is at the discretion of the Contract Administrator.

Waste Area Location	Station	Comments	Volume*
HM-2810	26+60	Northwest side of road outside of clearing limits	15,550cy
P&E Extension Quarry		See ROCK SOURCE DEVELOPMENT PLAN for location	200cy

*Quantities are estimates only. Actual quantities may vary and allowable volumes are at the discretion of the Contract Administrator.

4-38 PROHIBITED WASTE DISPOSAL AREAS

Purchaser shall not deposit waste material in the following areas:

- Within 25 feet of a cross drain culvert.
- Within 100 feet of a live stream or wetland.
- Within a riparian management zone.
- Within a wetland 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.

4-48 NATIVE MATERIAL

Native material consists of naturally occurring material that is free of organic debris, trash, and rocks greater than 4 inches in any dimension.

4-55 ROAD SHAPING

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

4-56 DRY WEATHER SHAPING

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

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. Waste material may be placed by end-dumping or sidecasting until sufficiently wide enough to support the equipment.

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4-61 SUBGRADE COMPACTION

Purchaser shall compact constructed 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 rock application.

4-62 DRY WEATHER COMPACTION

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

4-63 EXISTING SURFACE COMPACTION

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

SECTION 5 – DRAINAGE

5-5 CULVERTS

Purchaser shall install culverts as part of this contract. Culverts must be installed concurrently with subgrade work and must be installed before subgrade compaction and rock application. Culvert locations and the minimum requirements for culvert length and diameter are designated on the CULVERT LIST. Culvert, downspout, and flume lengths may be adjusted to fit as-built conditions and may not terminate directly on unprotected soil. Culverts must be new material and meet the specifications in Clauses 10-17 through 10-22.

5-6 CULVERT TYPE

Purchaser shall install culverts made of plastic in accordance with Clauses 10-17 through 10-22.

5-10 CULVERT MARKER INSTALLATION

At all new culverts, Purchaser shall provide and install culvert markers at the inlet in accordance with the CULVERT MARKER INSTALLATION DETAIL.

5-12 UNUSED MATERIALS STATE PROPERTY

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

5-15 CULVERT INSTALLATION

Culvert installation must be in accordance with the CULVERT AND DRAINAGE SPECIFICATION DETAIL and the Corrugated Polyethylene Pipe Association's "Recommended Installation Practices for Corrugated Polyethylene Pipe and Fittings". Corrugated Polyethylene pipe must be installed in a manner consistent with the manufacturer's recommendations. Culverts shall be banded using lengths of no less than 10 feet, and no more than one length less than 20 feet**.** Shorter section of banded culvert shall be installed at the inlet end.

5-17 CROSS DRAIN SKEW AND SLOPE

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

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5-18 CULVERT DEPTH OF COVER

Cross drain culverts must be installed with a depth of cover of not less than 1 foot of compacted subgrade over the top of the culvert at the shallowest point.

5-20 ENERGY DISSIPATERS

Purchaser shall install energy dissipaters in accordance with the CULVERT AND DRAINAGE SPECIFICATION DETAIL.

The type of energy dissipater and the amount of material must be consistent with the specifications listed on the CULVERT LIST. No placement by end dumping or dropping of rock is allowed. Energy dissipater installation is subject to approval by the Contract Administrator.

5-25 CATCH BASINS

Purchaser shall construct catch basins in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL. Minimum dimensions of catch basins are 3 feet wide and 4 feet long.

5-26 HEADWALLS FOR CROSS DRAIN CULVERTS

Purchaser shall construct headwalls in accordance with the CULVERT AND DRAINAGE SPECIFICATION DETAIL at all culverts on the CULVERT LIST that specify the placement of rock. Rock must be placed on shoulders, slopes, and around culvert inlets and outlets. Minimum specifications require that rock be placed at a width of one culvert diameter on each side of the culvert opening, and to a height of one culvert diameter above the top of the culvert. Rock may not restrict the flow of water into culvert inlets or catch basins. No placement by end dumping or dropping of rock is allowed.

5-33 NATIVE SURFACE ROADS

If overwintered, native surface roads must be waterbarred by November 1. Purchaser shall construct waterbars according to the attached NON-DRIVABLE WATERBAR DETAIL at a maximum spacing that will produce a vertical distance of no more than 10 feet between waterbars or between natural drainage paths, and with a maximum spacing of 150 feet.

SECTION 6 – ROCK AND SURFACING

6-2 ROCK SOURCE ON STATE LAND

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

Source	Location	Rock Type
P&E Extension Quarry	T13R06W Section 29	Select Pit Run, Quarry Spalls

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6-3 ROCK SOURCE STATE LAND, EXISTING STOCKPILE

Rock used in accordance with the quantities on the ROCK LIST may be obtained from the following existing stockpile(s) on state land at no charge to the Purchaser. Purchaser shall not remove additional yardage without prior written approval from the Contract Administrator. Other stockpiles may not be used.

Source	Location	Rock Type	Quantity
P&E Extension Quarry	T13R06W Section 19	2 ½-Inch Minus	384cy

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 are subject to written approval by the Contract Administrator before their use.

6-10 ROCK SOURCE DEVELOPMENT PLAN BY STATE

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

Source	Rock Type
P&E Extension Quarry	Select Pit Run, Quarry Spalls

6-22 FRACTURE REQUIREMENT FOR ROCK

A minimum of 50% by visual inspection of coarse aggregate must have at least one fractured face. Coarse aggregate is the material greater than 1/4-inch in size.

6-23 ROCK GRADATION TYPES

Purchaser shall provide or manufacture rock in accordance with the types and amounts listed in the ROCK LIST. Rock must meet the following specifications for gradation and uniform quality when placed in hauling vehicles. Purchaser shall provide a sieve analysis upon request from the Contract Administrator.

6-41 SELECT PIT RUN ROCK

No more than 50 percent of the rock may be larger than 6 inches in any dimension and no rock may be larger than 12 inches in any dimension. Select Pit Run rock may not contain more than 5 percent by weight of organic debris, dirt, and trash. Rock may require processing to meet this specification.

6-43 QUARRY SPALLS

% Passing 8" square sieve	100%
% Passing 3" square sieve	40% maximum
% Passing 3/4" square sieve	10% maximum

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

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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 loose yards. Purchaser shall apply adequate amounts of rock to meet the specified rock depths. Specified rock depths are minimum requirements and are not subject to reduction. Unless otherwise stated in Clause 6-75 OPTIONAL ROCK EXCEPTION.

6-56 ROCK MEASURMENT BY TRUCK VOLUME

Measurement of spot rock, energy dissipaters, culvert backfill, and landing rock is on a cubic yard truck measure basis. Purchaser shall measure each truck box before rock hauling. An average of such volumes for each truck will be used to tally the volume hauled. The Contract Administrator may periodically require that a load be flattened off and its volume calculated. Purchaser shall maintain load tally sheets for each truck and shall give them to the Contract Administrator on a weekly basis during rocking operations.

6-70 APPROVAL BEFORE ROCK APPLICATION

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

6-71 ROCK APPLICATION

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

6-73 ROCK FOR WIDENED PORTIONS

Purchaser shall apply rock to turnarounds, turnouts, and areas with curve widening to the same depth and specifications as the traveled way, unless otherwise specified in the ROCK LIST.

6-75 OPTIONAL ROCK EXCEPTION

On the following roads, if hauling takes place from June 1 to September 30, Purchaser may provide and place less rock than shown on the ROCK LIST, when approved in writing by the Contract Administrator.

If less rock is applied, Purchaser shall submit a written plan, for approval, describing how these roads will be constructed, used, maintained, and treated post-haul. Purchaser shall meet post-haul specifications in Section 9 POST-HAUL ROAD WORK, the FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS, or other conditions of the approved plan.

Road	Stations	Options
HM-2810-EXT	15+86 to 18+32	2 ½-Inch Minus
HM-2816	0+00 to 1+80	Select Pit Run
HM-2817	0+00 to 1+70	Select Pit Run

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8-1 SEDIMENT CONTROL STRUCTURES

Sediment control shall be accomplished using sediment traps, silt fences, settling ponds, check dams or other methods as approved in writing by the Contract Administrator.

Road	Stations	Comments
HM-2700	27+50 to 37+75	Install 10 check dams, evenly spaced

8-2 PROTECTION FOR EXPOSED SOIL

Purchaser shall provide and evenly spread a 4-inch layer of straw to all exposed soils within 50 feet of a stream or wetland. Soils must be covered before the first anticipated storm event. Soils may not sit exposed during any rain event.

8-15 REVEGETATION

On the following road(s) and waste areas, Purchaser shall spread seed on all exposed soils resulting from road work activities using manual dispersion. Other methods of covering must be approved in writing by the Contract Administrator. Required seed not spread by the termination of this contract will become the property of the state.

Location	Stations	Qty (lbs)*	Type
HM-2012	0+00 to 2+20	5.6	Grass Seed
HM-2810-EXT	0+00 to 35+70	91.6	
HM-2815	0+00 to 38+33	98.4	
HM-2816	0+00 to 1+80	4.8	
HM-2817	0+00 to 1+70	4.4	
Waste Areas		50	

*Quantities are estimates only. Actual quantities may vary and are the responsibility of the Purchaser.

8-16 REVEGETATION SUPPLY

The Purchaser shall provide the grass seed.

8-17 REVEGETATION TIMING

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

8-19 ASSURANCE FOR SEEDED AREA

Purchaser shall ensure the growth of a uniform and dense crop (at least 50% coverage) of 2-inch tall grass. Purchaser shall reapply the grass seed in areas that have failed to germinate or have been damaged through any cause, restore eroded or disturbed areas, clean up and properly dispose of eroded materials, and reapply the grass seed at no additional cost to the state.

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8-25 GRASS SEED

Purchaser shall evenly spread the seed mixture listed below on all exposed soil at a rate of 50 pounds per acre of exposed soil. Grass seed must meet the following specifications:

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

Kind and Variety of Seed in Mixture	% by Weight
Perennial Rye	35-45
Red Fescue	30-40
Highland Bent	5-15
White Clover	10-20
Inert and Other Crop	0.5

SECTION 9 – POST-HAUL ROAD WORK

9-3 CULVERT MATERIAL REMOVED FROM STATE LAND

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

9-5 POST-HAUL MAINTENANCE

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

9-10 LANDING DRAINAGE

Purchaser shall provide for drainage of the landing surface.

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10-17 CORRUGATED PLASTIC CULVERT

Polyethylene culverts must meet AASHTO M-294 specifications, or ASTM F-2648 specifications for recycled polyethylene. Culverts must be Type S – double walled with a corrugated exterior and smooth interior.

10-22 PLASTIC BAND

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

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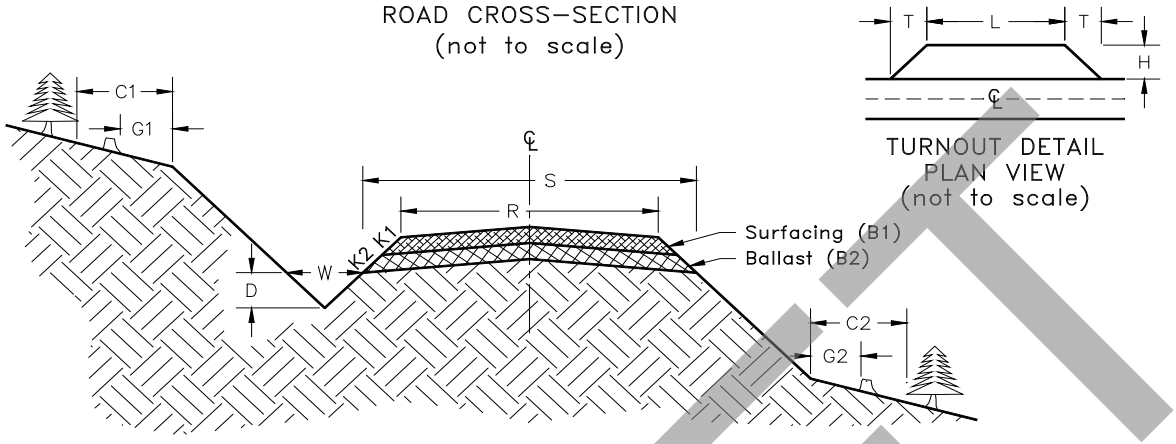
TYPICAL SECTION SHEET



Road Number	From Station	To Station	Tolerance Class	Subgrade Width ft	Road Width ft	Ditch Width ft	Ditch Depth ft	Crown @ CL in	Grubbing Limits ft		Clearing Limits ft	
				S	R	W	D		G1	G2	C1	C2
HM-Mainline	29+30	359+60	A	-	-	3	1	4	-	-	-	-
HM-2000	0+00	10+65	B	-	-	3	1	4	-	-	-	-
HM-2010	0+00	27+65	B	-	-	3	1	4	-	-	-	-
HM-2012	0+00	2+20	C	17	12	3	1	4	5	5	10	10
HM-2700	11+10	42+50	B	-	-	3	1	4	-	-	-	-
HM-2810	0+00	27+50	B	-	-	3	1	4	-	-	-	-
HM-2810-EXT	0+00	35+70	B	17	12	3	1	4	5	5	10	10
HM-2815	0+00	38+33	B	17	12	3	1	4	5	5	10	10
HM-2816	0+00	1+80	C	17	12	3	1	4	5	5	10	10
HM-2817	0+00	1+70	C	17	12	3	1	4	5	5	10	10

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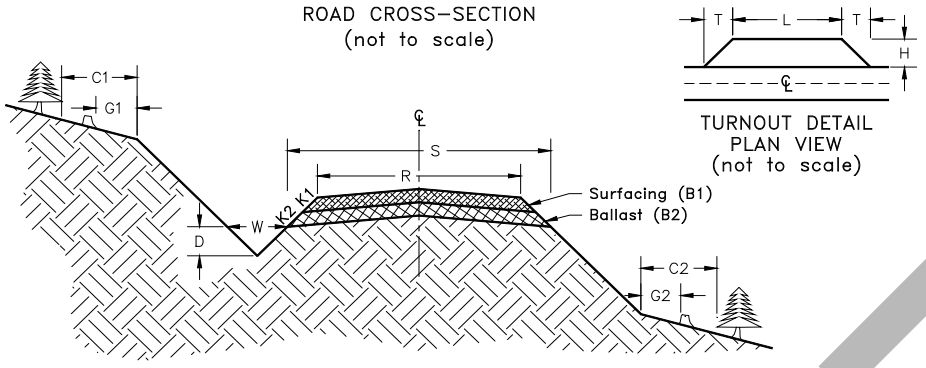

SELECT PIT RUN

Road Number		From Station	To Station	Rock Slope	Compacted Rock Depth (in)	C.Y. per Station or Unit	# of Stations or Units	C.Y. Subtotal	Rock Source	Turnout Length	Turnout Width	Turnout Taper
				K2	B2				P&E Extension Quarry or Commercial Source	L	H	T
HM-2000		Landings				68	1	68				
HM-2010		Landings				68	1	68				
HM-2012		0+00	2+20	1 1/2:1	15	81	2.20	178				
		Turnarounds				43	1	43				
		Junctions				15	1	15				
		Landings				68	1	68				
HM-2810-EXT		0+00	35+70	1 1/2:1	15	90	35.70	3213				
		Turnarounds				43	3	130				
		Turnouts 10+45, 22+46, 30+36				38	3	114		40	10	25
		Curve Widening 17+03	17+86			31	1.88	58				
		20+29	21+34									
		Junctions				15	1	15				
HM-2815		0+00	38+33	1 1/2:1	15	81	38.33	3105				
		Turnarounds				43.5	2	87				
		Turnouts 14+96, 21+66, 33+01				38	3	114		40	10	25
		Curve Widening 4+53	5+50			28	1.57	44				
		8+19	8+79									
		Junctions				15	1	15				
		Landings				67.3333	3	202				
HM-2816	*	0+00	1+80	1 1/2:1	15	81	1.80	146				
	*	Junctions				15	1	15				
	*	Landings				68	1	68				
HM-2817	*	0+00	1+70	1 1/2:1	15	81	1.70	138				
	*	Junctions				15	1	15				
	*	Landings				68	1	68				

*Optional Rock in accordance with 6-75

REQUIRED SELECT PIT RUN: 7537 CY
OPTIONAL SELECT PIT RUN: 450 CY

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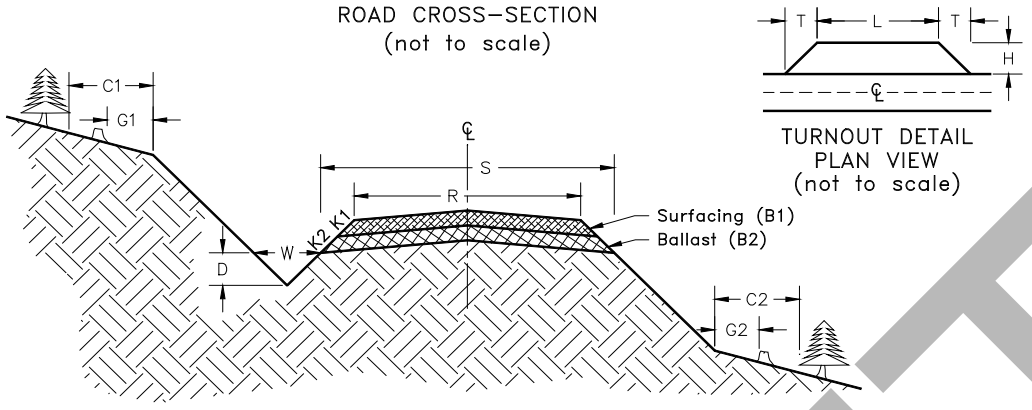

2 1/2 INCH MINUS CRUSHED ROCK

Road Number		From Station	To Station	Rock Slope	Compacted Rock Depth (in)	C.Y. per Station or Unit	# of Stations or Units	C.Y. Subtotal	Rock Source
				K1	B1				P&E Extension Quarry Stockpile or Commercial Source
HM-Mainline		Spot Rock 29+30	359+60					170	
		Culvert Backfill/Bedding				20	2	40	
HM-2000		Spot Rock 6+00	8+50					20	
HM-2010		Spot Rock 12+00	14+00					30	
HM-2700		Culvert Backfill/Bedding				20	1	20	
HM-2810		Spot Rock 2+50	4+50					20	
HM-2810-EXT	*	15+86	18+32	1 1/2:1	6	30	2.46	74	
	*	Curve Widening 17+03	17+86			12	0.83	10	

*Optional Rock in accordance with 6-75

REQUIRED 2 1/2 INCH MINUSCRUSHED ROCK: 300 CY

OPTIONAL 2 1/2 INCH MINUS CRUSHED ROCK: 84 CY

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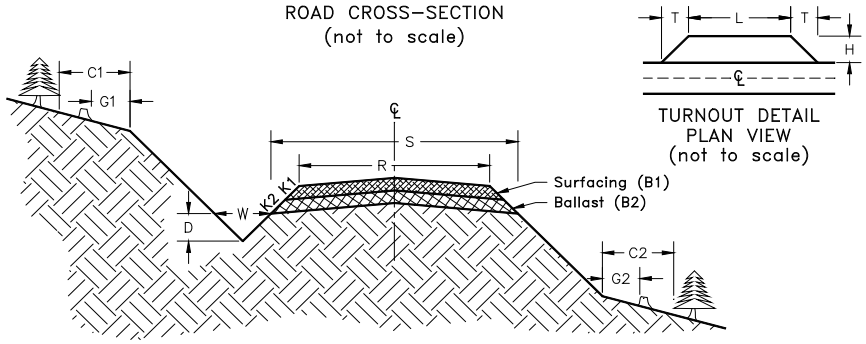

QUARRY SPALLS

Road Number		From Station	To Station	Rock Slope	Compacted Rock Depth (in)	C.Y. per Station or Unit	# of Stations or Units	C.Y. Subtotal	Rock Source	Turnout Length	Turnout Width	Turnout Taper
				K2	B2				P&E Extension Quarry or Commercial Source	L	H	T
HM-Mainline		Inlet Armoring				0.5	2	1				
		Energy Dissipaters				0.5	2	1				
HM-2700		Inlet Armoring				0.5	1	0.5				
		Energy Dissipaters				0.5	1	0.5				
		Check Dams				0.15	10	1.5				
HM-2810-EXT		Inlet Armoring				7	0.5	3.5				
		Energy Dissipaters				7	0.5	3.5				
HM-2815		Inlet Armoring				6	0.5	3				
		Energy Dissipaters				6	0.5	3				

