



**TIMBER NOTICE OF SALE**

**SALE NAME:** FARM VIEW VRH SWT

**AGREEMENT NO:** 30-104695

**AUCTION:** June 12, 2024 starting at 10:00 a.m.,  
Northwest Region Office, Sedro Woolley, WA

**COUNTY:** Snohomish

**SALE LOCATION:** Sale located approximately 12 miles northeast of Arlington, WA.

**PRODUCTS SOLD  
AND SALE AREA:**

All timber as described for removal in Schedule B bounded by white timber sale boundary tags and the CV-09 road, except cedar salvage (cedar snags, preexisting dead and down cedar trees and cedar logs), in Unit #1.

All timber bounded by white timber sale boundary tags and property lines, except cedar salvage (cedar snags, preexisting dead and down cedar trees and cedar logs), trees marked with blue paint on the bole and root collar, and forest products tagged out by yellow leave tree area tags in Units #2 and #3.

All timber bounded by orange right-of-way tags and all timber within 30 feet of centerline of roads to be constructed, except that title to the timber within the right-of-way associated with areas of road construction (located in the thinning area) is not conveyed to the Purchaser unless the road segment is actually constructed, except as described for removal in Schedule B.

All forest products above located on part(s) of Sections 8, 9, 16 and 17 all in Township 32 North, Range 6 East, W.M., containing 131 acres, more or less.

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

**ESTIMATED SALE VOLUMES AND QUALITY:**

Species	Avg DBH	Ring Count	Total MBF	Total \$/MBF	MBF by Grade								
					1P	2P	3P	SM	1S	2S	3S	4S	UT
Douglas fir	21.6	10	1,562		77			150		862	396	61	16
Hemlock	13.5		170							32	103	34	1
Redcedar	23.2		47								45	2	
Red alder	16.7		39							20	4	9	6
Maple	18.7		38							27		2	9
Cottonwood	23		12							12			
Sale Total			1,868										

**MINIMUM BID:** \$0/MBF (est. value \$0.00)

**BID METHOD:** Sealed Bids

**PERFORMANCE SECURITY:** \$0.00

**SALE TYPE:** MBF Scale

**EXPIRATION DATE:** March 31, 2027

**ALLOCATION:** Export Restricted

**BIDDABLE SPECIES:** Douglas fir

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



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**HARVEST METHOD:** Cable or tethered equipment (See below for restrictions); shovel, forwarder, tracked skidder, "6-wheeled rubber-tired skidders with over-the-tire tracks spanning both sets of rear tires" or rubber-tired skidder (See below for restrictions) on sustained slopes 35% or less; self-leveling equipment on sustained slopes 55% or less (See below for restrictions); also, falling by tracked machinery may be utilized on sustained slopes 35% or less.

Falling and yarding in Unit 1 shall not be permitted during the bark slippage season unless the Purchaser provides a written plan outlining mitigation measures and the plan is pre-authorized in writing by the Contract Administrator. This season is estimated to run from April 1 to July 15 but may vary depending on weather conditions.

Purchaser must obtain prior written approval from the Contract Administrator for areas as to where "6 wheeled rubber-tired skidders with over-the-tire tracks spanning both sets of rear tires" or rubber-tired skidders can operate. If ground disturbance is causing excessive damage, as determined by the Contract Administrator, the equipment will no longer be authorized.

Prior written approval of the Contract Administrator is required before tethered or self-leveling equipment may be used. If ground disturbance is causing excessive damage, as determined by the Contract Administrator, the use of this equipment will no longer be authorized. Falling and Yarding will not be permitted from November 1 to March 31 unless authorized in writing by the Contract Administrator (THIS PERTAINS TO GROUND-BASED EQUIPMENT ONLY) to reduce soil damage and erosion.

## ROADS:

8.59 stations of required construction. 2.35 stations of required reconstruction. 20.37 stations of optional construction. 26.24 stations of optional reconstruction. 27.63 stations of required prehaul maintenance.

Rock may be obtained from the following source(s) on State land at no charge to the Purchaser: Cedarvale Pit at station 8+70 of the CV-11 Road. Oceanview Pit at station 21+12 of the ST-37 Road. In addition, a rock stockpile is available in the Oceanview Pit, see road plan for details.

Development of an existing rock source(s) will involve drilling, shooting, and processing rock.

An estimated total quantity of rock needed for this proposal: 135 cubic yards of riprap, 40 cubic yards of stream simulation mix, 20 cubic yards of 5/8-inch minus bedding, 515 cubic yards of 2-inch minus surfacing, and 5,936 cubic yards of 3-inch minus ballast.

In-stream road work on the CV-ML (bridge installation) will not be permitted from August 16 to July 14; this shall not be waived. Rock haul on the ST-ML will not be permitted from October 1 to April 30 without written permission from the Clear Lake or Cascade District Manager. All remaining road work and the hauling of rock will not be permitted from November 1 to March 31 unless authorized in writing by the Contract Administrator to reduce soil damage and siltation. The hauling of forest products will not be permitted from November 1 to March 31 unless authorized in writing by the Contract Administrator to reduce soil damage and siltation.

## ACREAGE DETERMINATION

**CRUISE METHOD:** Acres determined by GPS traverse for units and a combination (GPS and GIS measure tool) for right-of-way. Cruise was conducted via variable plot sample type on units 1, 2 and 3, as well as fixed plot for RMZ, WMZ and right-of-way. See Cruise Narrative for



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further details. Shapefiles of units are available upon request, and on the DNR website after the BNR meeting in which the sale is presented.

**FEES:** \$31,756.00 is due on day of sale. \$9.00 per MBF is due upon removal. These are in addition to the bid price.

**SPECIAL REMARKS:**

1. Trees marked with pink paint represent the last take tree along property line boundaries.
2. HQ DF noted within the sale area.
3. Sample Scale - weight conversion sample scaling requests will be authorized for the following species: Douglas-fir (pure loads) in Unit 1 only, and western hemlock (pure loads) in Unit 1 only. See Schedule S for more details. If approved for Sample Scale, diameter restrictions may apply.
4. No haul permitted on the CV-ML across Pilchuck Tree Farm (Pacific Denkman) property until the current log stringer at MP 0.1 on the CV-ML is replaced (anticipated by August 2024).
5. During the CV-ML 32+50 stream relocation and bridge installation, the purchaser must relocate any fish trapped in the plunge pools formed beneath the weirs, per FPA #2819299.

**Schedule B**  
**Smallwood Thinning & RMZ Prescription**

THINNING PRESCRIPTION: UNIT 1 (SMALLWOOD THIN)

- Purchaser shall leave a residual stand that will achieve the following evenly distributed across each unit:

Average spacing of 17 feet x 17 feet

Only trees 8" DBH and great shall count toward the desired residual stand spacing.