*Optional Rock in accordance with 6-75 REQUIRED QUARRY SPALLS: 17.5 CY

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CULVERT LIST

Road Number	Location	Culvert			Armoring (C.Y.)			Backfill Material	Bedding Material	Inlet Marker	Remarks
		Dia (In)	Length	Type	Inlet	Outlet	Type				
HM-Mainline	138+90	18	30	PD	0.5	0.5	QS	CR	CR	Y	
HM-Mainline	288+90	18	30	PD	0.5	0.5	QS	CR	CR	Y	
HM-2700	37+75	18	30	PD	0.5	0.5	QS	CR	CR	Y	
HM-2810	6+00			DO							Ditchout Right (Northwest)
HM-2810	13+25			DO							Maintain Ditchout Left (Southeast)
HM-2810	22+60			DO							Ditchout Left (Southeast), Trench Out
HM-2810-EXT	3+30	18	30	PD	0.5	0.5	QS	NT	NT	Y	
HM-2810-EXT	7+10	18	30	PD	0.5	0.5	QS	NT	NT	Y	
HM-2810-EXT	10+45	18	30	PD	0.5	0.5	QS	NT	NT	Y	
HM-2810-EXT	14+40	18	30	PD	0.5	0.5	QS	NT	NT	Y	
HM-2810-EXT	16+66	18	30	PD	0.5	0.5	QS	NT	NT	Y	
HM-2810-EXT	19+70	18	30	PD	0.5	0.5	QS	NT	NT	Y	
HM-2810-EXT	31+75	18	30	PD	0.5	0.5	QS	NT	NT	Y	
HM-2810-EXT	34+40			DO							Ditchout Right (Northwest)
HM-2815	5+60	18	30	PD	0.5	0.5	QS	NT	NT	Y	
HM-2815	8+06	18	30	PD	0.5	0.5	QS	NT	NT	Y	
HM-2815	8+48	24	40	PD	0.5	0.5	QS	NT	NT	Y	Upsized Crossdrain, No Live Water
HM-2815	12+66	18	30	PD	0.5	0.5	QS	NT	NT	Y	
HM-2815	16+72			DO							Ditchout Right (West)
HM-2815	28+44			DO							Ditchout Right (West)
HM-2815	32+88	18	30	PD	0.5	0.5	QS	NT	NT	Y	
HM-2815	34+83			DO							Ditchout Right (North)

Key:

QS - Quarry Spalls
NT - Native Material
CR - 2 1/2 Inch Minus Crushed Rock
PD - Polyethylene Pipe Double Wall
DO - Ditchout

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COMPACTION LIST

Road	From Station	To Station	Type	Max Depth Per Lift (inches)	Equipment Type	Minimum Equipment Weight (lbs)	Minimum Number of Passes	Maximum Operating Speed (mph)	Maximum Amount of Deflection (inches)
All Roads			Subgrade	12	Vibratory Smooth Drum	14,000	4	3	2
All Roads			Fill	12	Vibratory Smooth Drum	14,000	4	3	2
All Roads			Waste Area	24	Excavation	28,000	-	-	4
All Roads			Pre-haul Surface	6	Vibratory Smooth Drum	14,000	5	3	1
All Roads			Rock	12	Vibratory Smooth Drum	14,000	3	3	1

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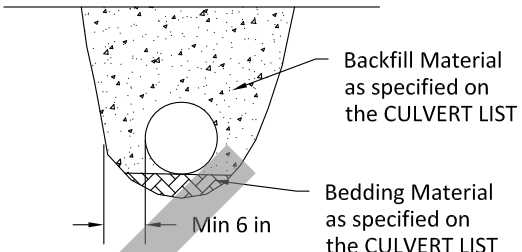
INSTALLATION REQUIREMENTS:

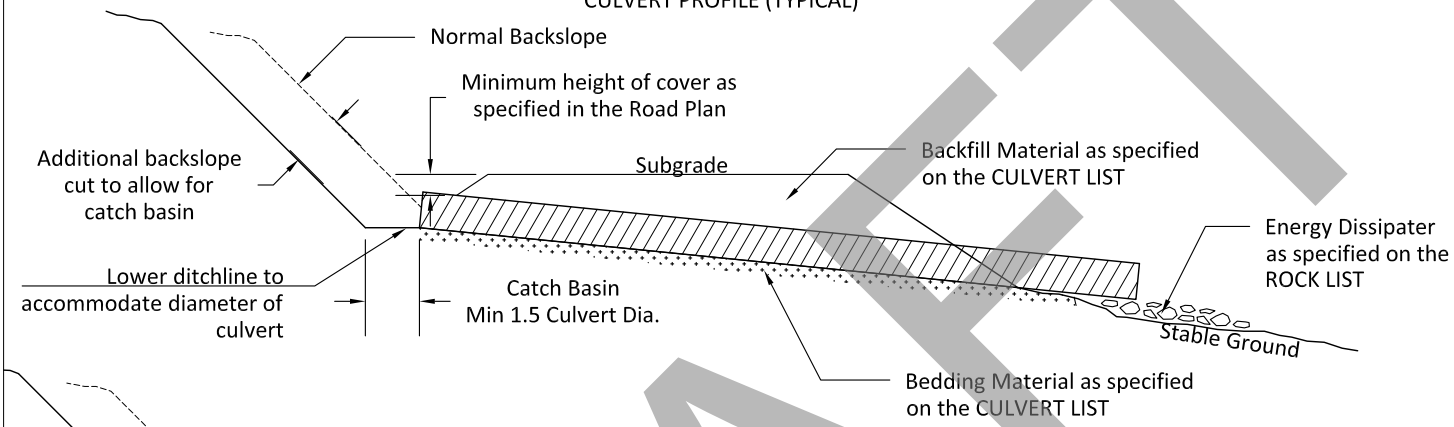
1. Proper preparation of foundation and placement of any required bedding material shall precede the installation of all culverts. This includes necessary leveling of the native trench bottom and compaction of required bedding material to form a uniform, dense, unyielding base. The pipe must be uniformly supported along the barrel.
2. Backfill material shall be compacted under the culvert haunches, around the sides, and above the culvert in accordance with the COMPACTION LIST.

ALL DRAWINGS ARE NOT TO SCALE

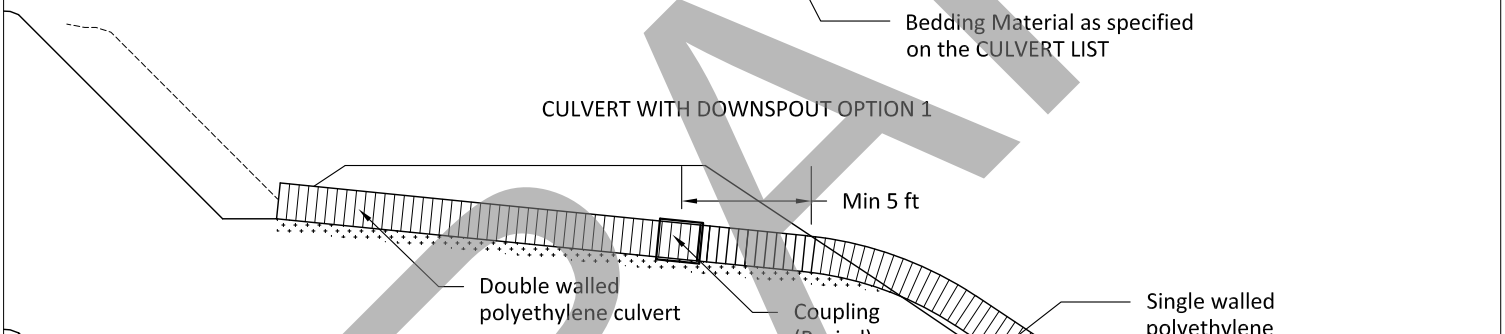
CROSS SECTION



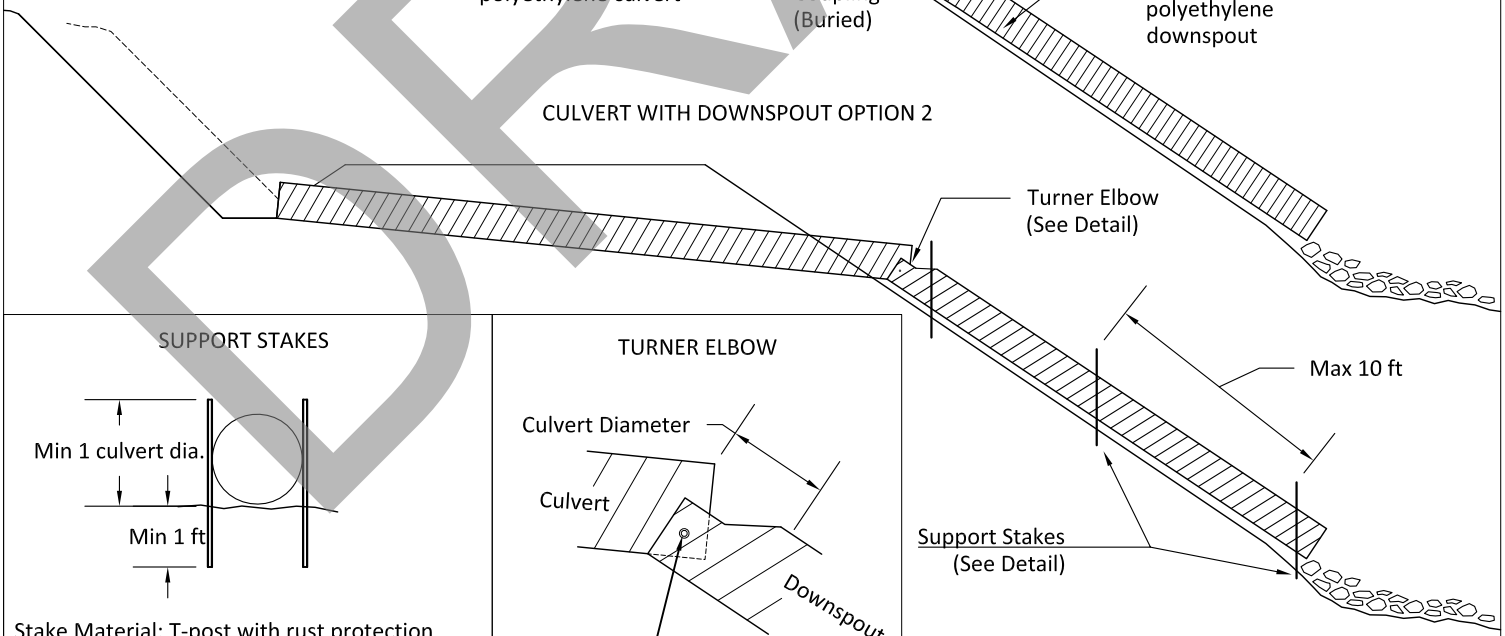
CULVERT PROFILE (TYPICAL)



CULVERT WITH DOWNSPOUT OPTION 1



CULVERT WITH DOWNSPOUT OPTION 2



SUPPORT STAKES

Stake Material: T-post with rust protection coating.
Connections: Bolt support stakes to the culvert with $\frac{5}{8}$" u-bolts, with washers on both the inside and outside of the culvert.
Alternative staking methods may be approved, in writing, by the Contract Administrator.

TURNER ELBOW

Bolted with $\frac{5}{8}$" galvanized bolts and washers (both sides)

Downspout must be 6 inches larger in diameter than the culvert.

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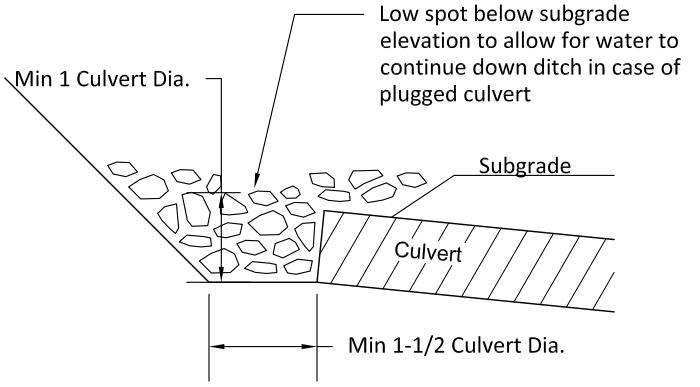
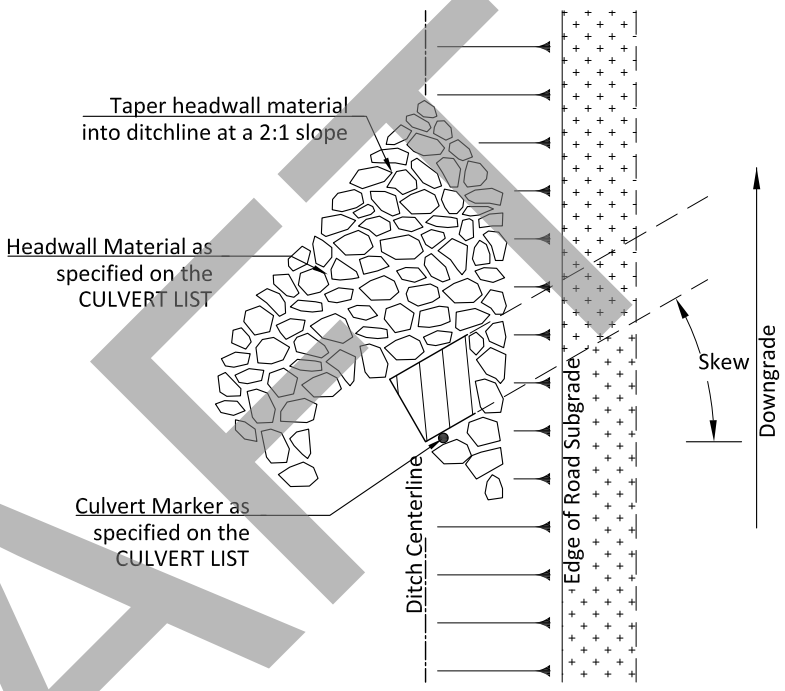
HEADWALLS

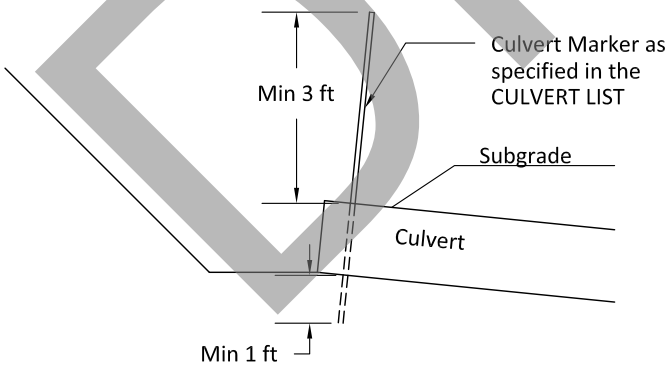
Section View



Plan View

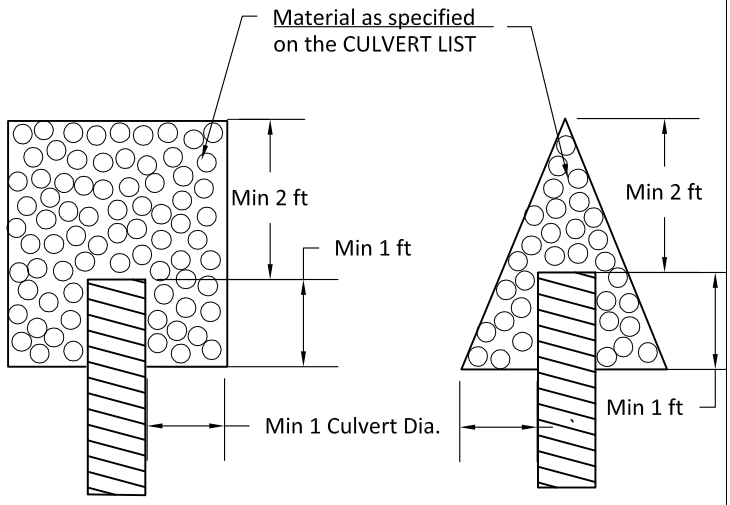


CULVERT MARKERS



Culvert Marker Material: 1 Inch I.D., Schedule 40 PVC Pipe, White. Marker must be capped on the top.
Culvert Marker Placement: Place on uphill side of culvert, between corrugations if possible.
Alternative culvert marker types may be approved, in writing, by the Contract Administrator.

ENERGY DISSIPATERS



Min Energy Dissipater Depth: 1 Culvert Dia.

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FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS
Page 1 of 2

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, with selected material or material approved by the Contract Administrator. Remove overhanging material from the top of cut slopes.
- Waste material from slides or other sources shall be placed and compacted in stable locations identified in the road plan or approved by the Contract Administrator, so that sediment will not deliver to any streams or wetlands.
- Slide material and debris shall not be mixed into the road surface materials, unless approved by the Contract Administrator.

Surface

- Grade and shape the road surface, turnouts, and shoulders to the original shape on the TYPICAL SECTION SHEET to provide a smooth, rut-free traveled surface and maintain surface water runoff in an even, unconcentrated manner.
- Blading shall not undercut the backslope or cut into geotextile fabric on the road.
- If required by the Contract Administrator, water shall be applied as necessary to control dust and retain fine surface rock.
- Surface material shall not be bladed off the roadway. Replace surface material when lost or worn away, or as directed by the Contract Administrator.
- Remove shoulder berms, created by grading, to facilitate drainage, except as marked or directed by the Contract Administrator.
- For roads with geotextile fabric: spread surface aggregate to fill in soft spots and wheel ruts (barrel spread) to prevent damage to the geotextile fabric.

Drainage

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

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Preventative Maintenance

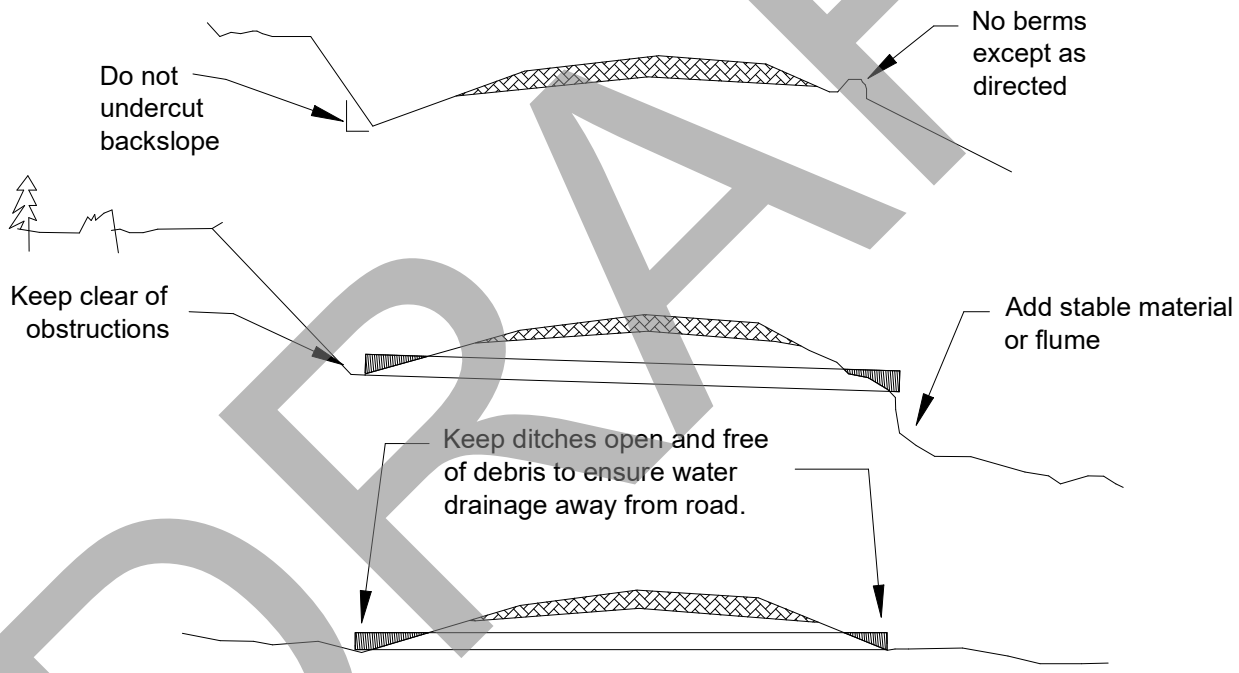
- Perform preventative maintenance work to safeguard against storm damage, such as blading to ensure correct runoff, ditch and culvert cleaning, and waterbar maintenance.

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.



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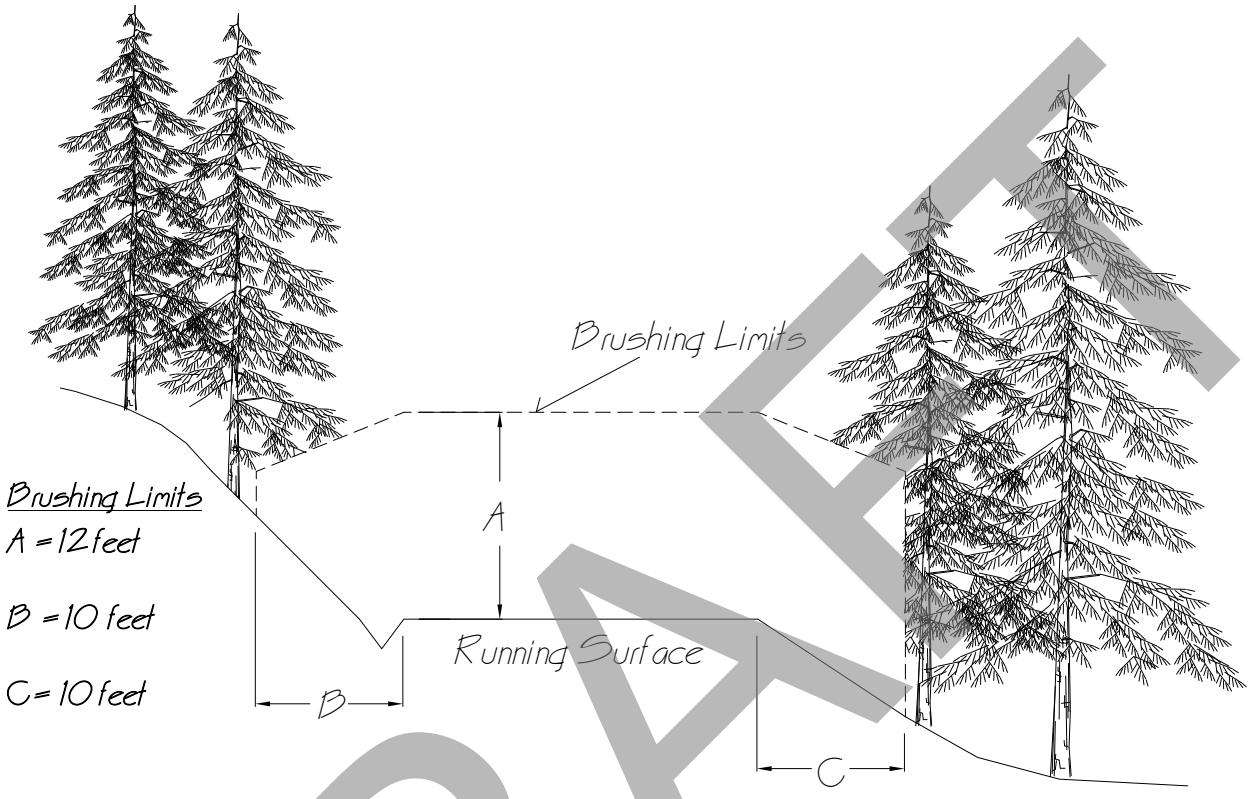
ROADSIDE BRUSHING DETAIL



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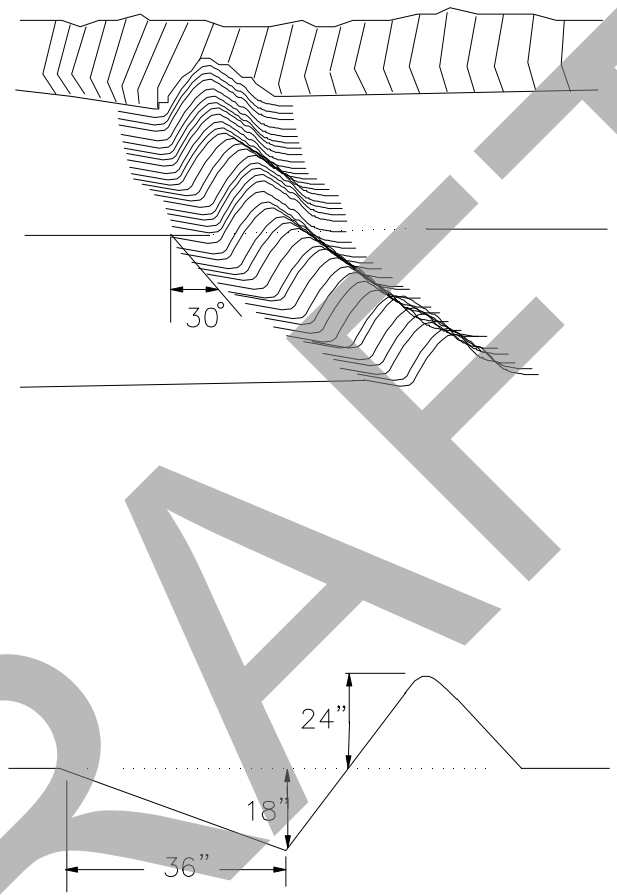
GENERAL NOTES

1) Vegetative material, including limbs, up to 4 inches in diameter shall be cut within the brushing limits shown on the drawing above. This includes vegetative material growing on the running surface.
2) Vegetative material shall be cut as near flush with the ground as possible, but shall not extend more than 6 inches above the ground.
3) Brushing Limit C may be increased on the inside of curves to improve sight distance if approved by the Contract Administrator

NON-DRIVABLE WATER BAR DETAIL



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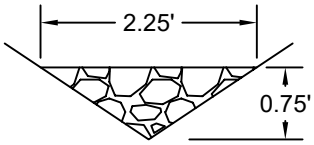
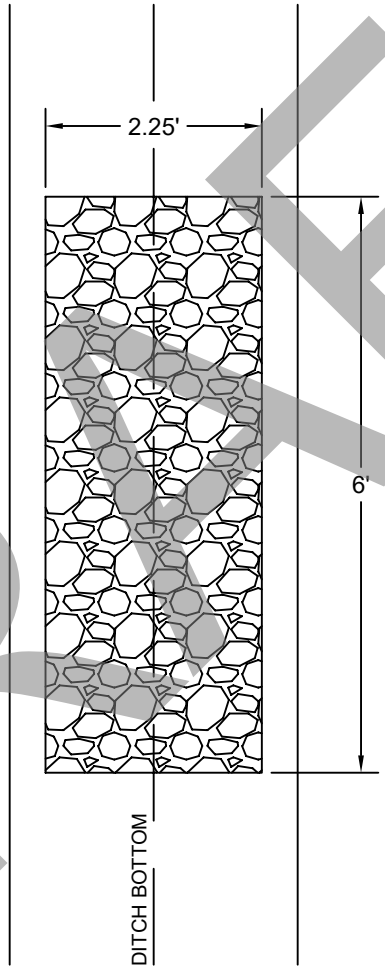
CHECK DAM DETAIL

DITCH CROSS SECTION VIEW



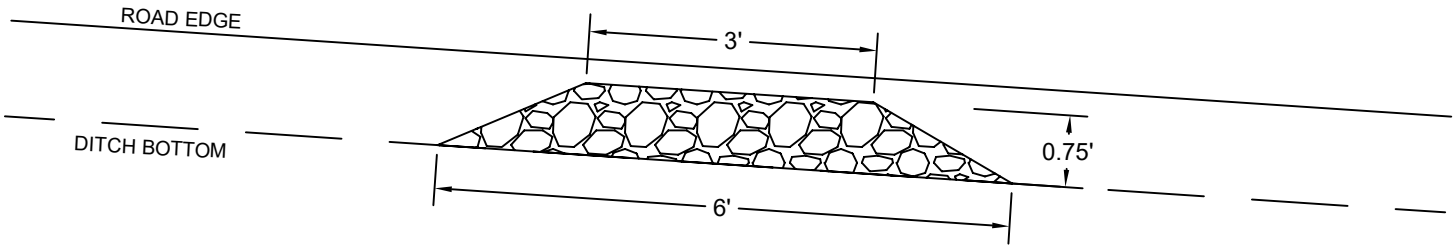
PLAN VIEW



CONSTRUCTION NOTE:

CHECK DAM SHALL BE CONSTRUCTED FROM QUARRY SPALLS. NO PLACEMENT BY END DUMPING OR DROPPING OF ROCK IS ALLOWED.

DITCH PROFILE VIEW



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DATE: 6/27/2024
DRAWN BY: G. GERRITSEN
Accessed: 10/01/2024 14:51

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES
PACIFIC CASCADE REGION

P&E EXTENSION QUARRY DEVELOPMENT PLAN
Section 29, Township 13 North, Range 06 West, W.M.

1. Development shall occur in Area A. Development in any other area must be approved in writing by the Contract Administrator.

2. Trees shall be cleared to a minimum of ¾ of the height of the tallest tree adjacent to the working face. All vegetation including stumps shall be cleared a minimum of 20 feet beyond the top of all working faces.

3. Overburden in excess of 3ft deep shall be end hauled to a waste area as designated by the Contract Administrator and compacted. Minimal acceptable compaction is achieved as detailed in the COMPACTION LIST.

4. Root wads and organic debris larger than one cubic foot in volume shall be separated from overburden material and cleared a minimum of 20ft beyond the top of all working faces.

5. Pit faces shall not exceed 25 feet in height; solid rock faces shall be sloped no steeper than ¼:1, diggable rock faces shall be sloped no steeper than ½:1.

6. Working bench width shall be a minimum of 20 feet.

7. The pit floor shall have continuity of slope, providing drainage to the Northeast at a minimum of 2 percent, unless otherwise approved in writing by Contract Administrator.

8. The location and amount of material to be placed in a stockpile are subject to approval of the Contract Administrator.

9. Oversize material remaining in the rock source at the conclusion of use shall not exceed 5 percent of the total volume mined during that operation. Oversize material is defined as rock fragments larger than two feet in any direction. At the conclusion of operations, oversize material shall be placed in the designated Oversize Storage Area.

10. All operations shall be carried out in compliance with all regulations of:
    a. Regulations and Standards Applicable to Metal and Nonmetal Mining and Milling Operations (30 CFR) U.S. Department of Labor, Mine Safety and Health Administration.
    b. Safety Standards for Construction Work (296-155 WAC), Washington Department of Labor and Industries.

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11. Upon completion of pit operations:

    a. The pit floor shall be left in a smooth and neat condition. The surface of pit floors and benches must be uniform and free-draining at a minimum 2% outslope gradient.

    b. All exposed soil in the waste area shall be grass seeded in accordance with Road Plan Clauses 8-15 REVEGETATION and 8-25 GRASS SEED.

    c. Pit faces and walls shall be scaled and cleared of loose and overhanging material.

    d. Benches and faces shall have safety berms constructed or access blocked to highway vehicles.

    e. The area will be left in a condition that will not endanger public safety, damage property, or be hazardous to animal or human life. The site shall be cleared of all temporary structures, equipment and rubbish, and shall be left in a neat and presentable condition.

    f. Prior to termination of the contract, quarry condition and compliance with all terms of the contract shall be approved in writing by the Contract Administrator.

12. Reclamation will not be required following use.

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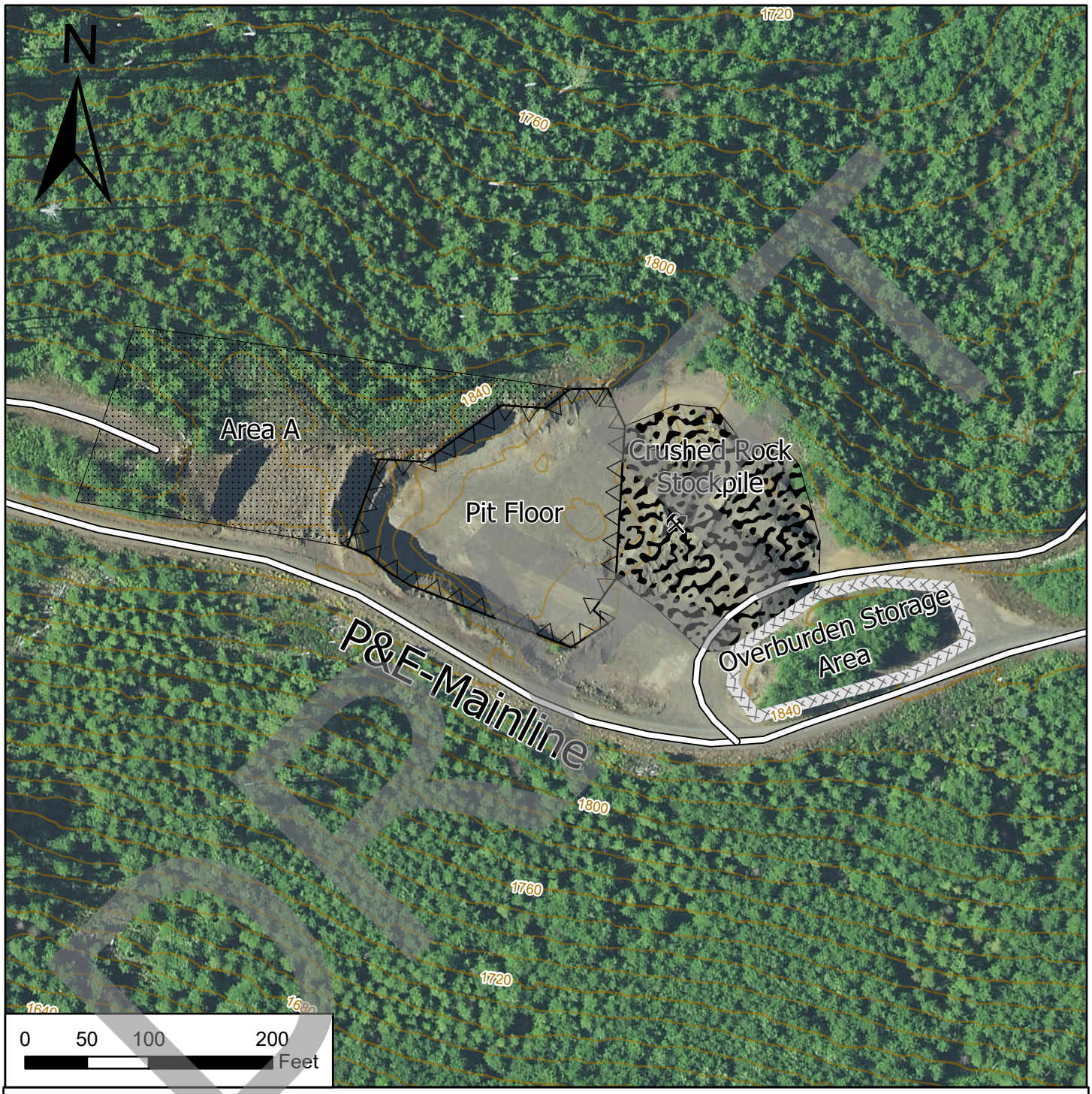
P&E Ext. Quarry Development Plan Pg. 3 of 3

T13R06W Section 29



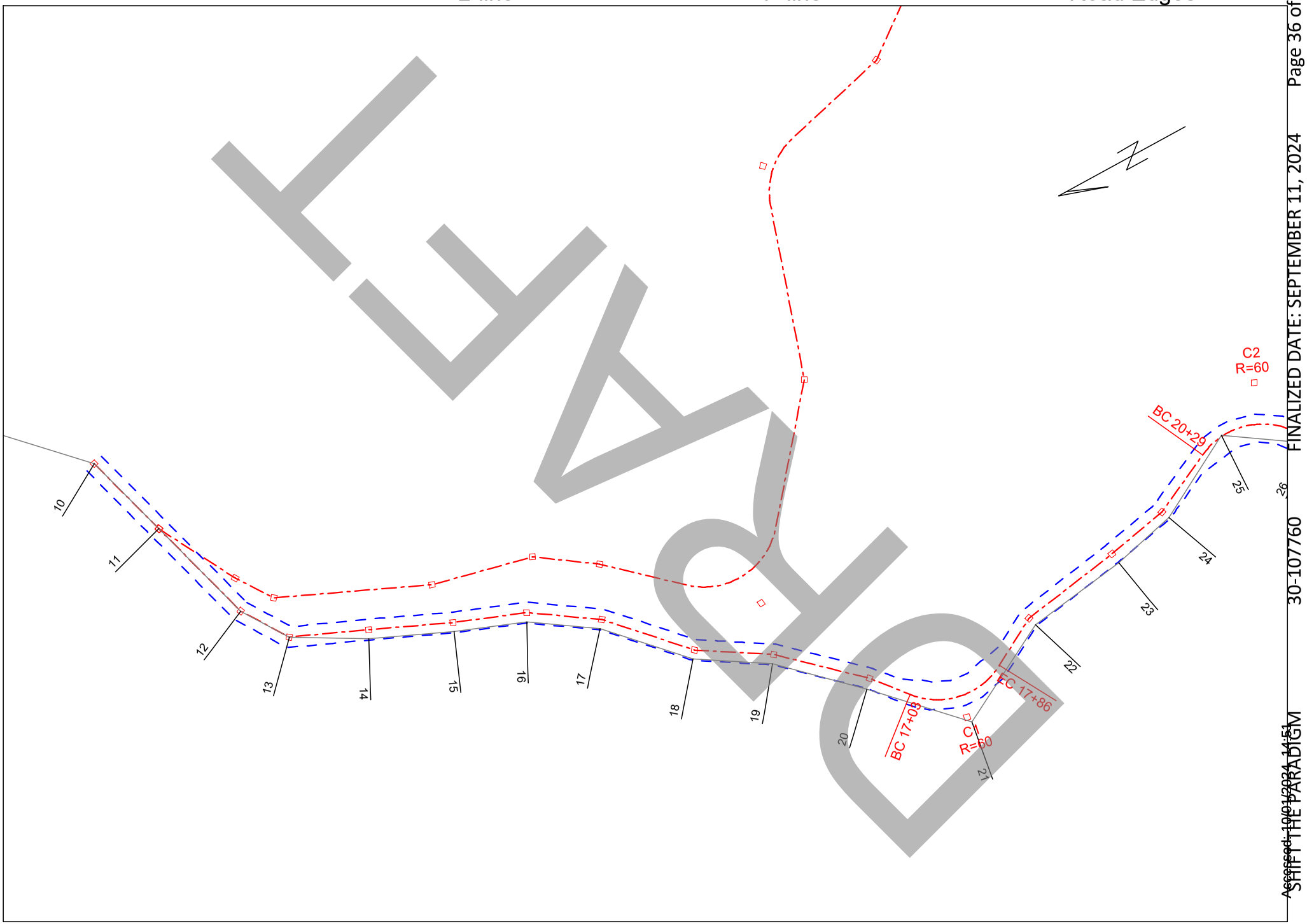
Legend

- Contours 10 ft
- Contours 40 ft
- Contours 200 ft
- Pit Floor
- Crushed Rock Stockpile
- Area A
- Overburden Storage Area
- Rock Pit