To accomplish this prescription, fallers shall harvest trees starting with smallest diameter trees working up to the larger trees (thin from below). The following take tree preference shall be followed to achieve the desired residual stand spacing:

- 1) All hardwoods
- 2) western hemlock
- 3) Defective or diseased Douglas-fir
- 4) Smallest diameter Douglas-fir

- Examples of defect are trees with broken tops and little canopy, well developed spike knots, and highly sinuous forms which should be prioritized for take.
- Where the prescription would leave an opening greater than 30 feet in diameter, the Purchaser must leave a conifer take tree from the largest diameter, largest crown class that has the best form and is undamaged.
- Western redcedar is not to be cut without prior approval of the Contract Administrator (CA). Only trees necessary to facilitate harvest operations or those which pose safety hazards shall be considered for approval.

RIPARIAN FOREST RESTORATION STRATEGY TREES

- RMZs shall have an 8-13 inch diameter limit.
- Three enhancement conifer trees per thinned RMZ acre from the largest diameter class of thinned trees shall be felled toward streams and left as down woody debris.
- Two enhancement conifer trees per thinned RMZ acre from the largest diameter class of thinned trees shall be cut in a manner that facilitates snag creation and recruitment (girdled or topped).

- These enhancement trees are in addition to the residual stocking targets mentioned above, and should be distributed evenly throughout the RMZs.

RMZ 1: 4 felled trees, 2 snag creation trees.

RMZ 2: 4 felled trees, 3 snag creation trees.

RMZ 3: 2 felled trees, 1 created snags.

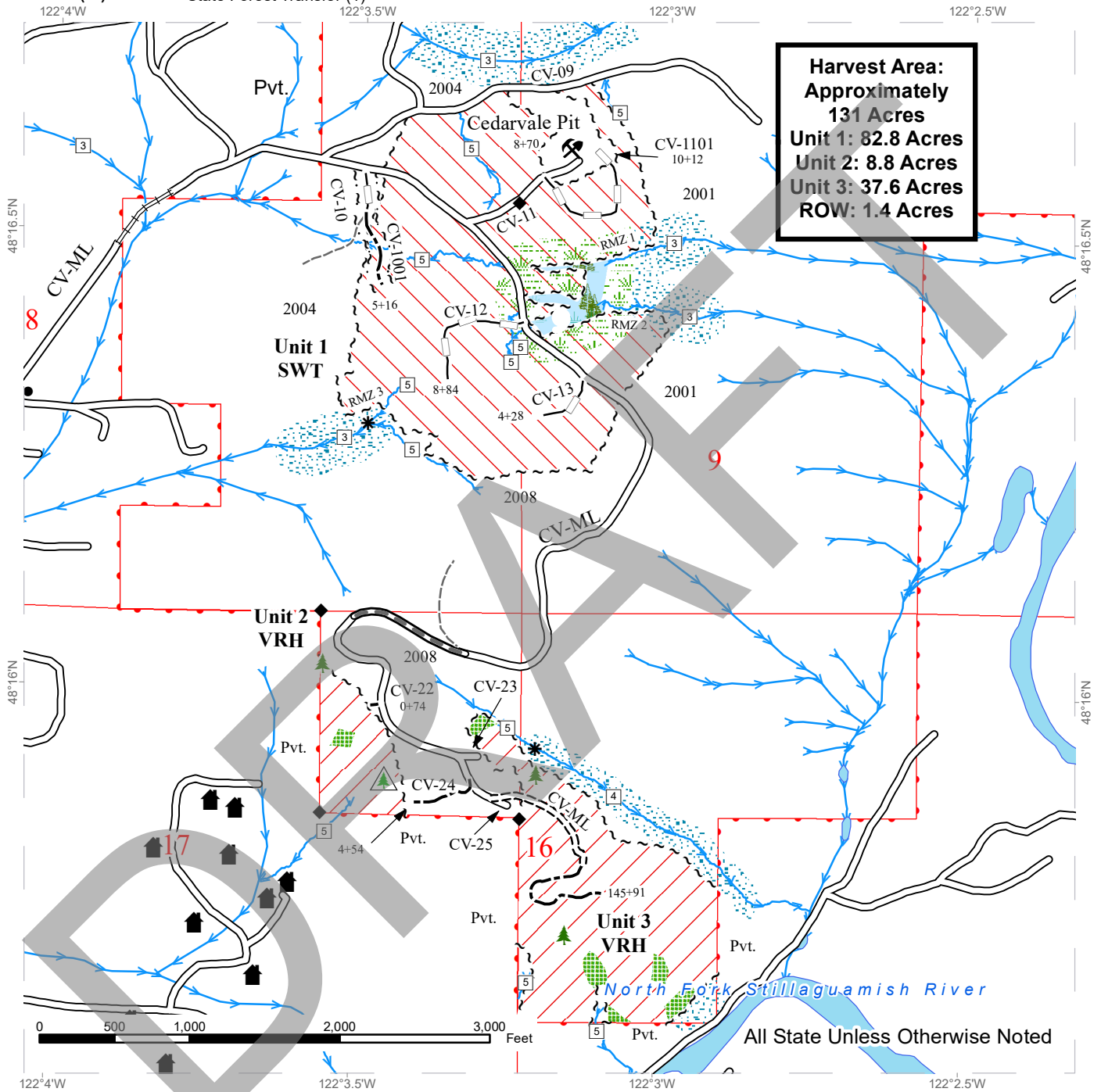
\* All cottonwood must be felled and yarded to a landing or girdled and left standing. Girdling requirements are two full >3” wide rings around the bole that are >3” apart. Felled cottonwood may not remain in the RMZ.

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# TIMBER SALE MAP

**SALE NAME:** FARM VIEW VRH SWT  
**AGREEMENT #:** 30-104695  
**TOWNSHIP(S):** T32R6E  
**TRUST(S):** State Forest Transfer (1)

**REGION:** Northwest Region  
**COUNTY(S):** Snohomish  
**ELEVATION RGE:** 240-1040



**Harvest Area:**  
 Approximately  
 131 Acres  
 Unit 1: 82.8 Acres  
 Unit 2: 8.8 Acres  
 Unit 3: 37.6 Acres  
 ROW: 1.4 Acres

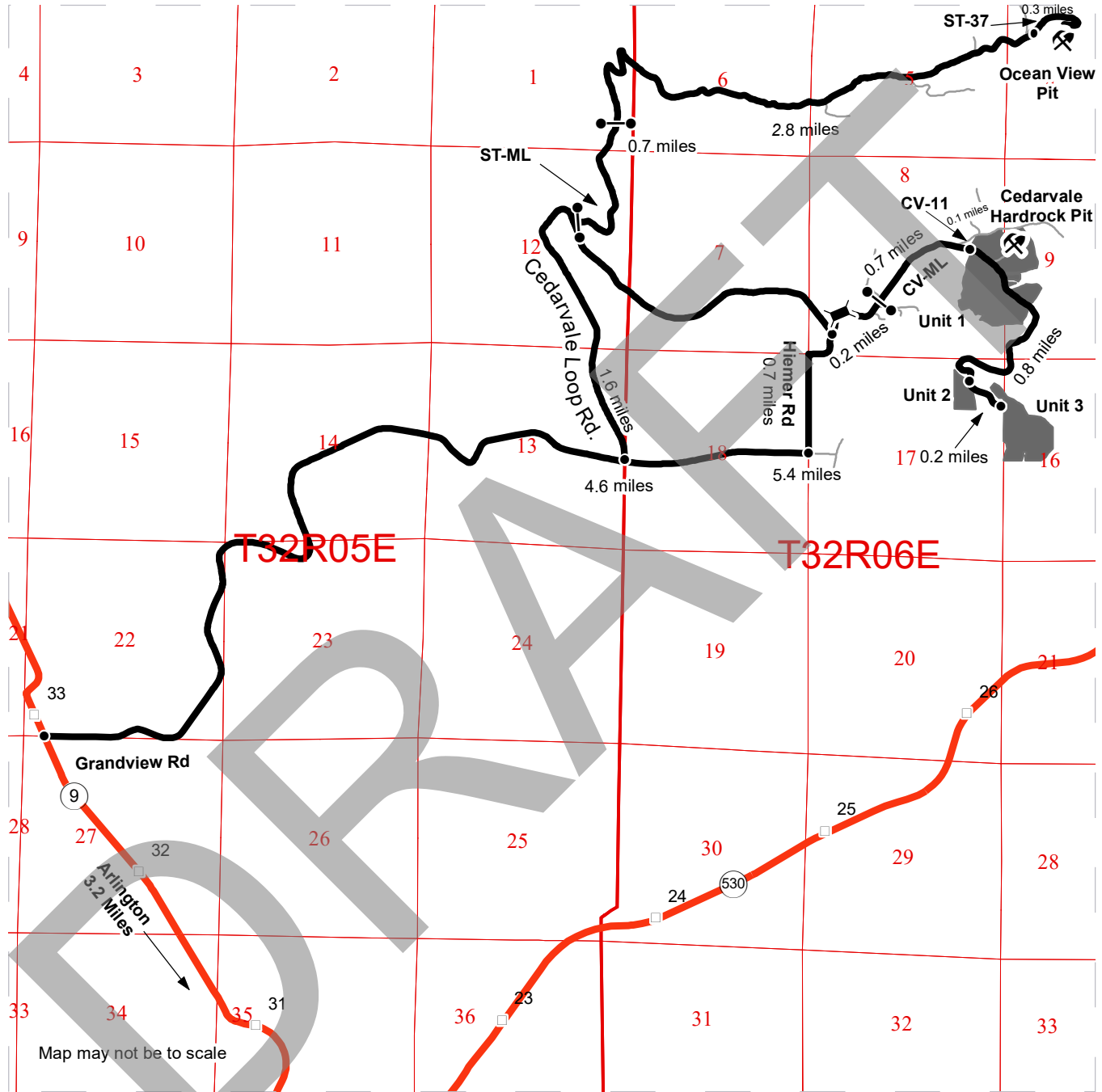
Variable Retention Harvest	Optional Reconstruction	Forested Wetland
Smallwood Thinning	Old Grade	Wetland Mgt Zone
Sale Boundary Tags	Streams	Gate (F1-3)
Right of Way Tags	Stream Type 3	Leave Tree Area <1/4-acre
Existing Roads	Stream Type 4	Non-Tradeable Leave Trees
Required Pre-Haul Maintenance	Stream Type 5	Rock Pit
Required Construction	Stream Break	Structure
Required Reconstruction	Leave Tree Area	Survey Monument
Optional Construction	Riparian Mgt Zone	DNR Managed Lands



# DRIVING MAP

**SALE NAME:** FARM VIEW VRH, SWT  
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Map may not be to scale

	Timber Sale Unit
	Haul Route
	Other Road
	Highway
	Milepost Markers
	Bridge
	Gate

**DRIVING DIRECTIONS:**

From the intersection of HWY 9 and State Route 530 in Arlington, travel 3.2 miles north on HWY 9 to Grandview Rd. Turn right and travel 5.4 miles to Hiemer Rd. Turn left and travel 0.7 miles to the CV-ML. Turn right and travel 0.2 miles to the gate. Pass through the locked gate; F 1-3 key required. Travel for another 0.7 miles on CV-ML to reach Unit 1. After passing through Unit 1, travel for another 0.8 miles to reach Unit 2. Continue for 0.2 miles to Unit 3.

Cedarvale Hardrock Pit: From the CV-ML gate, travel 0.9 miles to the CV-11. Turn left and travel 0.1 miles to the Cedarvale Hardrock Pit.

Ocean View Pit: From the HWY 9 intersection, travel 4.6 miles along Grandview Road. Turn left onto Cedarvale Loop Rd and continue for 1.6 miles to the Stimson Mainline (ST-ML). Pass through the gate; F 1-3 key required. Travel for 0.7 miles and pass through the gate; F 1-3 key required. Continue on ST-ML for 2.8 miles to the ST-37. Continue for 0.3 miles to access the Ocean View Pit.



## Timber Sale Cruise Report Farm View SWT/VRH - NW

**Sale Name:** FARM VIEW

**Sale Type:** MBF SCALE

**Region:** NORTHWEST

**District:** CLEAR LAKE

**Lead Cruiser:** Matt Llobet

**Other Cruisers:** Bailey Vos

### Location:

Farm View TS is a three unit timber sale located North of Arlington off Grandview Road. The sale ranges from 240 feet to 1040 feet in elevation and has good road access to all three units.

### Cruise Design:

Unit 1 was cruised with a 1:2 sample ratio and a 40 BAF was used. Units 2 and 3 were cruised with a 62.5/40 BAF combination and a cruise all sample was applied. The ROW unit was sampled with a 1/20th acre fix plot and a cruise all sample was applied. The smallest merchantable tree cruised throughout the sale had a DBH of 7.0 inches and 5.0 inches at 16 feet.

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

### Unit 1:

The stand characteristics throughout unit 1 showed a homogenous timber type with an open understory. The terrain throughout unit 1 was gentle/mild, making for productive thinning ground. Unit 1 cruised out at 3,574 bf per acre of sawlog volume and all live timber showed excellent form, with minor defect. The species composition consists of Douglas fir, Western Hemlock, and scattered hardwoods.

### RMZ & WMZ:

Thin to an average spacing of 17' x 17' selecting trees from the smallest diameter class. The RMZ & WMZ units consist of a uniform Douglas fir and Western Hemlock timber type with good operator ground.

### Unit 2:

The stand consists of a variable stocking with Douglas fir and being the dominant species. Operator ground is straightforward with steep terrain throughout. The species composition consists of Douglas fir, Western Red Cedar, and hardwoods. Unit 2 cruised out at 48,295 bf per acre. The Douglas fir made up 95% of the unit volume amounting to 405 mbf. The Douglas fir had an average DBH of 21 inches and an average bole length of 83 feet. High Quality segments were cruised throughout the Douglas fir - amounting to 125 mbf.