Created By: G. Gerritsen
Date: 6/6/24

Accessed: 10/01/2024 14:51

L-line P-line Road Edges



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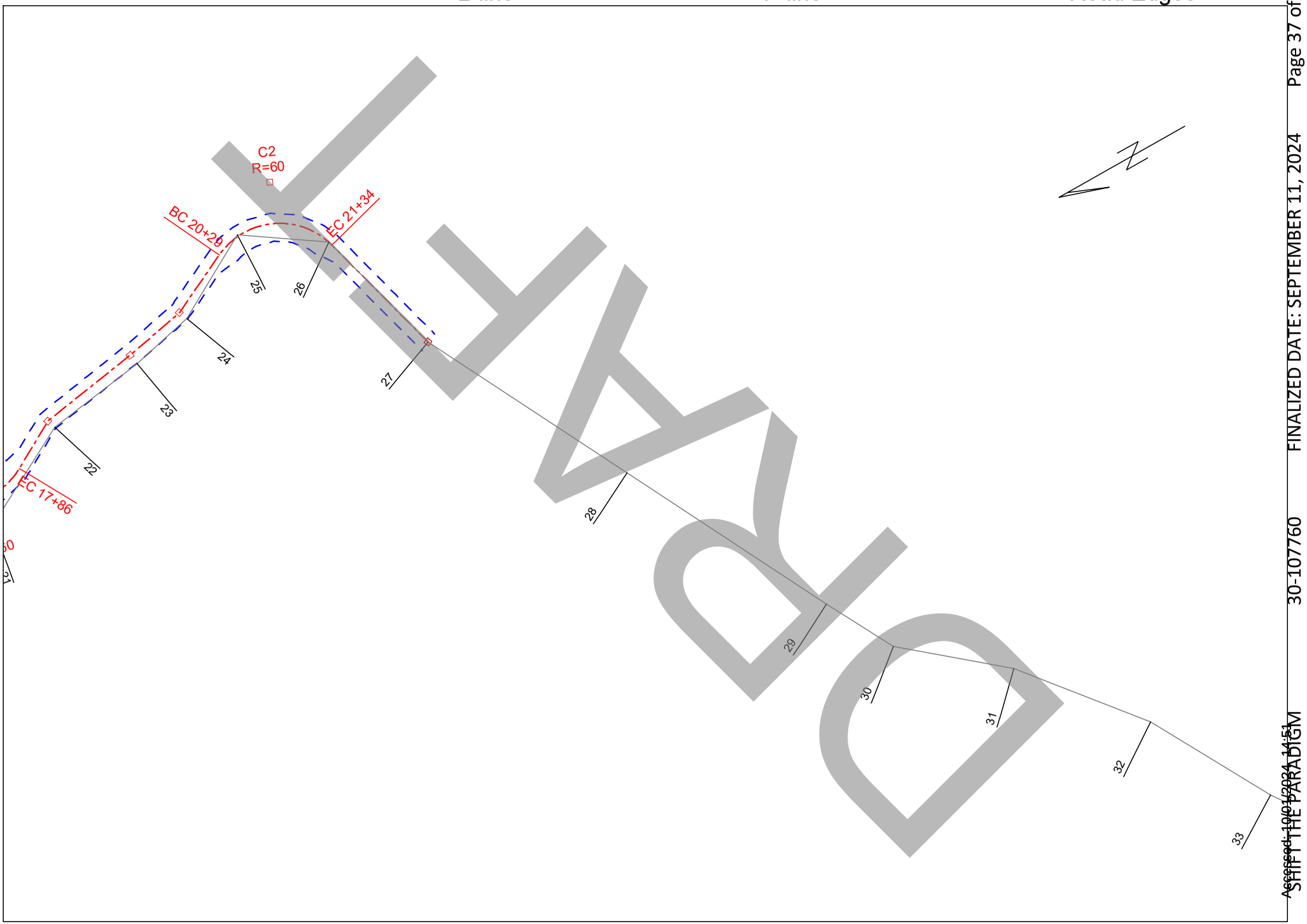
30-107760
FINALIZED DATE: SEPTEMBER 11, 2024
Page 36 of 49

L-line P-line Road Edges



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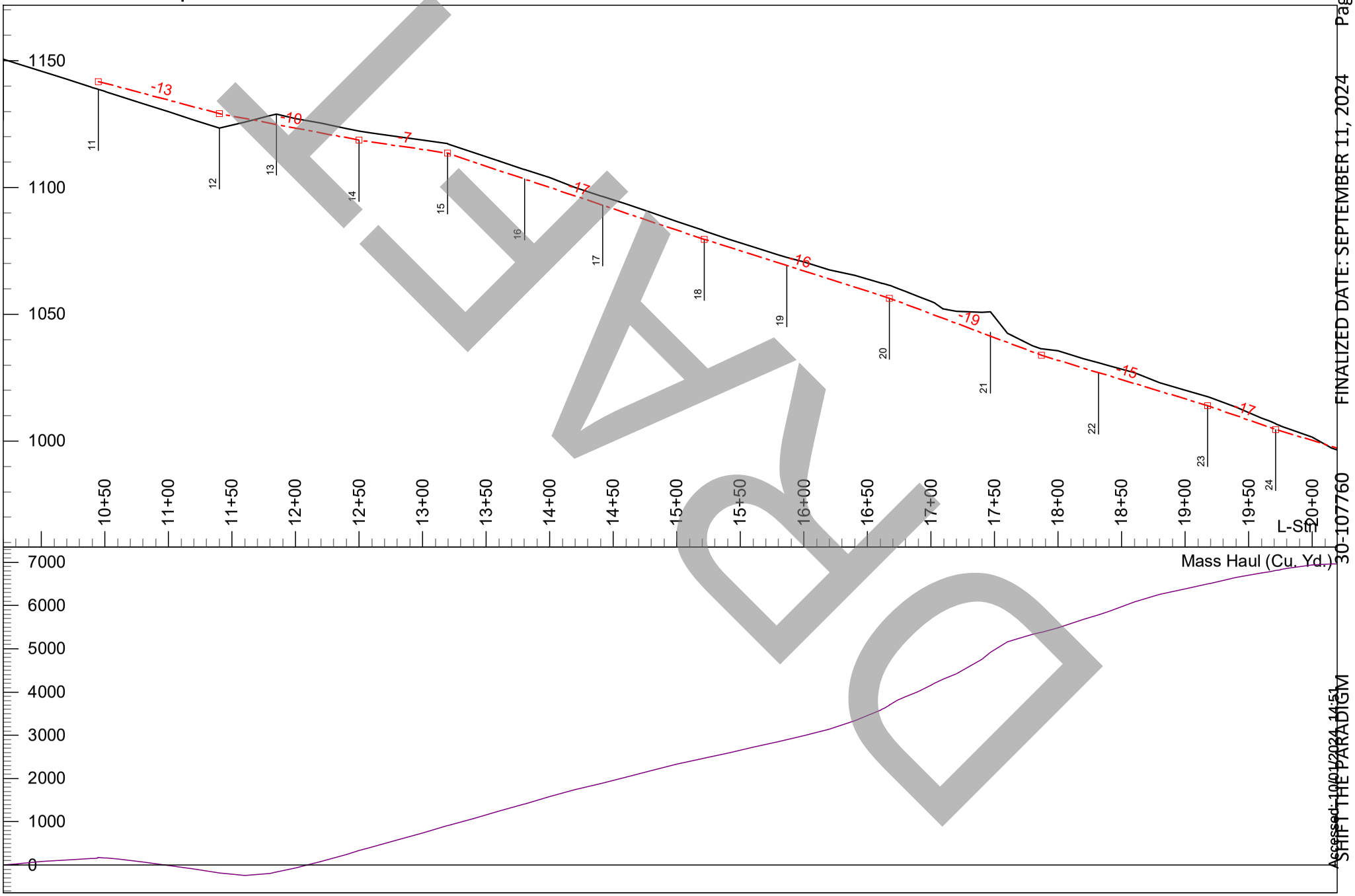
Shift The Paradigm
HM-2810-EXT
Grade %

Profile Vert Scale 1:600
Profile Horz Scale 1:1200

Profile View

Subgrade — Existing Topography

Assumed expansion factors Cut: 1.3 Fill: 0.8 *All volumes are estimates.



LEARD

Page 38 of 49
FINALIZED DATE: SEPTEMBER 11, 2024
30-107760
SHIFT THE PARADIGM
Assessed: 10/01/2024 14:51

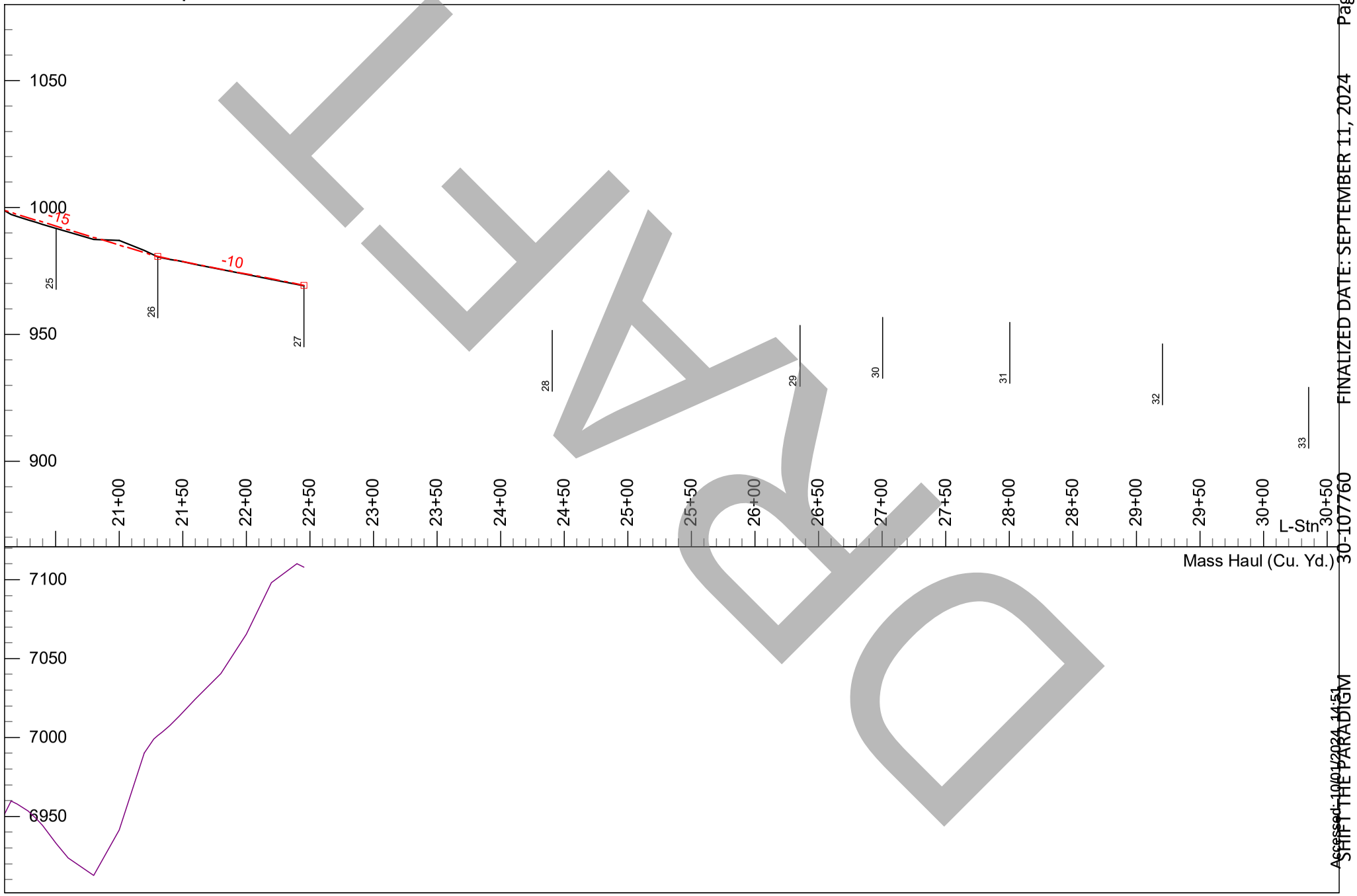
Shift The Paradigm
HM-2810-EXT
Grade %

Profile Vert Scale 1:600
Profile Horz Scale 1:1200

Profile View

Subgrade
Existing Topography

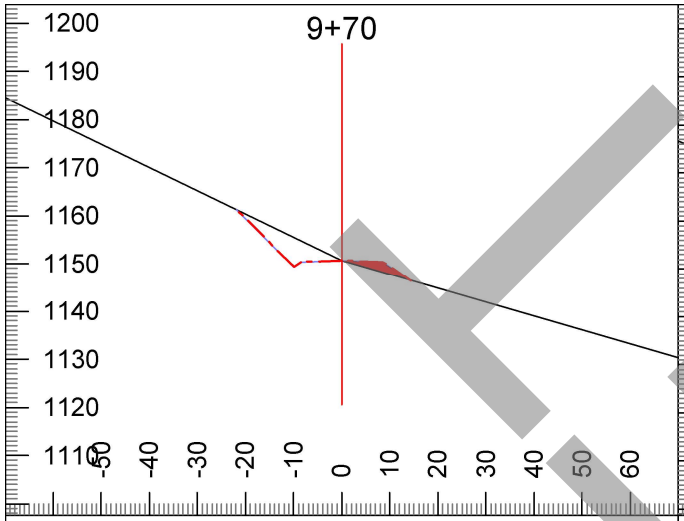
Assumed expansion factors Cut: 1.3 Fill: 0.8 *All volumes are estimates.



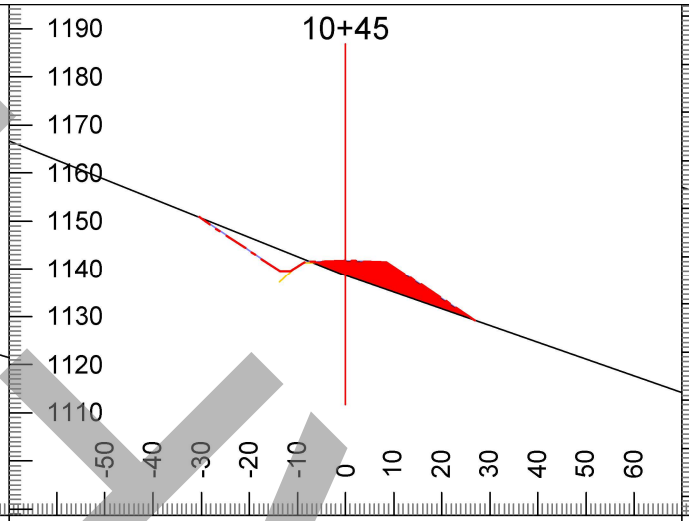
LEARED

Assessed: 10/01/2024 14:51
SHIFT THE PARADIGM

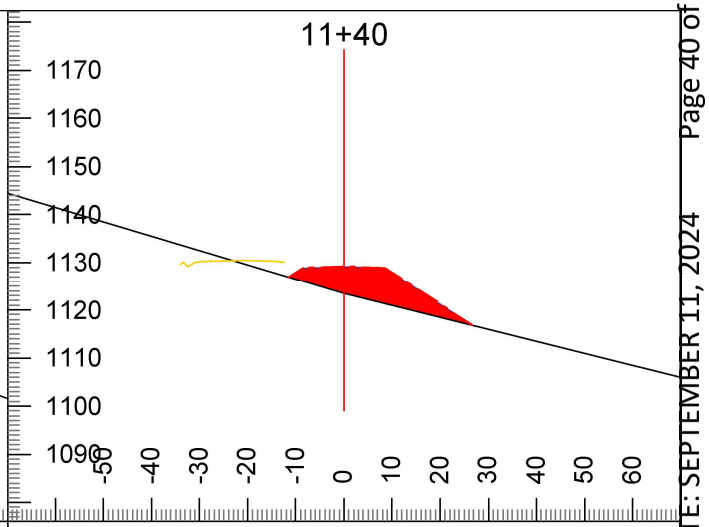
FINALIZED DATE: SEPTEMBER 11, 2024



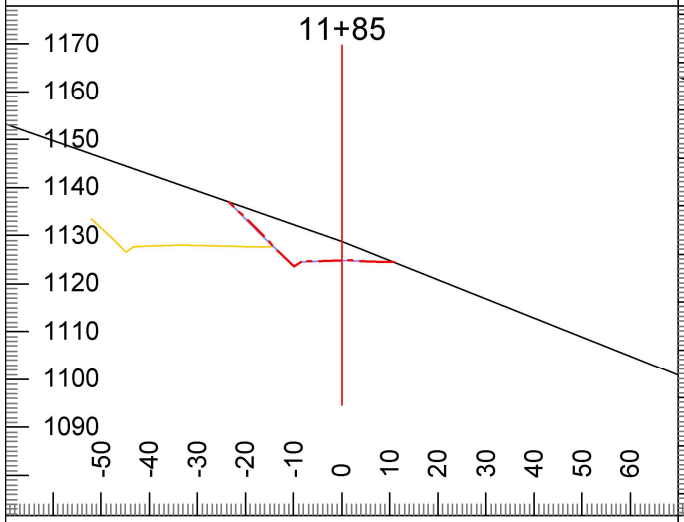
Index:	10	F Slope L:	100
L-Stn :	9+70	F Slope R:	-67
Cut Dp:	0	Grd.Nxt.:	-12
Rd. Wd. L:	9	Grd.Lst:	n/a
Rd. Wd. R:	9		



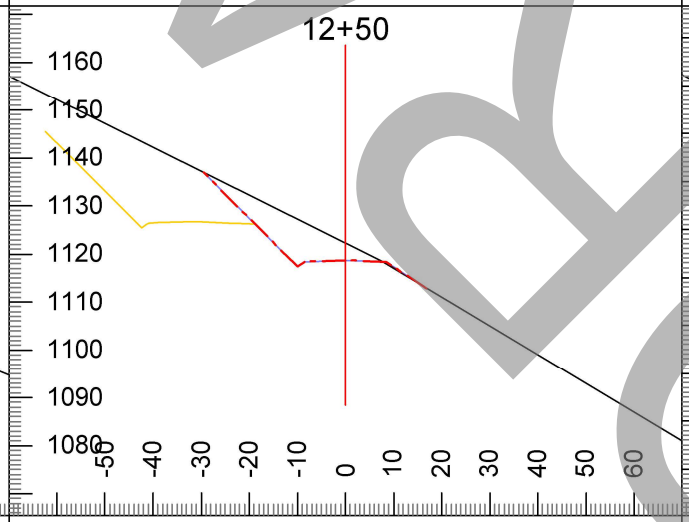
Index:	11	F Slope L:	67
L-Stn :	10+45	F Slope R:	-67
Cut Dp:	-3	Grd.Nxt.:	-13
Rd. Wd. L:	9	Grd.Lst:	n/a
Rd. Wd. R:	9		



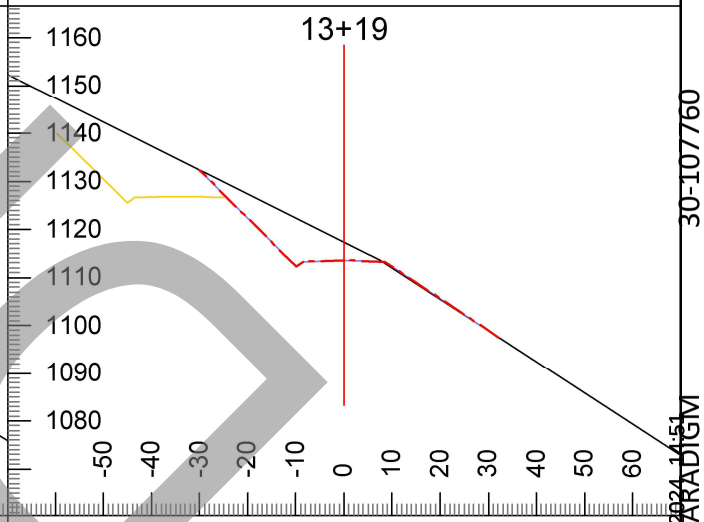
Index:	12	F Slope L:	-67
L-Stn :	11+40	F Slope R:	-67
Cut Dp:	-6	Grd.Nxt.:	-10
Rd. Wd. L:	9	Grd.Lst:	-13
Rd. Wd. R:	9		



Index:	13	F Slope L:	100
L-Stn :	11+85	F Slope R:	-3
Cut Dp:	4	Grd.Nxt.:	-10
Rd. Wd. L:	9	Grd.Lst:	-10
Rd. Wd. R:	9		



Index:	14	F Slope L:	100
L-Stn :	12+50	F Slope R:	-67
Cut Dp:	4	Grd.Nxt.:	-7
Rd. Wd. L:	9	Grd.Lst:	-10
Rd. Wd. R:	9		



Index:	15	F Slope L:	100
L-Stn :	13+19	F Slope R:	-67
Cut Dp:	4	Grd.Nxt.:	-17
Rd. Wd. L:	9	Grd.Lst:	-7
Rd. Wd. R:	9		