### Unit 3:

The stand consists of a variable stocking with mild/steep operator ground. The species composition consists of Douglas fir, Western Hemlock, Western Red Cedar, and scattered hardwoods. Douglas fir makes up 86% of the volume amounting to 973 mbf. The Western Hemlock makes up 4% of the volume amounting to 44 mbf. There is a scattered component of Western Red Cedar and hardwoods throughout unit 3 making up 10% of the unit volume. High Quality segments were cruised throughout the Douglas fir - amounting to 315 mbf.

### Logging and Stand Conditions:

Approximately 35% of the sale is cable harvest and the other 65% percent is ground base harvest.



**Timber Sale Notice Volume (MBF)**

Sp	DBH	Rings/In	Age	MBF Volume by Grade						
				All	Peeler	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	21.6	9.5		1,563	77	150	862	396	61	17
WH	13.5			170			32	104	34	1
RC	23.2			47				45	2	
RA	16.7			39			20	4	9	6
MA	18.7			38			27		2	9
BC	23.0			12			12			
ALL	20.2	9.5		1,868	77	150	951	548	108	33

**Timber Sale Notice Weight (tons)**

Sp	Tons by Grade						
	All	Peeler	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	10,406	425	915	5,299	3,113	519	136
WH	1,510			254	936	295	25
RC	397				382	15	
RA	318			148	28	90	52
MA	279			182		19	78
BC	61			61			
ALL	12,970	425	915	5,944	4,459	937	292

**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 (%)
197.2	5.3	130.5	3.3	25,635	6.4

**Timber Sale Unit Cruise Design**

Unit	Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
FARM VIEW U1	B1C: VR, 1 BAF (40) Measure/Count Plots, Sighting Ht = 4.5 ft	70.5	74.8	37	14	0
FARM VIEW RMZ	FX: FR plots (20 tree / acre expansion)	3.0	3.0	4	4	0
FARM VIEW WMZ	FX: FR plots (20 tree / acre expansion)	9.3	9.5	5	5	0
FARM VIEW U2	B2: VR, 2 BAF (62.5, 40 for some species) Measure All, Sighting Ht = 4.5	8.8	9.3	8	8	0

Unit	Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
	ft					
FARM VIEW U3	B2: VR, 2 BAF (62.5, 40 for some species) Measure All, Sighting Ht = 4.5 ft	37.6	40.3	33	33	1
FARM VIEW ROW	FX: FR plots (20 tree / acre expansion)	1.4	1.4	2	2	0
All		130.6	138.3	89	66	1

### Timber Sale Log Grade x Sort Summary

Sp	Status	Grade	Sort	Dia	Len	BF Gross	BF Net	Defect %	Tons	MBF Net
BC	LIVE	2 SAW	Domestic	14.2	30	89	89	0.0	61.1	11.6
DF	LIVE	2 SAW	Domestic	16.4	38	5,031	4,966	1.3	3,962.6	648.5
DF	LIVE	2 SAW	HQ-A	15.4	40	398	398	0.0	348.0	52.0
DF	LIVE	2 SAW	HQ-B	18.1	40	1,240	1,234	0.5	988.0	161.2
DF	LIVE	3 PEELER	HQ-A	26.2	39	593	593	0.0	424.7	77.4
DF	LIVE	3 SAW	Domestic	9.2	35	3,055	3,034	0.7	3,112.6	396.2
DF	LIVE	4 SAW	Domestic	6.9	22	475	468	1.5	518.5	61.1
DF	LIVE	CULL	Cull	16.3	22	100	0	100.0	0.0	0.0
DF	LIVE	SPECIAL MILL	HQ-A	20.0	40	1,161	1,149	1.1	915.1	150.0
DF	LIVE	UTILITY	Pulp	10.6	30	127	127	0.0	136.3	16.5
MA	LIVE	2 SAW	Domestic	14.1	20	225	203	10.0	181.7	26.5
MA	LIVE	4 SAW	Domestic	9.9	20	18	18	0.0	19.0	2.3
MA	LIVE	UTILITY	Pulp	13.6	23	72	72	0.0	78.1	9.4
RA	LIVE	2 SAW	Domestic	13.5	24	166	152	8.2	148.4	19.8
RA	LIVE	3 SAW	Domestic	10.5	30	26	26	0.0	27.8	3.5
RA	LIVE	4 SAW	Domestic	8.8	30	74	72	2.4	89.8	9.4
RA	LIVE	UTILITY	Pulp	10.3	27	48	48	0.0	52.2	6.3
RC	LIVE	3 SAW	Domestic	11.7	37	365	341	6.5	381.9	44.6
RC	LIVE	4 SAW	Domestic	7.5	18	16	16	0.0	14.6	2.1
RC	LIVE	CULL	Cull	12.6	12	13	0	100.0	0.0	0.0
WH	LIVE	2 SAW	Domestic	14.6	37	250	241	3.4	254.1	31.5
WH	LIVE	3 SAW	Domestic	8.3	38	796	796	0.0	936.3	104.0
WH	LIVE	4 SAW	Domestic	5.8	26	257	257	0.0	294.8	33.6
WH	LIVE	UTILITY	Pulp	2.2	20	6	6	0.0	25.0	0.8

**Timber Sale Log Sort x Diameter Bin Summary**

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
BC	5+	LIVE	Domestic	14.2	30	89	0.0	61.1	11.6
DF	5 - 7	LIVE	Pulp	5.7	33	78	0.0	97.5	10.2
DF	5 - 7	LIVE	Domestic	6.7	28	861	0.9	956.4	112.4
DF	8 - 11	LIVE	Domestic	9.8	34	2,641	0.8	2,674.8	344.9
DF	12 - 15	LIVE	Domestic	13.3	37	1,390	0.7	1,276.6	181.5
DF	12 - 15	LIVE	Cull	14.0	24	0	100.0	0.0	0.0
DF	12 - 15	LIVE	HQ-B	14.1	40	185	0.0	174.2	24.2
DF	12 - 15	LIVE	HQ-A	14.6	40	257	0.0	232.0	33.5
DF	16 - 19	LIVE	HQ-B	17.2	40	547	0.0	451.8	71.5
DF	16 - 19	LIVE	Domestic	17.4	39	1,860	0.9	1,448.0	242.9
DF	16 - 19	LIVE	HQ-A	18.0	40	655	0.0	538.4	85.5
DF	16 - 19	LIVE	Cull	18.3	12	0	100.0	0.0	0.0
DF	16 - 19	LIVE	Pulp	19.9	24	49	0.0	38.7	6.4
DF	20+	LIVE	HQ-B	22.4	40	502	1.2	362.1	65.5
DF	20+	LIVE	Domestic	23.3	38	1,716	2.2	1,238.0	224.1
DF	20+	LIVE	Cull	24.2	20	0	100.0	0.0	0.0
DF	20+	LIVE	HQ-A	24.3	40	1,228	1.0	917.4	160.4
MA	5+	LIVE	Pulp	12.1	26	72	0.0	78.1	9.4
MA	5+	LIVE	Domestic	13.5	21	220	9.3	200.6	28.8
RA	5+	LIVE	Domestic	9.9	26	250	5.8	266.0	32.7
RA	5+	LIVE	Pulp	10.3	27	48	0.0	52.2	6.3
RC	5+	LIVE	Domestic	10.7	32	357	6.3	396.5	46.6
RC	5+	LIVE	Cull	12.6	12	0	100.0	0.0	0.0
WH	< 5	LIVE	Pulp	2.2	20	6	0.0	25.0	0.8
WH	5 - 7	LIVE	Domestic	6.0	32	522	0.0	613.5	68.1
WH	8 - 11	LIVE	Domestic	9.2	35	532	0.0	617.6	69.4
WH	12 - 15	LIVE	Domestic	14.0	36	161	5.1	183.0	21.1
WH	16 - 19	LIVE	Domestic	17.2	40	80	0.0	71.1	10.4

## Cruise Unit Report FARM VIEW U1

### Unit Sale Notice Volume (MBF): FARM VIEW U1

Sp	DBH	Rings/In	Age	MBF Volume by Grade			
				All	3 Saw	4 Saw	Utility
DF	13.5			138	112	27	
WH	11.6			113	84	29	1
ALL	12.5			252	195	55	1

### Unit Cruise Design: FARM VIEW U1

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (40) Measure/Count Plots, Sighting Ht = 4.5 ft	70.5	74.8	37	14	0

### Unit Cruise Summary: FARM VIEW U1

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
RA		1	0.0	0
RC		1	0.0	0
DF	6	115	3.1	0
WH	6	64	1.7	0
ALL	12	181	4.9	0

### Unit Cruise Statistics: FARM VIEW 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 (%)
RA	1.1	608.3	100.0						
RC	1.1	608.3	100.0						
DF	124.3	83.3	13.7	113.5	18.1	7.4	14,111	85.3	15.6
WH	69.2	96.0	15.8	106.1	24.6	10.1	7,342	99.1	18.7
ALL	195.7	47.6	7.8	110.9	20.5	5.9	21,693	51.9	9.8

### Unit Summary: FARM VIEW U1

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	6	ALL	13.0	64	93	1,971	1,963	0.4	18.8	17.3	4.8	138.4
WH	LIVE	CUT	6	ALL	12.3	51	78	1,606	1,606	0.0	18.3	15.1	4.3	113.2

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
ALL	LIVE	CUT	12	ALL	12.7	58	86	3,577	3,569	0.2	37.1	32.4	9.1	251.6
ALL	ALL	ALL	12	ALL	12.7	58	86	3,577	3,569	0.2	37.1	32.4	9.1	251.6

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## Cruise Unit Report FARM VIEW RMZ

### Unit Sale Notice Volume (MBF): FARM VIEW RMZ

Sp	DBH	Rings/In	Age	MBF Volume by Grade		
				All	3 Saw	4 Saw
DF	11.6			10	8	2
WH	11.0			3	2	1
ALL	11.4			13	10	3

### Unit Cruise Design: FARM VIEW RMZ

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
FX: FR plots (20 tree / acre expansion)	3.0	3.0	4	4	0

### Unit Cruise Summary: FARM VIEW RMZ

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
RA		3	0.8	0
DF	4	31	7.8	0
WH	2	8	2.0	0
ALL	6	42	10.5	0

### Unit Cruise Statistics: FARM VIEW RMZ

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 (%)
RA	6.2	135.5	67.7						
DF	146.4	22.9	11.5	112.8	14.4	7.2	16,514	27.0	13.5
WH	32.5	126.7	63.3	80.3	26.7	18.9	2,610	129.4	66.1
ALL	185.1	16.4	8.2	106.9	21.4	8.7	19,784	27.0	12.0

### Unit Summary: FARM VIEW RMZ

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	4	ALL	11.6	54	82	3,320	3,295	0.8	39.8	29.2	8.6	9.9
WH	LIVE	CUT	2	ALL	11.0	47	64	1,060	1,060	0.0	20.0	13.2	4.0	3.2
ALL	LIVE	CUT	6	ALL	11.4	52	76	4,380	4,355	0.6	59.8	42.4	12.6	13.1
ALL	ALL	ALL	6	ALL	11.4	52	76	4,380	4,355	0.6	59.8	42.4	12.6	13.1

## Cruise Unit Report FARM VIEW WMZ

### Unit Sale Notice Volume (MBF): FARM VIEW WMZ

Sp	DBH	Rings/In	Age	MBF Volume by Grade			
				All	3 Saw	4 Saw	Utility
DF	12.1			35	19	6	10
WH	13.0			6	4	1	
ALL	12.2			41	23	7	10

### Unit Cruise Design: FARM VIEW WMZ

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
FX: FR plots (20 tree / acre expansion)	9.3	9.5	5	5	0

### Unit Cruise Summary: FARM VIEW WMZ

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	9	50	10.0	0
WH	1	1	0.2	0
ALL	10	51	10.2	0

### Unit Cruise Statistics: FARM VIEW WMZ

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	226.0	37.1	16.6	90.8	31.0	10.3	20,525	48.4	19.6
WH	3.7	223.6	100.0	162.8	0.0	0.0	600	223.6	100.0
ALL	229.7	36.0	16.1	92.0	37.7	11.9	21,125	52.1	20.0

### Unit Summary: FARM VIEW WMZ

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	9	ALL	12.1	50	74	3,784	3,784	0.0	52.2	41.7	12.0	35.2
WH	LIVE	CUT	1	ALL	13.0	75	98	600	600	0.0	4.0	3.7	1.0	5.6
ALL	LIVE	CUT	10	ALL	12.2	52	76	4,384	4,384	0.0	56.2	45.4	13.0	40.8
ALL	ALL	ALL	10	ALL	12.2	52	76	4,384	4,384	0.0	56.2	45.4	13.0	40.8

## Cruise Unit Report FARM VIEW U2

### Unit Sale Notice Volume (MBF): FARM VIEW U2

Sp	DBH	Rings/In	Age	MBF Volume by Grade						
				All	Peeler	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	20.6			405	11	10	257	120	6	
MA	17.4			16			9		2	5
RC	24.0			4				4		
ALL	20.3			425	11	10	266	125	8	5

### Unit Cruise Design: FARM VIEW U2

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2: VR, 2 BAF (62.5, 40 for some species) Measure All, Sighting Ht = 4.5 ft	8.8	9.3	8	8	0

### Unit Cruise Summary: FARM VIEW U2

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	35	35	4.4	0
MA	5	5	0.6	0
RC	1	1	0.1	0
ALL	41	41	5.1	0

### Unit Cruise Statistics: FARM VIEW 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	273.4	45.6	16.1	168.1	32.4	5.5	45,978	56.0	17.0
MA	25.0	225.3	79.6	72.2	39.0	17.5	1,804	228.6	81.5
RC	5.0	282.8	100.0	95.5	0.0	0.0	477	282.8	100.0
ALL	303.4	27.6	9.8	159.0	38.3	6.0	48,259	47.2	11.5