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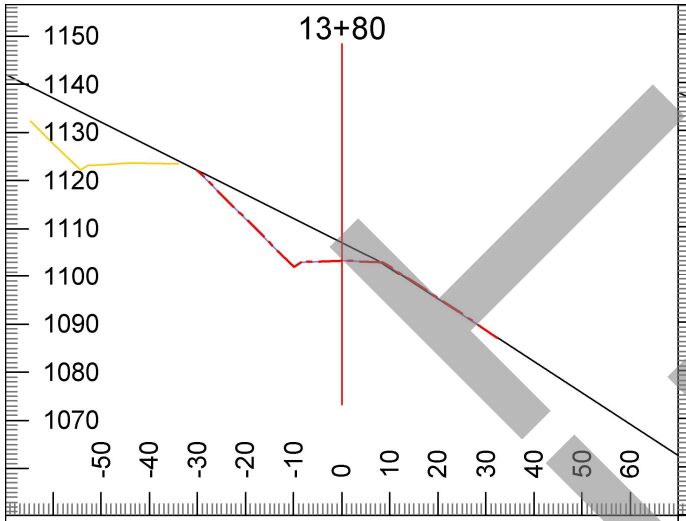
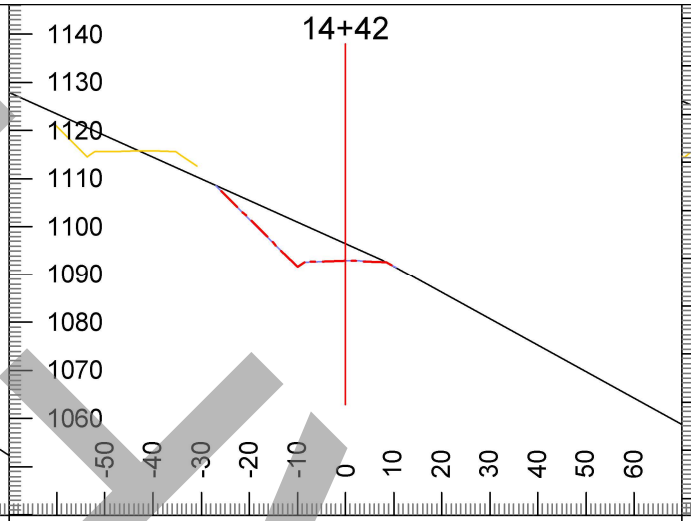
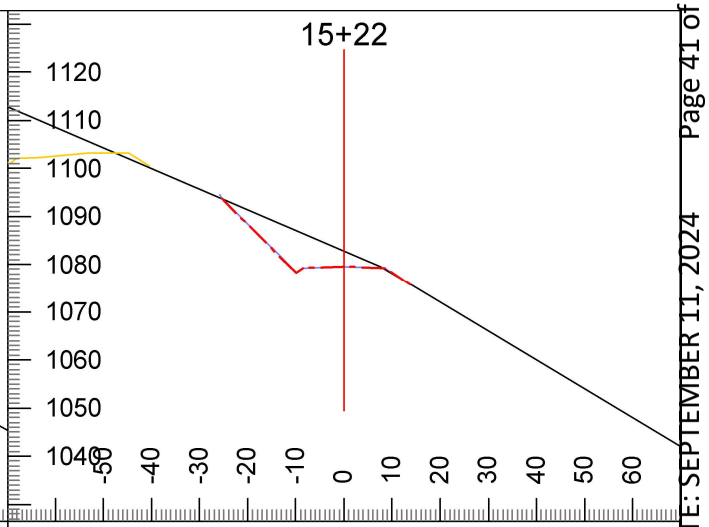


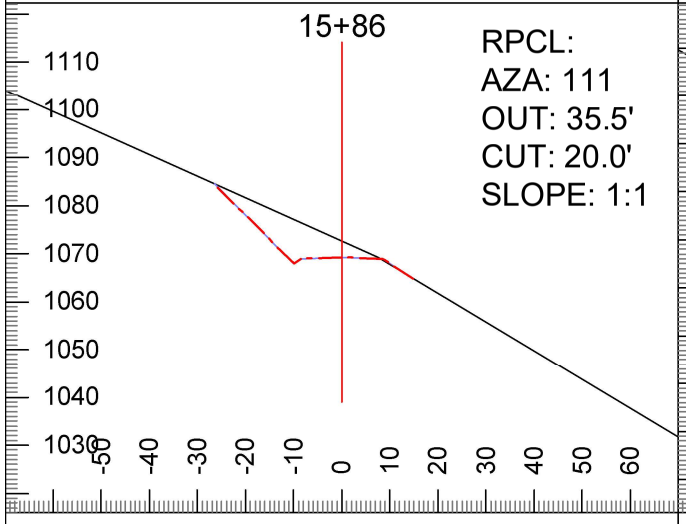
Index:	16	F Slope L:	100
L-Stn :	13+80	F Slope R:	-67
Cut Dp:	4	Grd.Nxt.:	-17
Rd. Wd. L:	9	Grd.Lst:	-17
Rd. Wd. R:	9		



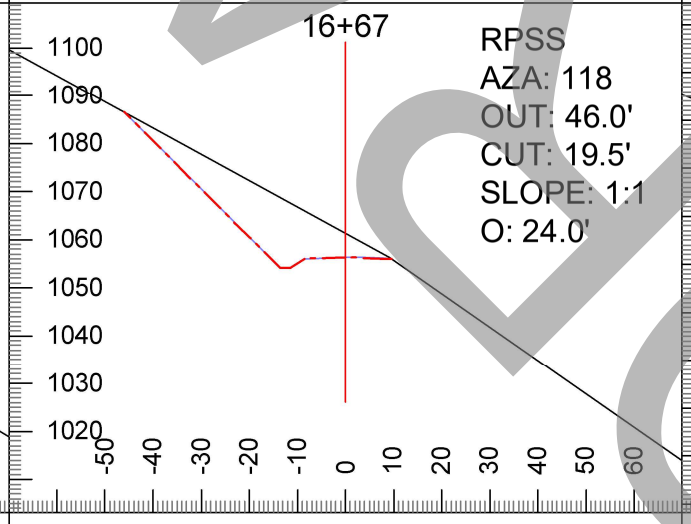
Index:	17	F Slope L:	100
L-Stn :	14+42	F Slope R:	-67
Cut Dp:	4	Grd.Nxt.:	-17
Rd. Wd. L:	9	Grd.Lst:	-17
Rd. Wd. R:	9		



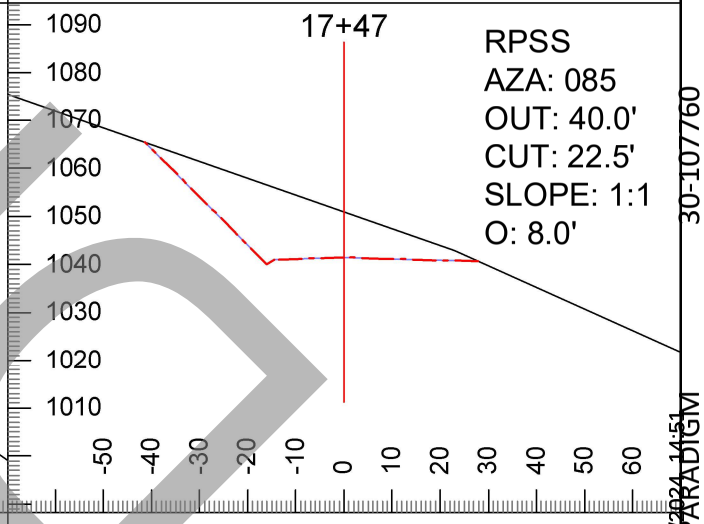
Index:	18	F Slope L:	100
L-Stn :	15+22	F Slope R:	-67
Cut Dp:	3	Grd.Nxt.:	-16
Rd. Wd. L:	9	Grd.Lst:	-17
Rd. Wd. R:	9		



Index:	19	F Slope L:	100
L-Stn :	15+86	F Slope R:	-67
Cut Dp:	3	Grd.Nxt.:	-16
Rd. Wd. L:	9	Grd.Lst:	-16
Rd. Wd. R:	9		



Index:	20	F Slope L:	100
L-Stn :	16+67	F Slope R:	-3
Cut Dp:	5	Grd.Nxt.:	-19
Rd. Wd. L:	9	Grd.Lst:	-19
Rd. Wd. R:	9		



Index:	21	F Slope L:	100
L-Stn :	17+47	F Slope R:	-3
Cut Dp:	9	Grd.Nxt.:	-19
Rd. Wd. L:	15	Grd.Lst:	-19
Rd. Wd. R:	9		

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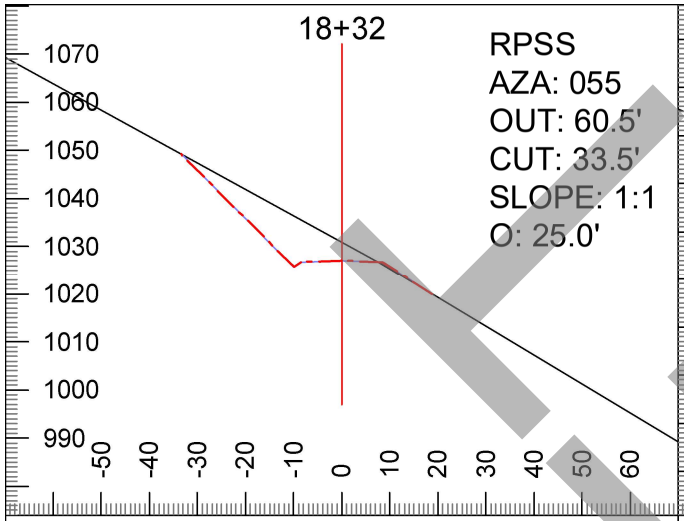
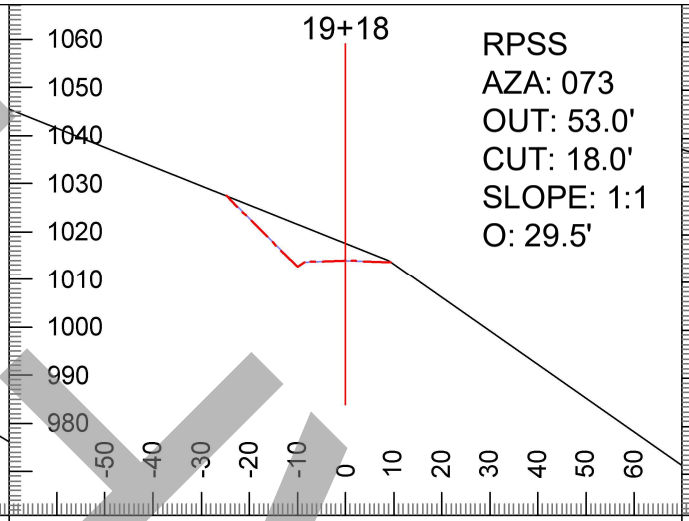
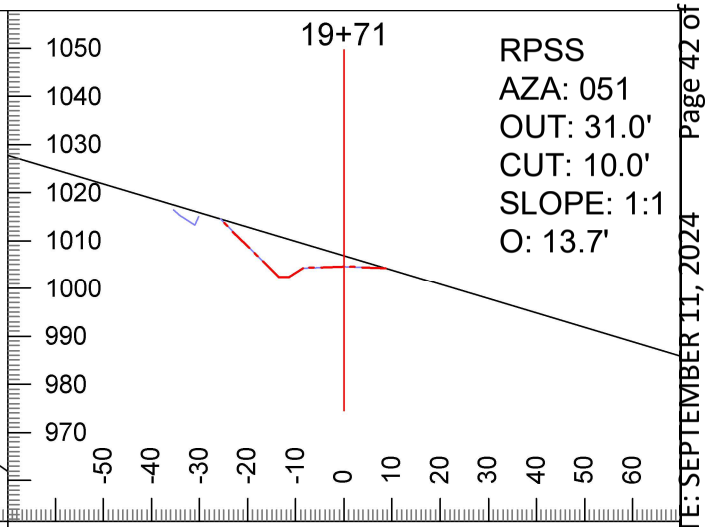


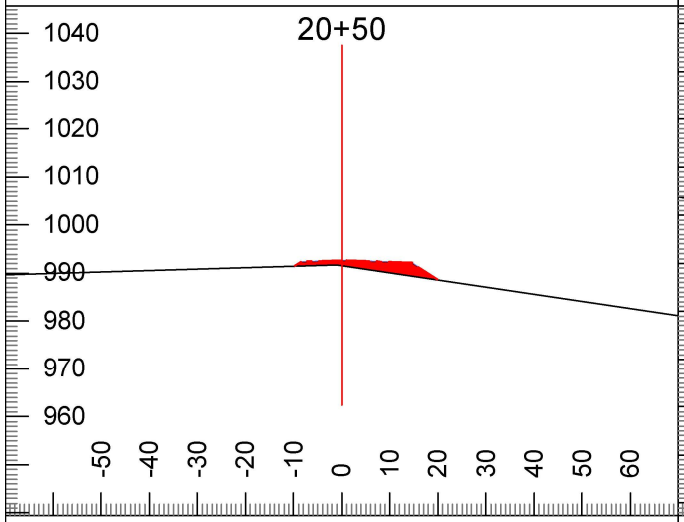
Index:	22	F Slope L:	100
L-Stn :	18+32	F Slope R:	-67
Cut Dp:	4	Grd.Nxt.:	-15
Rd. Wd. L:	9	Grd.Lst:	-15
Rd. Wd. R:	9		



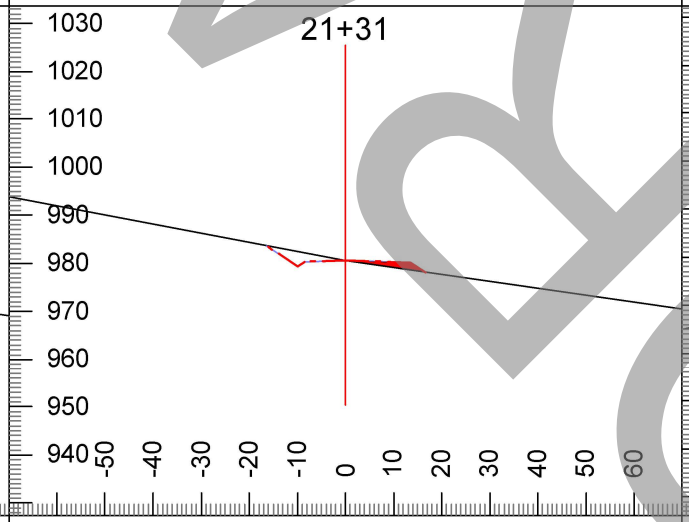
Index:	23	F Slope L:	100
L-Stn :	19+18	F Slope R:	-3
Cut Dp:	4	Grd.Nxt.:	-17
Rd. Wd. L:	9	Grd.Lst:	-15
Rd. Wd. R:	9		



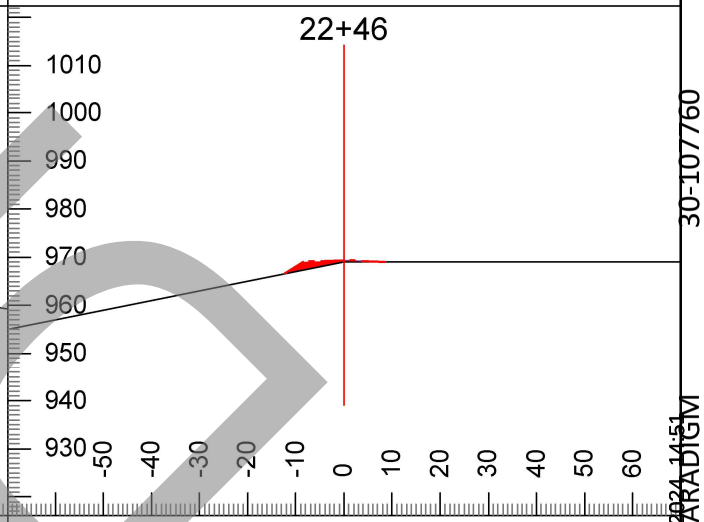
Index:	24	F Slope L:	100
L-Stn :	19+71	F Slope R:	-67
Cut Dp:	2	Grd.Nxt.:	-15
Rd. Wd. L:	9	Grd.Lst:	-17
Rd. Wd. R:	9		



Index:	25	F Slope L:	-67
L-Stn :	20+50	F Slope R:	-67
Cut Dp:	-1	Grd.Nxt.:	-15
Rd. Wd. L:	9	Grd.Lst:	-15
Rd. Wd. R:	15		



Index:	26	F Slope L:	67
L-Stn :	21+31	F Slope R:	-67
Cut Dp:	0	Grd.Nxt.:	-10
Rd. Wd. L:	9	Grd.Lst:	-10
Rd. Wd. R:	14		



Index:	27	F Slope L:	-67
L-Stn :	22+46	F Slope R:	-67
Cut Dp:	0	Grd.Nxt.:	n/a
Rd. Wd. L:	9	Grd.Lst:	-10
Rd. Wd. R:	9		

FINAL

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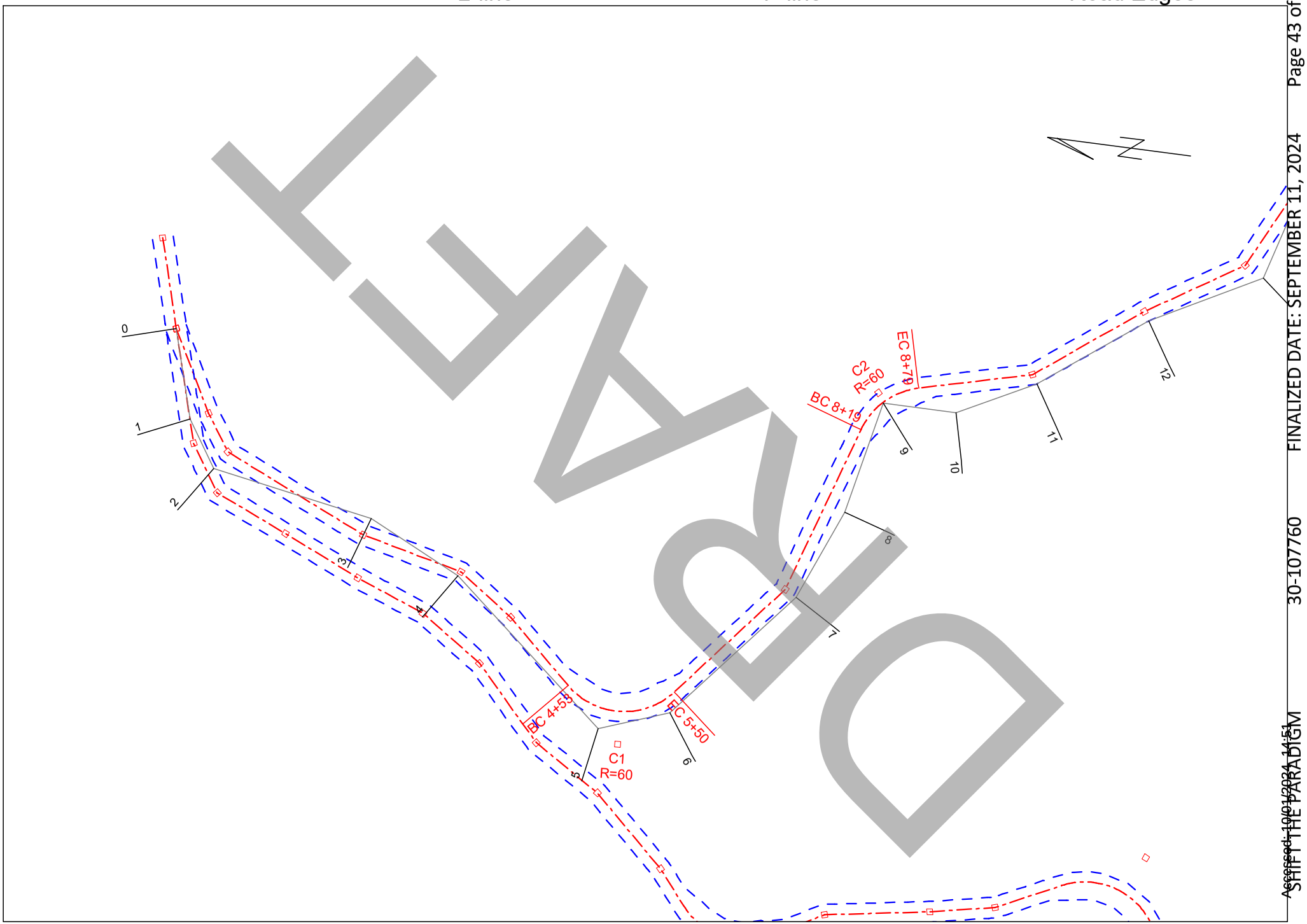
HM-2815 — L-line — P-line — Road Edges



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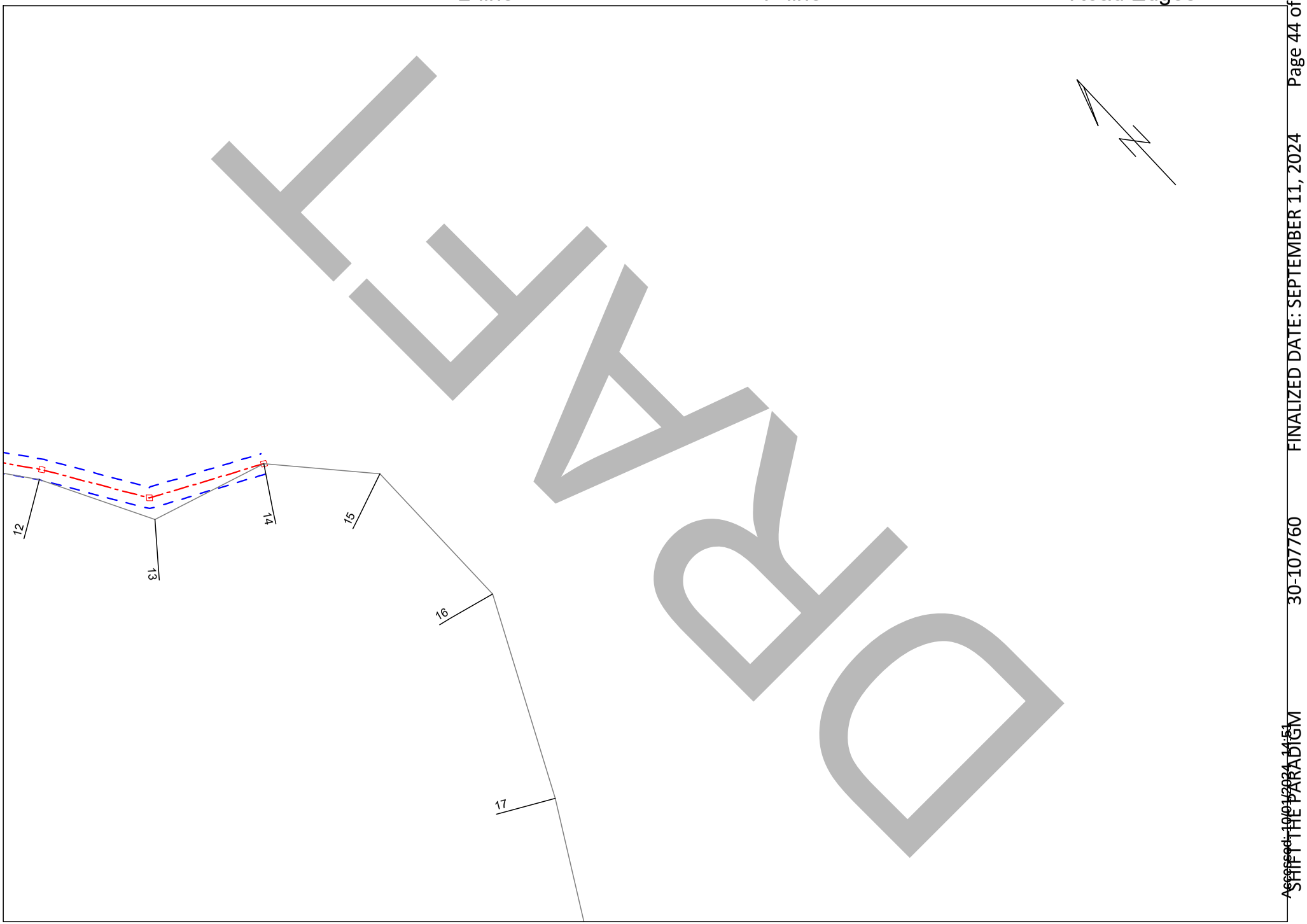
HM-2815 — L-line — P-line — Road Edges



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Shift The Paradigm
HM-2815
Grade %

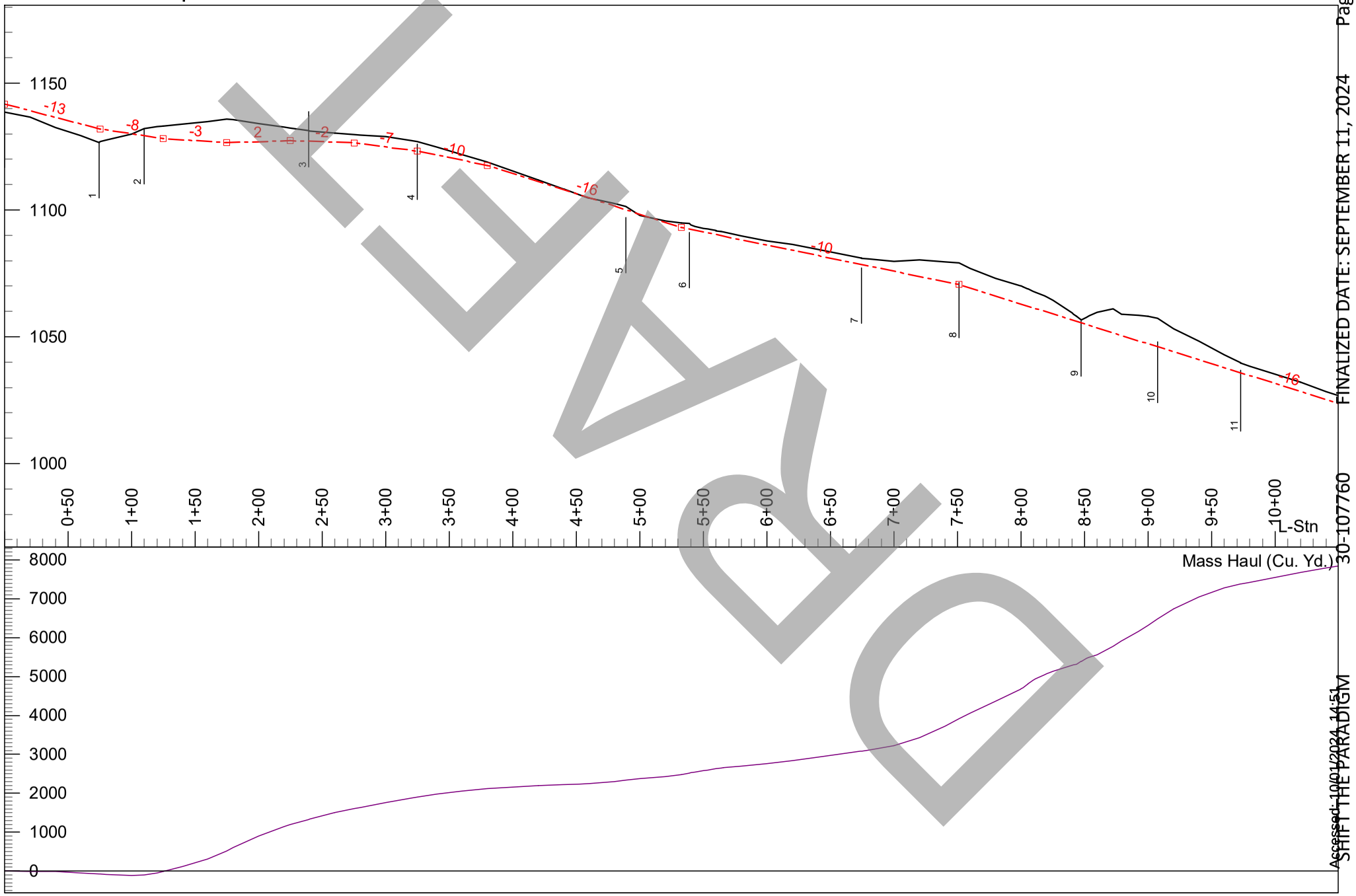
Profile Vert Scale 1:600
Profile Horz Scale 1:1200

Profile View

Subgrade

Existing Topography

Assumed expansion factors Cut: 1.3 Fill: 0.8 *All volumes are estimates.



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PRELIMINARY

Shift The Paradigm
HM-2815
Grade %

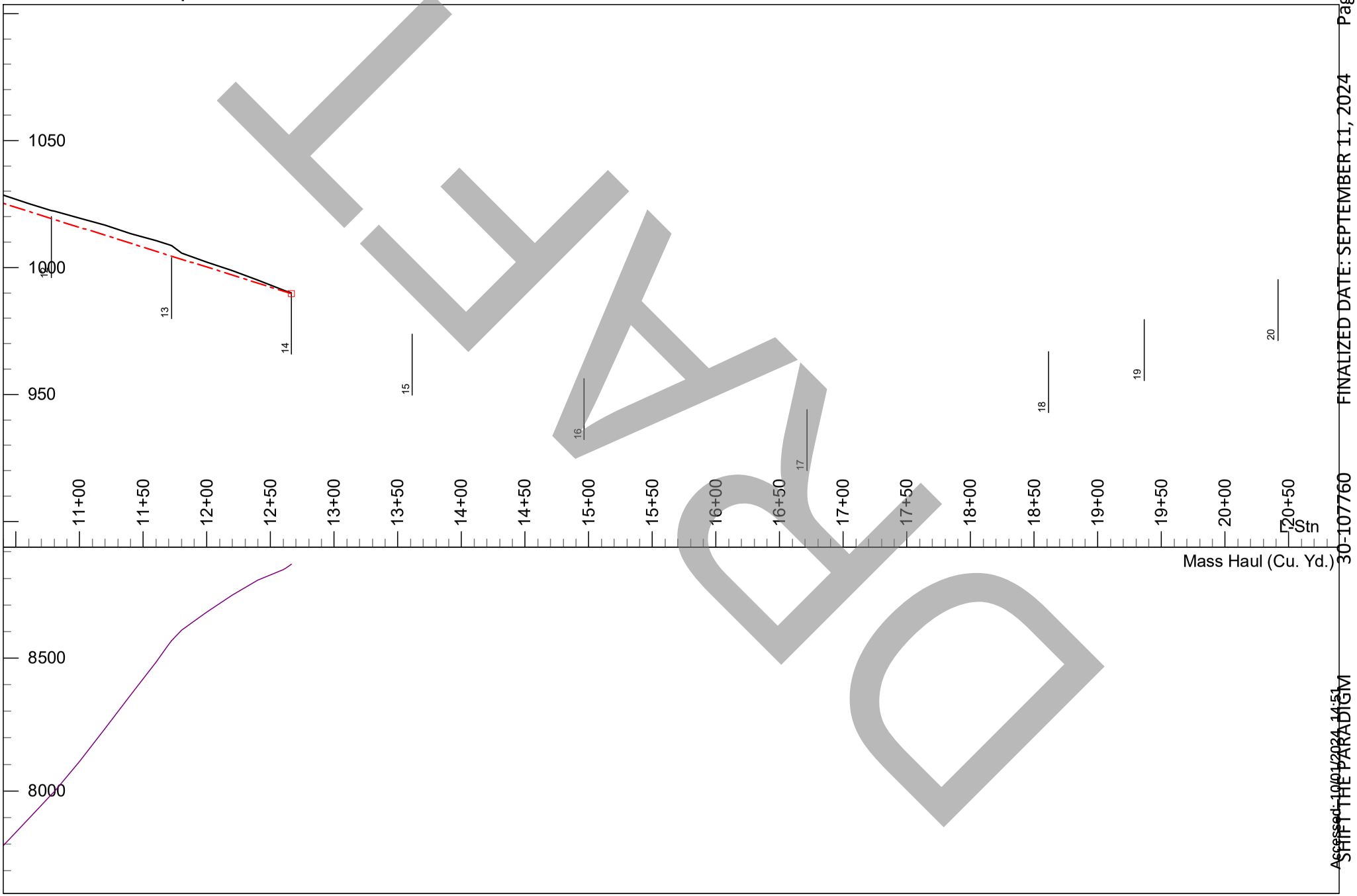
Profile Vert Scale 1:600
Profile Horz Scale 1:1200

Profile View

Subgrade

Existing Topography

Assumed expansion factors Cut: 1.3 Fill: 0.8 *All volumes are estimates.



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SHIFT THE PARADIGM
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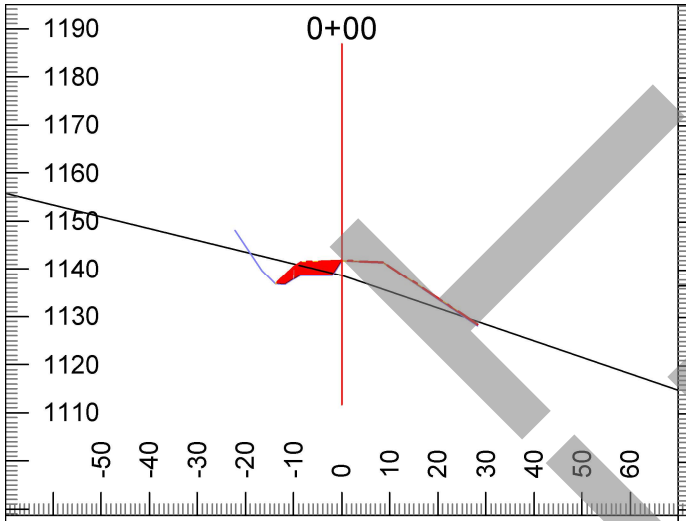
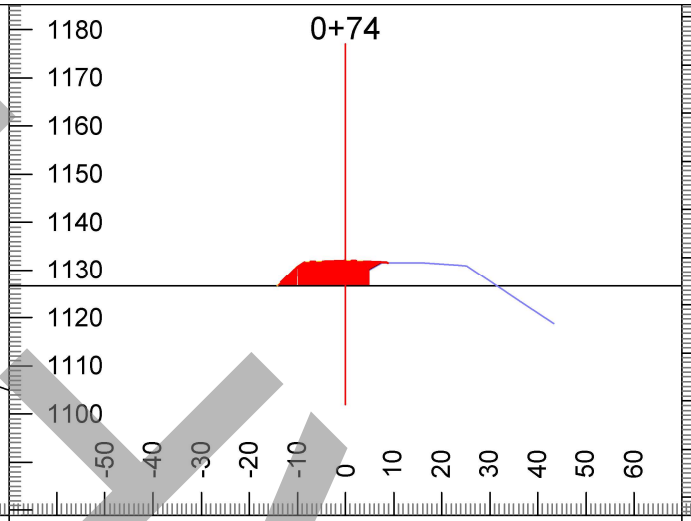
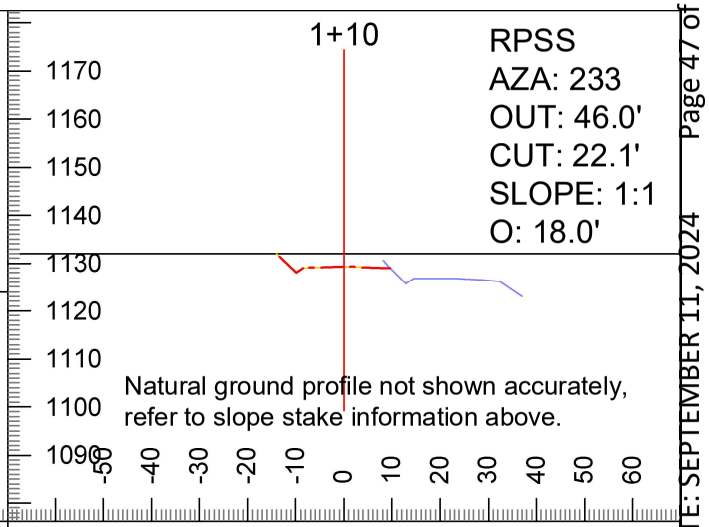


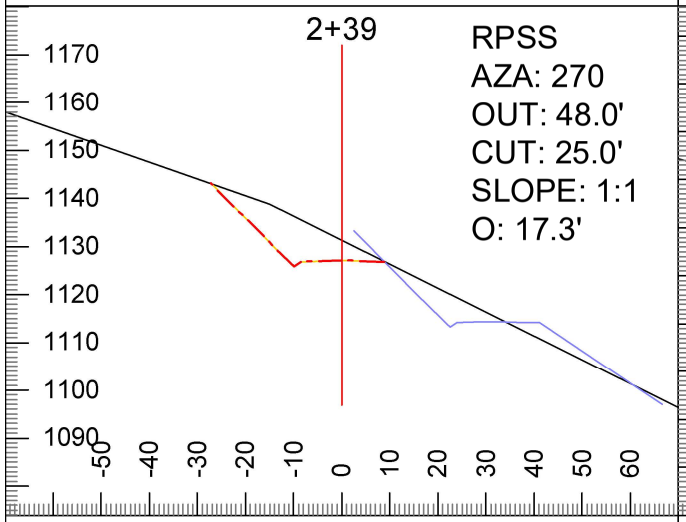
Index:	0	F Slope L:	-100
L-Stn :	0+00	F Slope R:	-67
Cut Dp:	-3	Grd.Nxt.:	-13
Rd. Wd. L:	9	Grd.Lst:	n/a
Rd. Wd. R:	9		



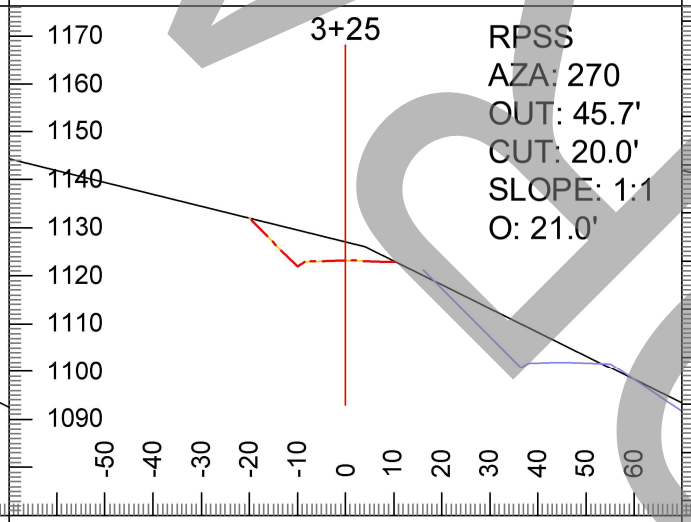
Index:	1	F Slope L:	-100
L-Stn :	0+74	F Slope R:	-67
Cut Dp:	-5	Grd.Nxt.:	-13
Rd. Wd. L:	9	Grd.Lst:	-13
Rd. Wd. R:	9		



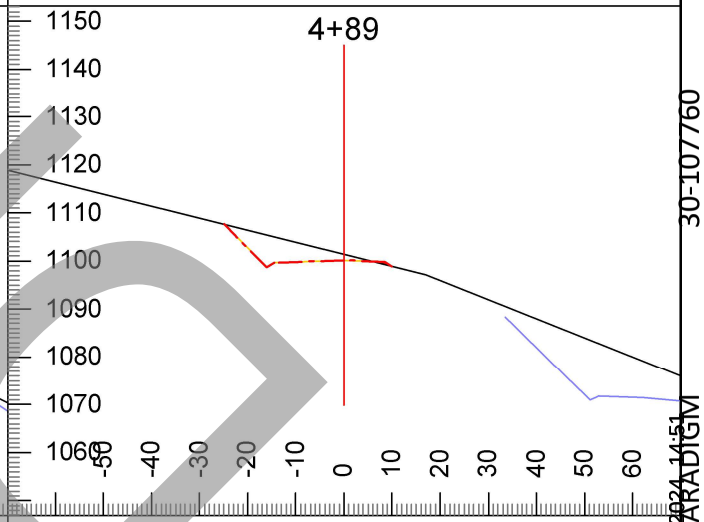
Index:	2	F Slope L:	100
L-Stn :	1+10	F Slope R:	-3
Cut Dp:	3	Grd.Nxt.:	-8
Rd. Wd. L:	9	Grd.Lst:	-8
Rd. Wd. R:	9		



Index:	3	F Slope L:	100
L-Stn :	2+39	F Slope R:	-3
Cut Dp:	4	Grd.Nxt.:	-2
Rd. Wd. L:	9	Grd.Lst:	-2
Rd. Wd. R:	9		



Index:	4	F Slope L:	100
L-Stn :	3+25	F Slope R:	-3
Cut Dp:	4	Grd.Nxt.:	-10
Rd. Wd. L:	9	Grd.Lst:	-7
Rd. Wd. R:	9		



Index:	5	F Slope L:	100
L-Stn :	4+89	F Slope R:	-67
Cut Dp:	1	Grd.Nxt.:	-16
Rd. Wd. L:	15	Grd.Lst:	-16
Rd. Wd. R:	9		