### Unit Summary: FARM VIEW U2

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	35	ALL	20.6	83	108	46,926	45,978	2.0	118.1	273.4	60.2	404.6
MA	LIVE	CUT	5	ALL	17.4	47	58	1,951	1,804	7.5	15.1	25.0	6.0	15.9



Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
RC	LIVE	CUT	1	ALL	24.0	75	95	477	477	0.0	1.6	5.0	1.0	4.2
ALL	LIVE	CUT	41	ALL	20.3	79	102	49,353	48,259	2.2	134.8	303.4	67.3	424.7
ALL	ALL	ALL	41	ALL	20.3	79	102	49,353	48,259	2.2	134.8	303.4	67.3	424.7

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## Cruise Unit Report FARM VIEW U3

### Unit Sale Notice Volume (MBF): FARM VIEW U3

Sp	DBH	Rings/In	Age	MBF Volume by Grade						
				All	Peeler	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	23.6	9.5		973	67	140	605	136	19	6
WH	19.2			44			32	11	2	
RC	23.1			42				40	2	
RA	17.1			37			20	4	7	6
MA	19.7			22			18			5
BC	23.0			12			12			
ALL	22.3	9.5		1,129	67	140	685	191	30	18

### Unit Cruise Design: FARM VIEW U3

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2: VR, 2 BAF (62.5, 40 for some species) Measure All, Sighting Ht = 4.5 ft	37.6	40.3	33	33	1

### Unit Cruise Summary: FARM VIEW U3

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	67	67	2.0	2
WH	5	5	0.2	0
RC	10	10	0.3	0
RA	10	10	0.3	0
MA	8	8	0.2	0
BC	1	1	0.0	0
ALL	101	101	3.1	2

### Unit Cruise Statistics: FARM VIEW 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	126.9	88.4	15.4	203.8	31.0	3.8	25,864	93.6	15.8
WH	9.5	240.3	41.8	122.5	42.8	19.2	1,160	244.1	46.0
RC	12.1	303.0	52.7	93.1	43.1	13.6	1,129	306.0	54.5
RA	12.1	174.7	30.4	80.7	30.4	9.6	978	177.3	31.9
MA	9.7	231.3	40.3	61.1	17.9	6.3	593	232.0	40.8

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 (%)
BC	1.9	574.5	100.0	163.2	0.0	0.0	309	574.5	100.0
ALL	172.2	65.7	11.4	174.4	44.9	4.5	30,034	79.6	12.3

## Unit Summary: FARM VIEW U3

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
BC	LIVE	CUT	1	ALL	23.0	75	93	309	309	0.0	0.7	1.9	0.4	11.6
DF	LIVE	CUT	67	ALL	23.6	88	115	26,360	25,864	1.9	41.8	126.9	26.1	972.5
MA	LIVE	CUT	8	ALL	19.7	49	60	637	593	6.9	4.6	9.7	2.2	22.3
RA	LIVE	CUT	10	ALL	17.1	52	66	1,031	978	5.2	7.6	12.1	2.9	36.8
RC	LIVE	CUT	10	ALL	23.1	62	82	1,258	1,129	10.2	4.2	12.1	2.5	42.4
WH	LIVE	CUT	5	ALL	19.2	63	78	1,190	1,160	2.5	4.7	9.5	2.2	43.6
ALL	LIVE	CUT	101	ALL	22.3	77	100	30,785	30,034	2.4	63.6	172.2	36.3	1,129.3
ALL	ALL	ALL	101	ALL	22.3	77	100	30,785	30,034	2.4	63.6	172.2	36.3	1,129.3

## Cruise Unit Report FARM VIEW ROW

### Unit Sale Notice Volume (MBF): FARM VIEW ROW

Sp	DBH	Rings/In	Age	MBF Volume by Grade		
				All	3 Saw	4 Saw
WH	10.0			4	3	1
DF	9.8			2	1	1
RA	10.7			2		2
ALL	10.2			9	5	4

### Unit Cruise Design: FARM VIEW ROW

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
FX: FR plots (20 tree / acre expansion)	1.4	1.4	2	2	0

### Unit Cruise Summary: FARM VIEW ROW

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
WH	6	6	3.0	0
DF	5	5	2.5	0
RA	5	5	2.5	0
ALL	16	16	8.0	0

### Unit Cruise Statistics: FARM VIEW ROW

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
WH	32.6	141.4	100.0	92.8	18.0	7.3	3,030	142.6	100.3
DF	26.2	141.4	100.0	65.6	18.7	8.4	1,720	142.7	100.3
RA	31.2	14.7	10.4	50.1	16.3	7.3	1,560	22.0	12.7
ALL	90.0	15.2	10.7	70.1	30.2	7.5	6,310	33.8	13.1






### Unit Summary: FARM VIEW ROW

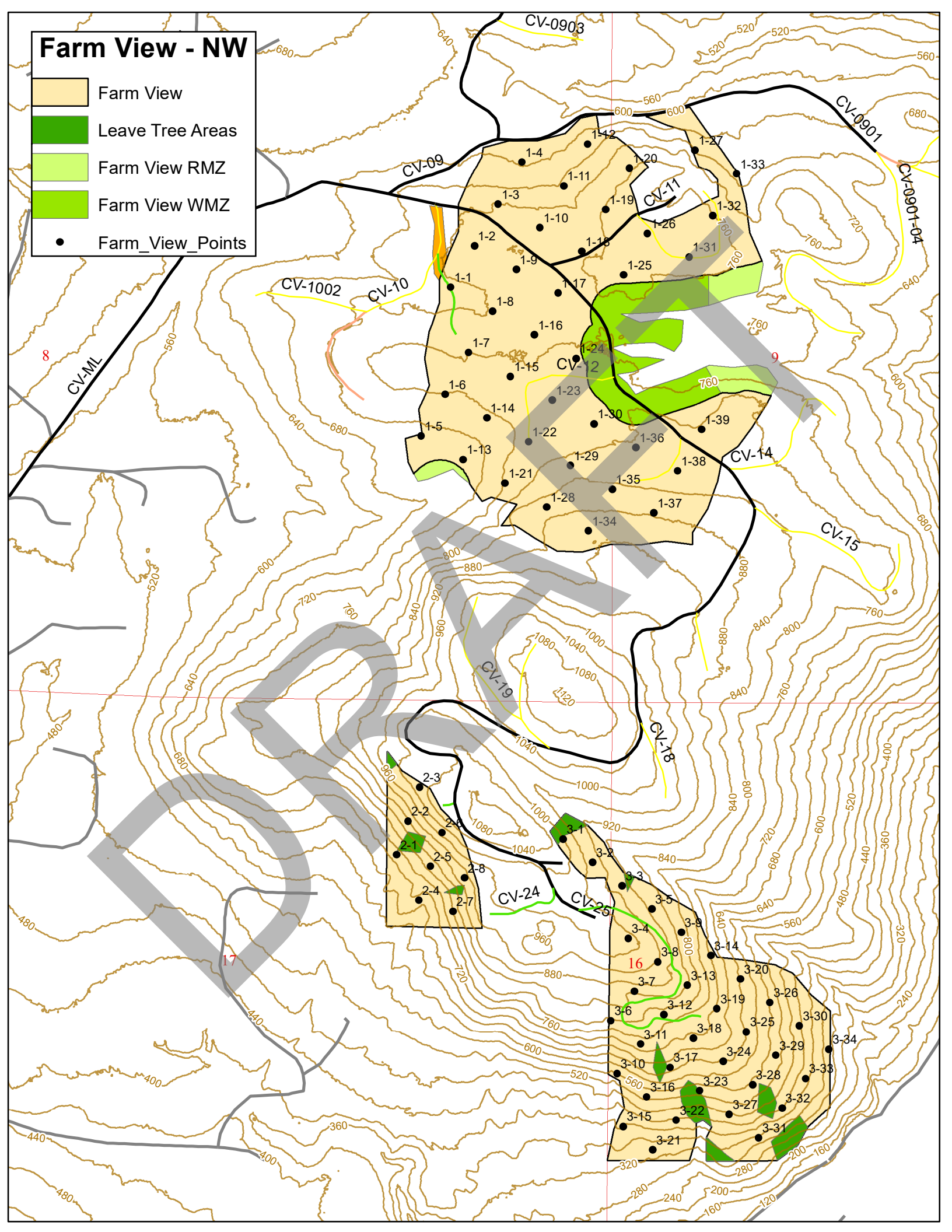
Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	5	ALL	9.8	33	50	1,720	1,720	0.0	50.1	26.2	8.4	2.4
RA	LIVE	CUT	5	ALL	10.7	28	42	1,560	1,560	0.0	49.9	31.2	9.5	2.2
WH	LIVE	CUT	6	ALL	10.0	44	63	3,030	3,030	0.0	59.8	32.6	10.3	4.2
ALL	LIVE	CUT	16	ALL	10.2	35	52	6,310	6,310	0.0	159.8	90.0	28.2	8.8

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
ALL	ALL	ALL	16	ALL	10.2	35	52	6,310	6,310	0.0	159.8	90.0	28.2	8.8

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# Farm View - NW

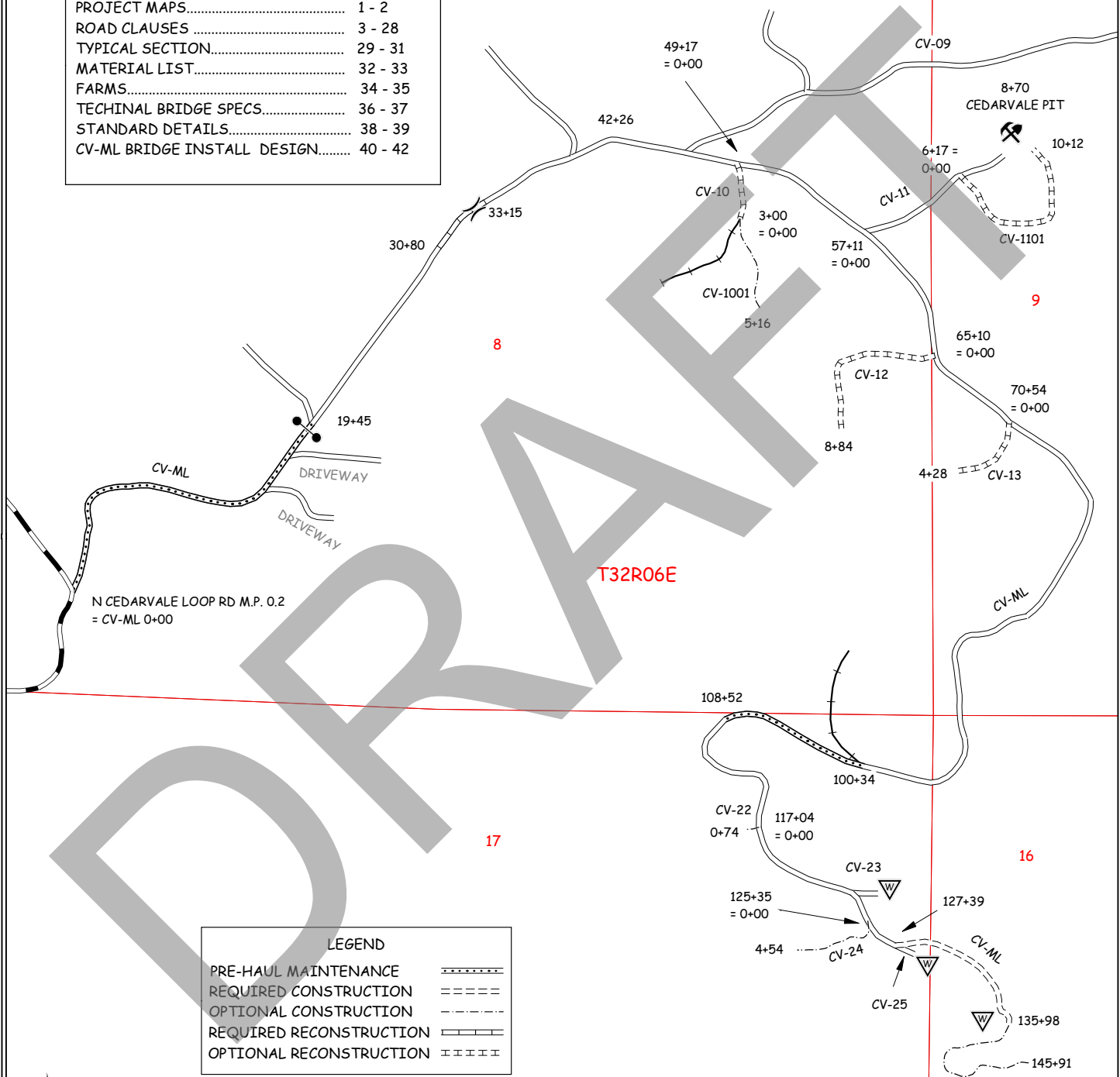
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-  Leave Tree Areas
-  Farm View RMZ
-  Farm View WMZ
-  Farm\_View\_Points



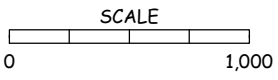
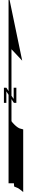