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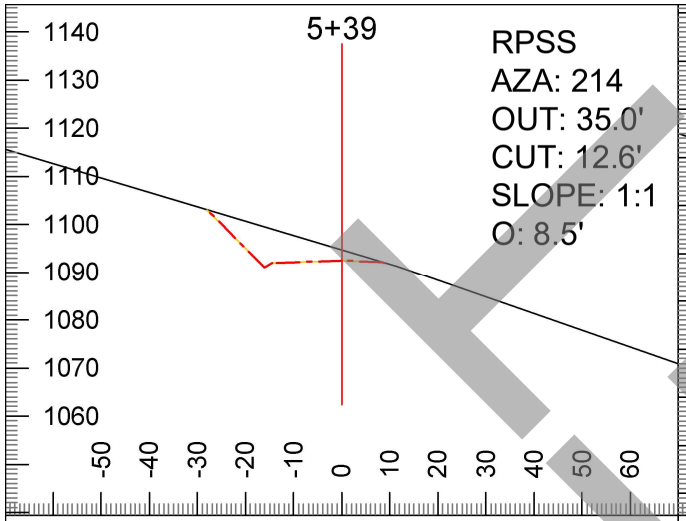
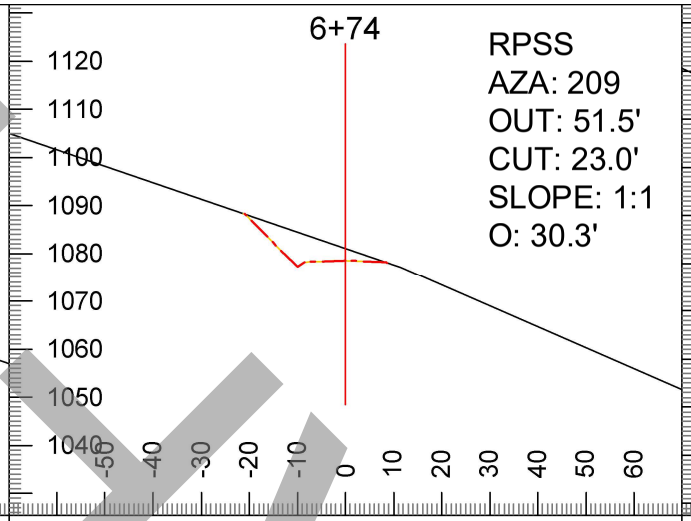
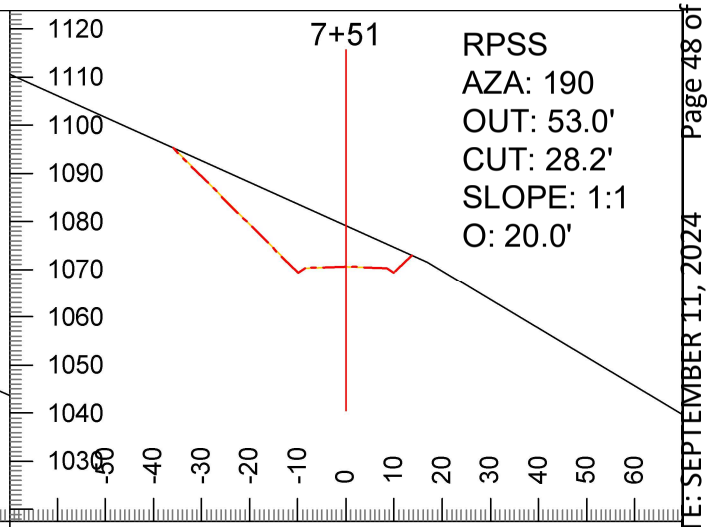


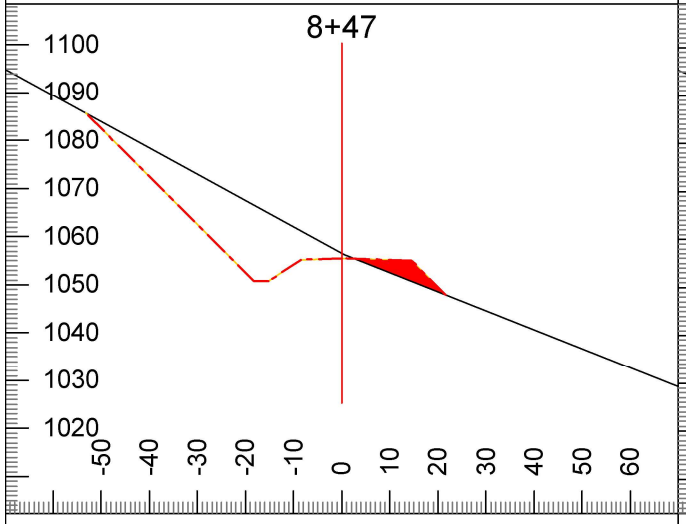
Index:	6	F Slope L:	100
L-Stn :	5+39	F Slope R:	-67
Cut Dp:	2	Grd.Nxt.:	-10
Rd. Wd. L:	15	Grd.Lst:	-10
Rd. Wd. R:	9		



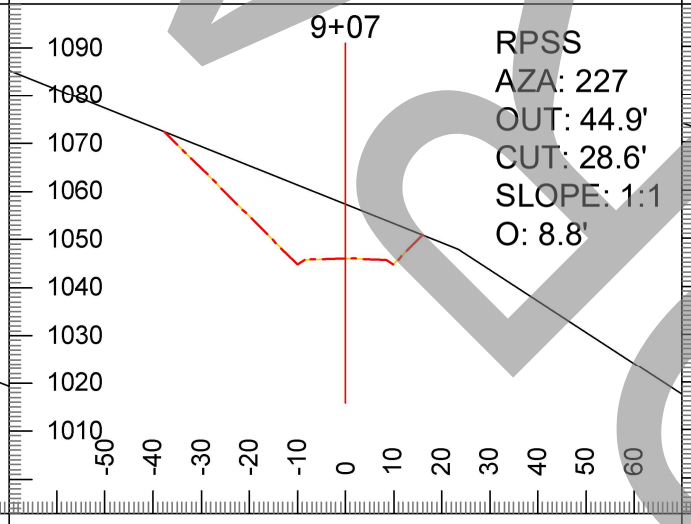
Index:	7	F Slope L:	100
L-Stn :	6+74	F Slope R:	-67
Cut Dp:	3	Grd.Nxt.:	-10
Rd. Wd. L:	9	Grd.Lst:	-10
Rd. Wd. R:	9		



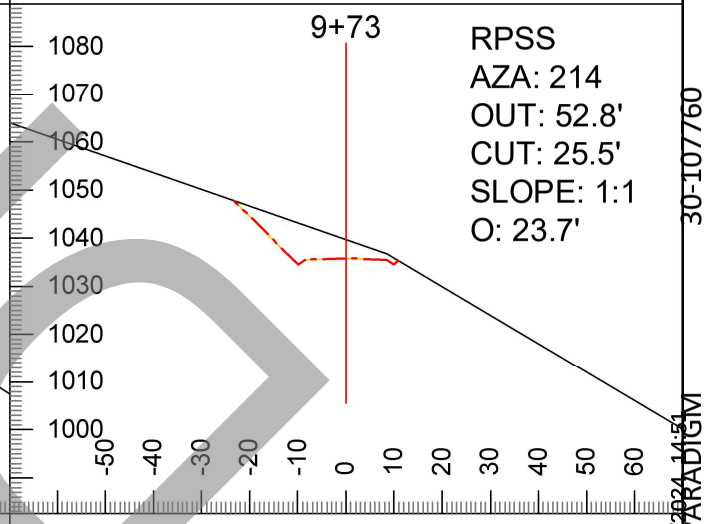
Index:	8	F Slope L:	100
L-Stn :	7+51	F Slope R:	100
Cut Dp:	9	Grd.Nxt.:	-16
Rd. Wd. L:	9	Grd.Lst:	-16
Rd. Wd. R:	9		



Index:	9	F Slope L:	100
L-Stn :	8+47	F Slope R:	-100
Cut Dp:	1	Grd.Nxt.:	-16
Rd. Wd. L:	9	Grd.Lst:	-16
Rd. Wd. R:	15		



Index:	10	F Slope L:	100
L-Stn :	9+07	F Slope R:	100
Cut Dp:	11	Grd.Nxt.:	-16
Rd. Wd. L:	9	Grd.Lst:	-16
Rd. Wd. R:	9		



Index:	11	F Slope L:	100
L-Stn :	9+73	F Slope R:	100
Cut Dp:	4	Grd.Nxt.:	-16
Rd. Wd. L:	9	Grd.Lst:	-16
Rd. Wd. R:	9		

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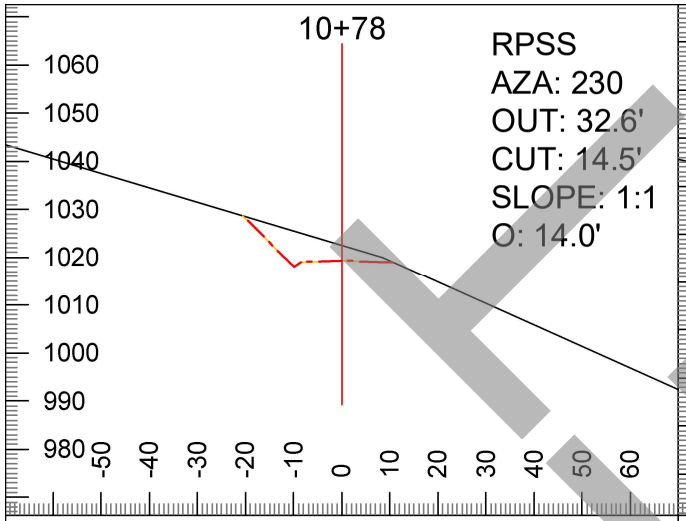
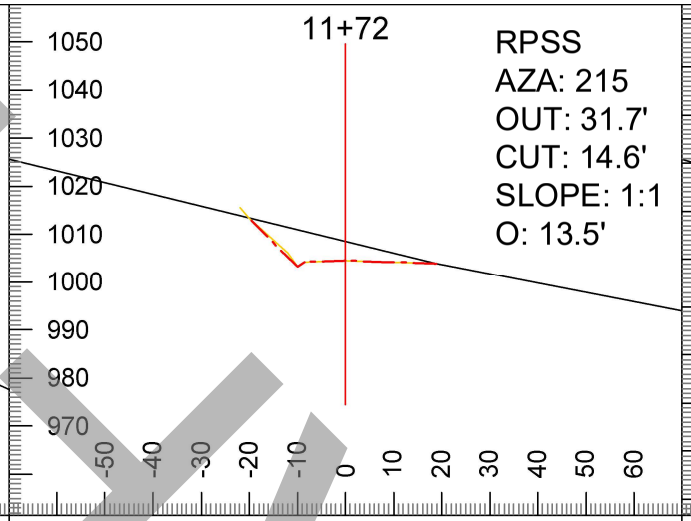
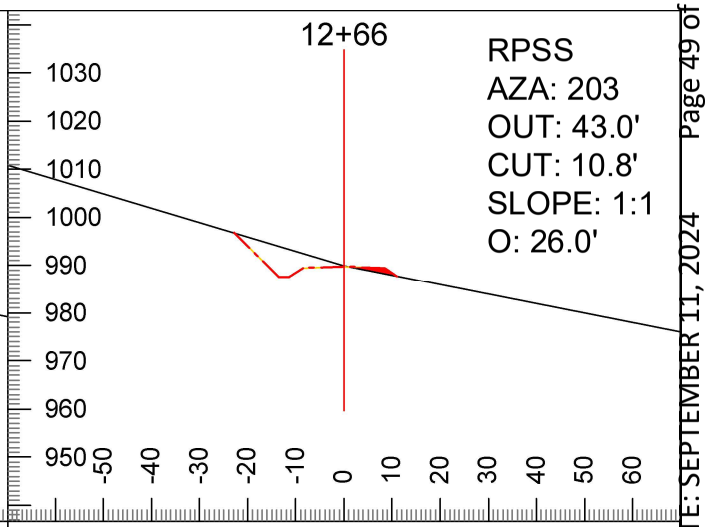


Index:	12	F Slope L:	100
L-Stn :	10+78	F Slope R:	-3
Cut Dp:	3	Grd.Nxt.:	-16
Rd. Wd. L:	9	Grd.Lst:	-16
Rd. Wd. R:	9		



Index:	13	F Slope L:	100
L-Stn :	11+72	F Slope R:	-3
Cut Dp:	4	Grd.Nxt.:	-16
Rd. Wd. L:	9	Grd.Lst:	-16
Rd. Wd. R:	9		



Index:	14	F Slope L:	100
L-Stn :	12+66	F Slope R:	-67
Cut Dp:	0	Grd.Nxt.:	n/a
Rd. Wd. L:	9	Grd.Lst:	-16
Rd. Wd. R:	9		

FINAL
SHIFT THE PARADIGM
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SUMMARY - Road Development Costs

REGION: Pacific Cascade
DISTRICT: Lewis

SALE/PROJECT NAME: Shift The Paradigm AGREEMENT #: 30-107760

ROAD NUMBERS: Optional: HM-2012, HM-2810-EXT, HM-2815, HM-2816, HM-2817

Required: HM-Mainline, HM-2000, HM-2010, HM-2700, HM-2810

ROAD STANDARD:		Construction	Reconstruction	Maintenance
NUMBER OF STATIONS:		79.73	0.00	427.50
CLEARING & GRUBBING, EXCAVATION AND FILL, MISC.:		$136,713.20	$0.00	$17,805.10
ROAD ROCK:				
	Optional:	$13,936.37	$0.00	$0.00
	Required:	$116,664.01	$0.00	$6,784.83
	Total:	$130,600.38	$0.00	$6,784.83
STOCKPILE:		-	-	$0.00
CULVERTS AND FLUMES:		$10,258.80	$0.00	$2,412.80
STRUCTURES:		-	-	-
MOBILIZATION:		$7,574.34	$0.00	$986.46
TOTAL COSTS:		$285,146.72	$0.00	$27,989.19
COST PER STATION:		$3,576.40	$0.00	$65.47
ROAD DEACTIVATION & ABANDONMENT COSTS:		$0.00	$0.00	$0.00

10% OVERHEAD AND GENERAL EXPENSE = $31,313.59
TOTAL (All Roads) = $344,449.50
TOTAL (Minus Optional Rock) = $330,513.13
SALE VOLUME MBF = 8,412
TOTAL $/MBF = $40.95
TOTAL $/MBF (Minus Optional Rock) = $39.29

Profit and Risk costs are accounted on an individual basis.

DRAFT

SUMMARY OF ROAD

Sale: **Shift The Paradigm** Road: **HM-Mainline**

Required Pre-Haul Maintenance-	330+30	stations	Required Reconstruction -		stations	Required Construction -		stations
	6.26	miles		0.00	miles		0.00	miles
Required Abandonment-		stations	Optional Reconstruction -	0+00	stations	Optional Construction -	0+00	stations
	0.00	miles		0.00	miles		0.00	miles

PRE-HAUL MAINTENANCE

CLEARING

Roadside Brushing	0.91	miles	@	$1,170.00	per mile =	$1,064.70

EXCAVATION

Construct sediment traps at station 108+50-	4.00		@	$53.75	each	$215.00
Reconstruct ditch-	37.55	stations	@	$215.00	per station	$8,073.25
Clean ditch -	26.15	stations	@	$39.81	per station	$1,041.03

MISC.

Spot grade and shape existing road surface -	23.30	stations	@	$10.95	per station	$255.14
Roll shaped road surface w/ vibratory roller prior to rocking -	23.30	stations	@	$9.70	per station	$226.01
Clean culvert inlet and outlet -	3.00		@	$45.00	each	$135.00

TOTAL CLEARING, GRUBBING, EXCAVATION, FILL, and MISC. **$11,010.13**

CULVERTS - MATERIALS & INSTALLATION

Culverts

60	LF of 18"	$1,603.20	0	LF of 24"	$0.00	
		$1,603.20			$0.00	

Culvert Stakes & Markers

2 markers	$16.00	

TOTAL CULVERTS **$1,603.20**

ROCK

Culvert Backfill	0+00	40	cy. of	2 1/2 Inch Minus Crushed Rock	@	$13.87	per c.y.=	$554.80
Spot Rock	0+00	170	cy. of	2 1/2 Inch Minus Crushed Rock	@	$13.87	per c.y.=	$2,357.90
Inlet Headwall	0+00	1	cy. of	Quarry Spalls	@	$25.29	per c.y.=	$25.29
Energy Dissipator	0+00	1	cy. of	Quarry Spalls	@	$25.29	per c.y.=	$25.29

TOTAL ROCK **$2,963.28**

SUBTOTAL **$15,576.61**

MOBILIZATION

SUBTOTAL **$610.00**

OVERHEAD & GENERAL EXPENSES 10%

SUBTOTAL **$1,618.66**

TOTAL **$17,805.27**

Optional Rock? NO

COST PER STATION **$53.91**

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SUMMARY OF ROAD

Sale: **Shift The Paradigm** Road: **HM-2000**

Required Pre-Haul Maintenance-	10+65	stations	Required Reconstruction -		stations	Required Construction -		stations
	0.20	miles		0.00	miles		0.00	miles
Required Abandonment-		stations	Optional Reconstruction -	0+00	stations	Optional Construction -	0+00	stations
	0.00	miles		0.00	miles		0.00	miles

PRE-HAUL MAINTENANCE

MISC.

Spot grade and shape existing road surface -	2.00	stations @	$18.25	per station	$36.50	
Roll shaped road surface w/ vibratory roller prior to rocking -	2.00	stations @	$9.70	per station	$19.40	
				TOTAL CLEARING, GRUBBING, EXCAVATION, FILL, and MISC.		**$55.90**

ROCK

Spot Rock		0+00	20	cy. of	2 1/2 Inch Minus Crushed Rock	@	$13.21	per c.y.=	$264.20
0+00	to	10+65	68	cy. of	Select Pit Run	@	$19.49	per c.y.=	$1,325.32
								TOTAL ROCK	**$1,589.52**

	SUBTOTAL	**$1,645.42**
MOBILIZATION	SUBTOTAL	**$3.10**
OVERHEAD & GENERAL EXPENSES 10%	SUBTOTAL	**$164.85**
	TOTAL	**$1,813.37**
	COST PER STATION	**$170.27**

Optional Rock? NO

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SUMMARY OF ROAD

Sale: **Shift The Paradigm** Road: **HM-2010**

Required Pre-Haul Maintenance-	27+65	stations	Required Reconstruction -		stations	Required Construction -		stations
	0.52	miles		0.00	miles		0.00	miles
Required Abandonment-		stations	Optional Reconstruction -	0+00	stations	Optional Construction -	0+00	stations
	0.00	miles		0.00	miles		0.00	miles

PRE-HAUL MAINTENANCE

MISC.

Spot grade and shape existing road surface -	2.00	stations @	$18.25	per station	$36.50	
Roll shaped road surface w/ vibratory roller prior to rocking -	2.00	stations @	$9.70	per station	$19.40	
Grade turnarounds -	2.00	@	$9.13	each	$18.26	
				TOTAL CLEARING, GRUBBING, EXCAVATION, FILL, and MISC.		**$74.16**

ROCK

Spot Rock		0+00	30	cy. of	2 1/2 Inch Minus Crushed Rock	@	$13.55	per c.y.=	$406.50	
0+00	to	27+65	68	cy. of	Select Pit Run	@	$20.41	per c.y.=	$1,387.88	
									TOTAL ROCK	**$1,794.38**

	SUBTOTAL	**$1,868.54**
MOBILIZATION	SUBTOTAL	**$4.11**
OVERHEAD & GENERAL EXPENSES 10%	SUBTOTAL	**$187.27**
	TOTAL	**$2,059.92**
Optional Rock? NO	**COST PER STATION**	**$74.50**

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SUMMARY OF ROAD

Sale: **Shift The Paradigm** Road: **HM-2012**

Required Pre-Haul Maintenance-	0+00 stations 0.00 miles	Required Reconstruction -	stations 0.00 miles	Required Construction -	2+20 stations 0.04 miles
Required Abandonment-	stations 0.00 miles	Optional Reconstruction -	0+00 stations 0.00 miles	Optional Construction -	0+00 stations 0.00 miles

CONSTRUCTION

CLEARING/GRUBBING						
Scattering Organic Debris	2.20	sta @	$280.00	per sta	$616.00	
EXCAVATION						
Road Construction Earthwork	2.20	sta. @	$152.17	per sta. =	$334.77	
Grade and shape subgrade -	2.20	stations @	$14.60	per station	$32.12	
MISC.						
Roll subgrade w/ vibratory roller prior to rocking -	2.20	stations @	$12.12	per station	$26.66	
Construct turnaround @ sta. -	1.00	@	$134.62	each	$134.62	
Construct landing -	1.00	@	$538.46	each	$538.46	
Grass seed and fertilize -	5.60	lbs @	$15.00	per lbs	$84.00	
				TOTAL CLEARING, GRUBBING, EXCAVATION, FILL, and MISC.		**$1,766.63**

ROCK

0+00 to 2+20 304 cy. of Select Pit Run @ $21.54 per c.y.= $6,548.16

TOTAL ROCK **$6,548.16**

SUBTOTAL **$8,314.79**

MOBILIZATION

SUBTOTAL **$97.88**

OVERHEAD & GENERAL EXPENSES

10% SUBTOTAL **$841.27**

TOTAL **$9,253.94**

Optional Rock? YES

COST PER STATION **$4,206.34**

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SUMMARY OF ROAD

Sale: **Shift The Paradigm** Road: **HM-2700**

Required Pre-Haul Maintenance-	31+40 stations 0.59 miles	Required Reconstruction -	stations 0.00 miles	Required Construction -	stations miles
Required Abandonment-	stations 0.00 miles	Optional Reconstruction -	0+00 stations 0.00 miles	Optional Construction -	0+00 stations 0.00 miles

PRE-HAUL MAINTENANCE

EXCAVATION

Pull and clean ditch-	18.40	stations @	$67.19	per station	$1,236.30	
MISC.						
Install rock check dams -	10.00	@	$53.75	each	$537.50	
				TOTAL CLEARING, GRUBBING, EXCAVATION, FILL, and MISC.		**$1,773.80**

CULVERTS - MATERIALS & INSTALLATION

Culverts

30	LF of 18"	$801.60	0	LF of 24"	$0.00	
		$801.60			$0.00	
Culvert Stakes & Markers						
1 markers		$8.00				
		$8.00			TOTAL CULVERTS	**$809.60**

ROCK

Culvert Backfill	0+00	20	cy. of	2 1/2 Inch Minus Crushed Rock	@	$13.66	per c.y.=	$273.20
Inlet Headwall	0+00	0.5	cy. of	Quarry Spalls	@	$25.54	per c.y.=	$12.77
Energy Dissipator	0+00	0.5	cy. of	Quarry Spalls	@	$25.54	per c.y.=	$12.77
Check Dams	0+00	1.5	cy. of	Quarry Spalls	@	$25.54	per c.y.=	$38.31
							TOTAL ROCK	**$337.05**

	SUBTOTAL	**$2,920.45**
MOBILIZATION	SUBTOTAL	**$0.00**
OVERHEAD & GENERAL EXPENSES 10%	SUBTOTAL	**$292.05**
	TOTAL	**$3,212.50**
Optional Rock? NO	**COST PER STATION**	**$102.31**

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SUMMARY OF ROAD

Sale: **Shift The Paradigm** Road: **HM-2810**

Required Pre-Haul Maintenance-	27+50 stations 0.52 miles	Required Reconstruction -	0+00 stations 0.00 miles	Required Construction -	stations 0.00 miles
Required Abandonment-	stations 0.00 miles	Optional Reconstruction -	stations 0.00 miles	Optional Construction -	0+00 stations 0.00 miles

PRE-HAUL MAINTENANCE

EXCAVATION					
Reconstruct ditch -	16.65	stations @	$215.00	per station	$3,579.75
Pull and clean ditch-	7.75	stations @	$67.19	per station	$520.72
MISC.					
Grade and shape existing road surface -	11.10	stations @	$18.25	per station	$202.58
Spot grade and shape existing road surface -	1.00	stations @	$18.25	per station	$18.25
Roll shaped road surface w/ vibratory roller prior to rocking -	1.00	stations @	$9.70	per station	$9.70
Clean culvert inlet and outlet -	2.00	@	$45.00	each	$90.00
ENDHAUL					
Slump cleanup at Sta. 18+80 -	50	cy. @	$2.28	per c.y.	$114.00
		TOTAL CLEARING, GRUBBING, EXCAVATION, FILL, and MISC.			**$4,535.00**

ROCK

Spot Rock	0+00	20	cy. of	2 1/2 Inch Minus Crushed Rock	@	$5.03	per c.y.=	$100.60
							TOTAL ROCK	**$100.60**

	SUBTOTAL	**$4,635.60**
MOBILIZATON	SUBTOTAL	**$251.25**
OVERHEAD & GENERAL EXPENSES 10%	SUBTOTAL	**$488.69**
	TOTAL	**$5,375.54**
	COST PER STATION	**$195.47**

Optional Rock? NO

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SUMMARY OF ROAD

Sale: **Shift The Paradigm** Road: **HM-2810-EXT**

Required Pre-Haul Maintenance-	0+00 stations 0.00 miles	Required Reconstruction -	stations 0.00 miles	Required Construction -	11+50 stations 0.22 miles
Required Abandonment-	stations 0.00 miles	Optional Reconstruction -	0+00 stations 0.00 miles	Optional Construction -	24+20 stations 0.46 miles

CONSTRUCTION

CLEARING/GRUBBING						
Scattering Organic Debris	35.70	sta @	$280.00	per sta	$9,996.00	
Remove large stumps -	3.00	@	$350.00	each	$1,050.00	
Construct waste areas -	5.00	hours @	$180.00	per hour	$900.00	
EXCAVATION						
Road Construction Earthwork	35.70	sta. @	$269.23	per sta. =	$9,611.51	
Construct ditchouts -	1.00	@	$71.67	each	$71.67	
Grade and shape subgrade -	35.70	stations @	$14.60	per station	$521.22	
Full Bench	6750	cy. @	$3.00	per c.y.=	$20,250.00	
MISC.						
Roll subgrade w/ vibratory roller prior to rocking -	35.70	stations @	$12.12	per station	$432.68	
Construct turnouts @ sta. -	4.00	@	$134.62	each	$538.48	
Construct turnaround @ sta. -	3.00	@	$134.62	each	$403.86	
Construct landing -	3.00	@	$538.46	each	$1,615.38	
Grass seed and fertilize -	91.60	lbs @	$15.00	per lbs	$1,374.00	
ENDHAUL						
Full Bench	6750	cy. @	$2.37	per c.y.=	$15,997.50	
				TOTAL CLEARING, GRUBBING, EXCAVATION, FILL, and MISC.		**$62,762.30**

CULVERTS - MATERIALS & INSTALLATION

Culverts					
210	LF of 18"	$5,611.20	0	LF of 24"	$0.00
		$5,611.20			$0.00
Culvert Stakes & Markers					
7	markers	$56.00			
		$56.00		TOTAL CULVERTS	**$5,667.20**

ROCK

15+86 to	18+32	84	cy. of	2 1/2 Inch Minus	@	$10.36	per c.y.=	$870.24
Culvert Backfill	0+00	0	cy. of	2 1/2 Inch Minus	@	$10.36	per c.y.=	$0.00
In-Stream Structure	0+00	0	cy. of	Riprap	@	$21.58	per c.y.=	$0.00
Fill Armor	0+00	0	cy. of	Riprap	@	$21.58	per c.y.=	$0.00
Spot Rock	0+00	0	cy. of	2 1/2 Inch Minus	@	$10.36	per c.y.=	$0.00
Inlet Headwall	0+00	3.5	cy. of	Quarry Spalls	@	$21.58	per c.y.=	$75.53
Energy Dissipator	0+00	3.5	cy. of	Quarry Spalls	@	$21.58	per c.y.=	$75.53
0+00 to	35+70	3,530	cy. of	Select Pit Run	@	$16.08	per c.y.=	$56,762.40
0+00 to	35+70	0	cy. of	ROAD ROCK N/A	@	$16.58	per c.y.=	$0.00
Ditch/Embankment Fill	0+00	0	cy. of	Pit-Run	@	$16.58	per c.y.=	$0.00
Check Dams	0+00	0	cy. of	Pit-Run	@	$21.58	per c.y.=	$0.00
Backfill	0+00	0	cy. of	2 1/2 Inch Minus	@	$16.58	per c.y.=	$0.00
Bedding/Backfill	0+00	0	cy. of	2 1/2 Inch Minus	@	$16.58	per c.y.=	$0.00
							TOTAL ROCK	**$57,783.70**

	SUBTOTAL	**$126,213.20**
MOBILIZATION	SUBTOTAL	**$3,477.23**
OVERHEAD & GENERAL EXPENSES 10%	SUBTOTAL	**$12,969.04**
	TOTAL	**$142,659.47**
	COST PER STATION	**$3,996.06**

Optional Rock? NO

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SUMMARY OF ROAD

Sale: **Shift The Paradigm** Road: **HM-2815**

Required Pre-Haul Maintenance-	0+00 stations 0.00 miles	Required Reconstruction -	stations 0.00 miles	Required Construction -	stations 0.00 miles
Required Abandonment-	stations 0.00 miles	Optional Reconstruction -	0+00 stations 0.00 miles	Optional Construction -	38+33 stations 0.73 miles

CONSTRUCTION

CLEARING/GRUBBING						
Scattering Organic Debris	38.33	sta @	$280.00	per sta	$10,732.40	
EXCAVATION						
Road Construction Earthwork	38.33	sta. @	$152.17	per sta. =	$5,832.68	
Construct ditchouts -	3.00	@	$71.67	each	$215.01	
Grade and shape subgrade -	38.33	stations @	$14.60	per station	$559.62	
Full Bench	8800	cy. @	$3.00	per c.y.=	$26,400.00	
MISC.						
Roll subgrade w/ vibratory roller prior to rocking -	38.33	stations @	$12.12	per station	$464.56	
Construct turnouts @ sta. -	5.00	@	$134.62	each	$673.10	
Construct turnaround @ sta. -	2.00	@	$134.62	each	$269.24	
Construct landing -	3.00	@	$538.46	each	$1,615.38	
Grass seed and fertilize -	98.40	lbs @	$15.00	per lbs	$1,476.00	
ENDHAUL						
Full Bench	8800	cy. @	$2.37	per c.y.=	$20,856.00	
				TOTAL CLEARING, GRUBBING, EXCAVATION, FILL, and MISC.		**$69,093.99**

CULVERTS - MATERIALS & INSTALLATION

Culverts							
120	LF of 18"	$3,206.40		40	LF of 24"	$1,345.20	
		$3,206.40				$1,345.20	
Culvert Stakes & Markers							
5 markers		$40.00					
		$40.00				TOTAL CULVERTS	**$4,591.60**

ROCK

Inlet Headwall	0+00	3	cy. of	Quarry Spalls	@	$21.97	per c.y.=	$65.91	
Energy Dissipator	0+00	3	cy. of	Quarry Spalls	@	$21.97	per c.y.=	$65.91	
0+00 to	38+33	3,567	cy. of	Select Pit Run	@	$16.47	per c.y.=	$58,748.49	
								TOTAL ROCK	**$58,880.31**

	SUBTOTAL	**$132,565.90**
MOBILIZATION	SUBTOTAL	**$3,828.02**
OVERHEAD & GENERAL EXPENSES 10%	SUBTOTAL	**$13,639.39**
	TOTAL	**$150,033.31**
Optional Rock? NO	**COST PER STATION**	**$3,914.25**

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SUMMARY OF ROAD

Sale: **Shift The Paradigm** Road: **HM-2816**

Required Pre-Haul Maintenance-	stations	Required Reconstruction -	stations	Required Construction -	stations
0.00	miles	0.00	miles	0.00	miles
Required Abandonment-	stations	Optional Reconstruction - 0+00	stations	Optional Construction - 1+80	stations
0.00	miles	0.00	miles	0.03	miles

CONSTRUCTION

CLEARING/GRUBBING						
Scattering Organic Debris	1.80	sta @	$280.00	per sta	$504.00	
EXCAVATION						
Road Construction Earthwork	1.80	sta. @	$152.17	per sta. =	$273.91	
Grade and shape subgrade -	1.80	stations @	$14.60	per station	$26.28	
MISC.						
Roll subgrade w/ vibratory roller prior to rocking -	1.80	stations @	$12.12	per station	$21.82	
Construct turnaround @ sta. -	1.00	@	$134.62	each	$134.62	
Construct landing -	1.00	@	$538.46	each	$538.46	
Grass seed and fertilize -	4.80	lbs @	$15.00	per lbs	$72.00	
		TOTAL CLEARING, GRUBBING, EXCAVATION, FILL, and MISC.				**$1,571.09**

ROCK

0+00	to	1+80	229	cy. of	Select Pit Run	@	$17.15	per c.y.=	$3,927.35
								TOTAL ROCK	**$3,927.35**

	SUBTOTAL	**$5,498.44**
MOBILIZATION	SUBTOTAL	**$87.04**
OVERHEAD & GENERAL EXPENSES 10%	SUBTOTAL	**$558.55**
	TOTAL	**$6,144.03**
Optional Rock? YES	**COST PER STATION**	**$3,413.35**

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SUMMARY OF ROAD

Sale: **Shift The Paradigm** Road: **HM-2817**

Required Pre-Haul Maintenance-	stations	Required Reconstruction -	0+00 stations	Required Construction -	stations
	0.00 miles		0.00 miles		0.00 miles
Required Abandonment-	stations	Optional Reconstruction -	stations	Optional Construction -	1+70 stations
	0.00 miles		0.00 miles		0.03 miles

CONSTRUCTION

CLEARING/GRUBBING						
Scattering Organic Debris	1.70	sta @	$280.00	per sta	$476.00	
EXCAVATION						
Road Construction Earthwork	1.70	sta. @	$152.17	per sta. =	$258.69	
Grade and shape subgrade -	1.70	stations @	$14.60	per station	$24.82	
MISC.						
Roll subgrade w/ vibratory roller prior to rocking -	1.70	stations @	$12.12	per station	$20.60	
Construct turnaround @ sta. -	1.00	@	$134.62	each	$134.62	
Construct landing -	1.00	@	$538.46	each	$538.46	
Grass seed and fertilize -	4.40	lbs @	$15.00	per lbs	$66.00	
		TOTAL CLEARING, GRUBBING, EXCAVATION, FILL, and MISC.				**$1,519.19**

ROCK

0+00	to	1+70	221	cy. of	Select Pit Run	@	$15.66	per c.y.= $3,460.86
							TOTAL ROCK	**$3,460.86**

	SUBTOTAL	**$4,980.05**
MOBILIZATION	SUBTOTAL	**$84.17**
OVERHEAD & GENERAL EXPENSES 10%	SUBTOTAL	**$506.42**
	TOTAL	**$5,570.64**
Optional Rock? YES	**COST PER STATION**	**$3,276.85**

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ROCK DEVELOPMENT COST SUMMARY

Pit:	P&E Ridge Extension Quarry	Location:	T13R07W		
Sale:	**Shift The Paradigm**		Road:		8006 c.y.
Swell:	1.40		Stockpile:		c.y.
Shrinkage	1.16		Total Truck Loads:		8006 c.y.
Drill Pct.:	0%		In Place Total:		5719 c.y.

Pit Development & Cleanup including Clearing and grubbing of Waste Area @ adjacent to pit, place overburden in Waste Area, spread and compact.	$5.56	/cu.yd	x	4444	cu.yds.	$24,708.64
Drill & Shoot:	$4.50	/cu.yd	x	0	cu.yds.	$0.00
Rip Rock:	$2.50	/cu.yd	x	5719	cu.yds.	$14,297.50
Push Rock:	$0.67	/cu.yd	x	8006	cu.yds.	$5,364.02
Load Dump Truck:	$1.50	/cu.yd	x	8006	cu.yds.	$12,009.00
					Subtotal	$56,379.16

Move in Loader	1	@	$491.67	=	$491.67
Move in Excavator	1	@	$637.59	=	$637.59
Move in Trucks	5	@	$0.00	=	$0.00
Move in Water Truck	0	@	$0.00	=	$0.00
				Subtotal	$1,129.26
			TOTAL PRODUCTION COSTS		$57,508.42

Base Cost= $7.18 Per Cu.Yd.

Road Segment	Haul Cost /cu.yd.	Application Cost /cu.yd.	Base Cst. /cu.yd.	Cost /cu.yd.	Number Cu. Yds	Speed (Mi/hr.)	One-Way Dist (ft)	ROCK COST
HM-Mainline Inlet Headwall	$12.11	$6.00	$7.18	$25.29	1	15	28000	$25.29
HM-Mainline Energy Dissipator	$12.11	$6.00	$7.18	$25.29	1	15	28000	$25.29
HM-2000	$11.31	$1.00	$7.18	$19.49	68	15	25900	$1,325.32
HM-2010	$12.23	$1.00	$7.18	$20.41	68	15	27000	$1,387.88
HM-2012	$13.36	$1.00	$7.18	$21.54	304	15	30000	$6,548.16
HM-2700 Energy Dissipator	$12.36	$6.00	$7.18	$25.54	1	15	27350	$25.54
HM-2700 Check Dams	$12.36	$6.00	$7.18	$25.54	1.5	15	27350	$38.31
HM-2810-EXT Inlet Headwall	$8.40	$6.00	$7.18	$21.58	4	15	16900	$86.32
HM-2810-EXT Energy Dissipator	$8.40	$6.00	$7.18	$21.58	4	15	16900	$86.32
HM-2810-EXT	$7.90	$1.00	$7.18	$16.08	3530	15	16900	$56,762.40
HM-2815 Inlet Headwall	$8.79	$6.00	$7.18	$21.97	3	15	17935	$65.91
HM-2815 Energy Dissipator	$8.79	$6.00	$7.18	$21.97	3	15	17935	$65.91
HM-2815	$8.29	$1.00	$7.18	$16.47	3567	15	17935	$58,748.49
HM-2816	$8.97	$1.00	$7.18	$17.15	229	15	18400	$3,927.35
HM-2817	$7.48	$1.00	$7.18	$15.66	221	15	14475	$3,460.86
				Total C.Y.	8006		Sub Total	$132,579.35

TOTAL ROCKING COSTS $132,579.35

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ROCK DEVELOPMENT COST SUMMARY

Pit:	P&E Ridge Extension Quarry Stockpile	Location:	T13R06W
Sale:	**Shift The Paradigm**	Road:	385 c.y.
Swell:	1.40	Stockpile:	c.y.
Shrinkage	1.16	Total Truck Loads:	385 c.y.
Drill Pct.:	0%	In Place Total:	275 c.y.

Pit Development & Cleanup including Clearing and grubbing of Waste Area @ adjacent to pit, place overburden in Waste Area, spread and compact.	$0.00	/cu.yd	x	0	cu.yds. =	$0.00
Drill & Shoot:	$0.00	/cu.yd	x	0	cu.yds. =	$0.00
Rip Rock:	$0.00	/cu.yd	x	275	cu.yds. =	$0.00
Push Rock:	$0.00	/cu.yd	x	385	cu.yds. =	$0.00
Load Crusher:	$0.00	/cu.yd	x	0	cu.yds. =	$0.00
Crush 3" Rock:	$0.00	/cu.yd	x	0	cu.yds. =	$0.00
Load Dump Truck:	$0.75	/cu.yd	x	385	cu.yds. =	$288.75
					Subtotal	$288.75

Move in Loader	1	@	$491.67	=	$491.67
Move in Excavator	0	@	$637.59	=	$0.00
				Subtotal	$491.67
			TOTAL PRODUCTION COSTS		$780.42

Base Cost= $2.03 Per Cu.Yd.

Road Segment	Haul Cost /cu.yd.	Application Cost /cu.yd.	Base Cst. /cu.yd.	Cost /cu.yd.	Number Cu. Yds	Speed (Mi/hr.)	One-way Dist (ft)	ROCK COST
HM-Mainline Culvert Backfill	$10.84	$1.00	$2.03	$13.87	40	18	28000	$554.80
HM-Mainline Spot Rock	$10.84	$1.00	$2.03	$13.87	170	18	28000	$2,357.90
HM-2000 Spot Rock	$10.18	$1.00	$2.03	$13.21	20	18	25900	$264.20
HM-2010 Spot Rock	$10.52	$1.00	$2.03	$13.55	30	18	27000	$406.50
HM-2700 Culvert Backfill	$10.63	$1.00	$2.03	$13.66	20	18	27350	$273.20
HM-2700 Inlet Headwall	$10.63	$6.00	$2.03	$18.66	1	18	27350	$18.66
HM-2810 Spot Rock	$2.00	$1.00	$2.03	$5.03	20	18		$100.60
HM-2810-EXT	$7.33	$1.00	$2.03	$10.36	84	18	16900	$870.24
				Total C.Y.	385		Sub Total	$4,846.10

TOTAL ROCKING COSTS $4,846.10

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WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES

FOREST EXCISE TAX ROAD SUMMARY SHEET

Region: Pacific Cascade

Timber Sale Name: Shift The Paradigm

Application Number: 30- 107760

EXCISE TAX APPLICABLE ACTIVITIES

Construction: 7,973 **linear feet**
Road to be constructed (optional and required) but not abandoned

Reconstruction: 0 **linear feet**
Road to be reconstructed (optional and required) but not abandoned

Abandonment: 0 **linear feet**
Abandonment of existing roads not reconstructed under the contract

Decommission: 0 **linear feet**
Road to be made undriveable but not officially abandoned.

Pre-Haul Maintenance: 42,750 **linear feet**
Existing road to receive maintenance work (optional and required) prior to haul

EXCISE TAX EXEMPT ACTIVITIES

Temporary Construction: 0 **linear feet**
Roads to be constructed (optional and required) and then abandoned

Temporary Reconstruction: 0 **linear feet**
Roads to be reconstructed (optional and required) and then abandoned

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All parties must make their own assessment of the taxable or non-taxable status of any work performed under the timber sale contact. The Department of Revenue bears responsibility for determining forest road excise taxes. The Department of Natural Resources developed this form to help estimate the impact of forest excise taxes. However, the information provided may not precisely calculate the actual amount of taxes due. The Department of Revenue is available for consultation by calling 1.800.548.8829.
(Revised 9/18)