# ROAD PLAN AND SPECIFICATIONS #30-104695 FARMVIEW TIMBER SALE

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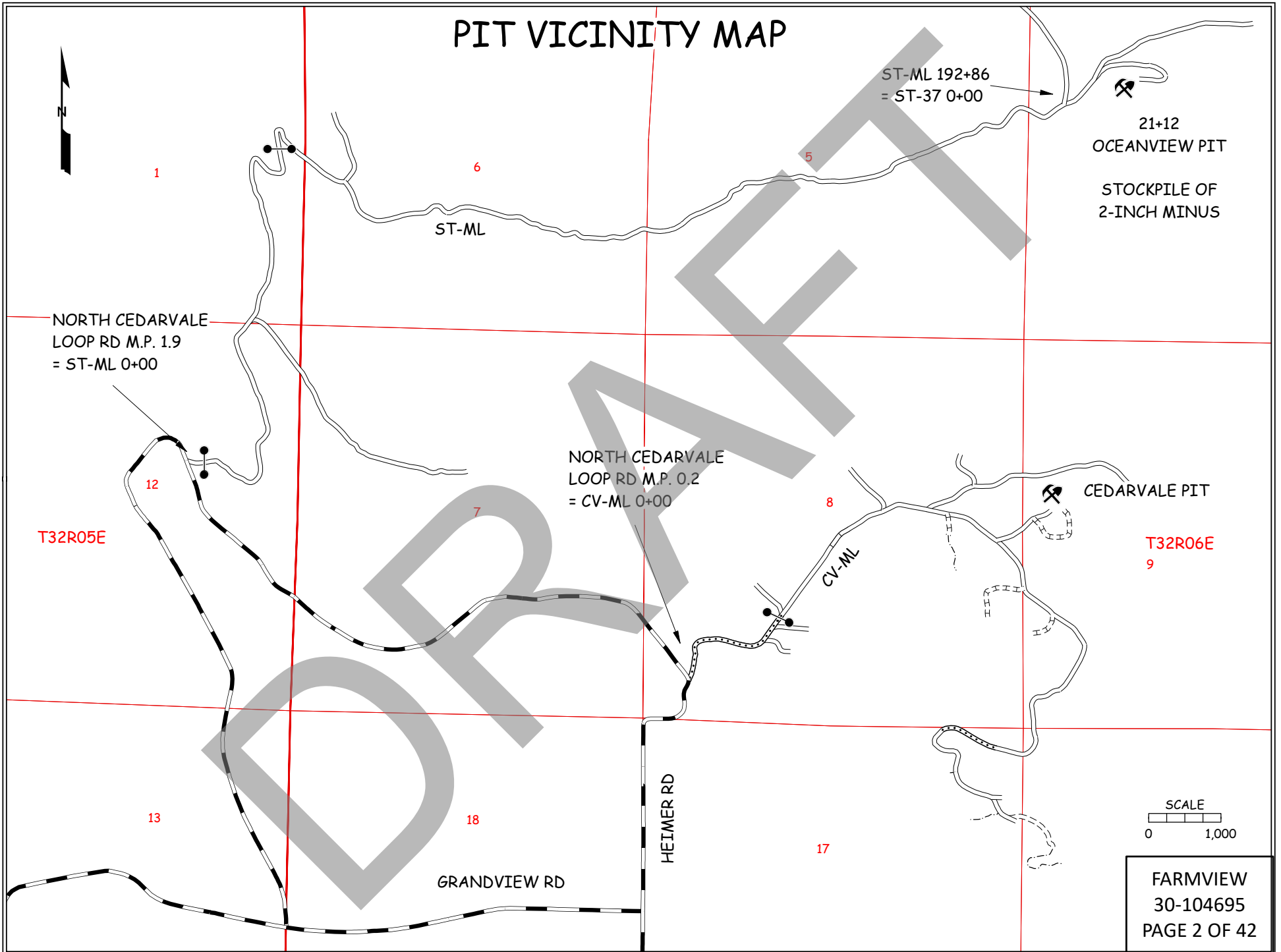


LEGEND	
PRE-HAUL MAINTENANCE	-----
REQUIRED CONSTRUCTION	.....
OPTIONAL CONSTRUCTION	- . - . - . - .
REQUIRED RECONSTRUCTION	—————
OPTIONAL RECONSTRUCTION	—————



DESIGNED BY	REVIEWED BY	APPROVED BY	PLAN DATE	SHEET
J. WESTRA	ZYLSTRA 1/8/2024	ZYLSTRA 1/8/2024	3/21/2023	1 OF 42

# PIT VICINITY MAP



SCALE  
0 1,000

FARMVIEW  
30-104695  
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STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES

FARMVIEW TIMBER SALE ROAD PLAN  
SNOHOMISH COUNTY  
CLEAR LAKE DISTRICT  
NORTHWEST REGION

AGREEMENT NO.: 30-104695

STAFF ENGINEER: J. WESTRA

DATE: MARCH 21, 2023

SECTION 0 – SCOPE OF PROJECT

**0-1 ROAD PLAN SCOPE**

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

**0-2 REQUIRED ROADS**

The specified work on the following roads is required.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
CV-ML	0+00 to 19+45 100+34 to 108+52	PREHAUL MAINTENANCE
CV-ML	30+80 to 33+15	RECONSTRUCTION
CV-ML	127+39 to 135+98	CONSTRUCTION

**0-3 OPTIONAL ROADS**

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

<u>Road</u>	<u>Stations</u>	<u>Type</u>
CV-ML	135+98 to 145+91	CONSTRUCTION
CV-10	0+00 to 3+00	RECONSTRUCTION
CV-1001	0+00 to 5+16	CONSTRUCTION
CV-1101	0+00 to 10+12	RECONSTRUCTION
CV-12	0+00 to 8+84	RECONSTRUCTION
CV-13	0+00 to 4+28	RECONSTRUCTION
CV-22	0+00 to 0+74	CONSTRUCTION
CV-24	0+00 to 4+54	CONSTRUCTION

**0-4 CONSTRUCTION**

Construction may include, but is not limited to clearing, grubbing, excavation and embankment to subgrade, drill and shoot, full-bench end-haul, landing and turnout construction, culvert installation and application of 3-inch-minus ballast.

**0-5 RECONSTRUCTION**

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

Additional reconstruction requirements include:

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
CV-ML	30+80 to 33+15	Replacement of 72" x 40' culvert with a 35' long x 14' wide precast concrete bridge. Application of 3 inches crushed rock surfacing.

**0-6 PRE-HAUL MAINTENANCE**

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

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
CV-ML	0+00 to 19+45	Rip potholes, grade and application of 3 inches of crushed rock surfacing. Purchaser shall apply an additional 1 cubic yard crushed rock at driveway intersections and shape a smooth transition.
CV-ML	100+34 to 108+52	Grade and application of 3 inches crushed rock surfacing.

**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 drilling, shooting and processing rock. Work for developing rock sources is listed in Section 6 ROCK AND SURFACING.

**0-13 STRUCTURES**

Purchaser shall provide and install a 35-foot long, 14-foot wide precast concrete bridge, footings and precast concrete blocks. Requirements for these structures are listed in Section 7 STRUCTURES and the CV-ML 32+50 BRIDGE INSTALLATION DESIGN.

SECTION 1 – GENERAL

**1-1 ROAD PLAN CHANGES**

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

**1-2 UNFORESEEN CONDITIONS**

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

**1-3 ROAD DIMENSIONS**

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

**1-4 ROAD TOLERANCES**

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

<u>Tolerance Class</u>	<u>A</u>	<u>B</u>	<u>C</u>
Road and Subgrade Width (feet)	+1.5	+1.5	+2.0
Subgrade Elevation (feet +/-)	0.5	1.0	2.0
Centerline alignment (feet lt./rt.)	1.0	1.5	3.0
Bridge elevation (feet)	±0.25		

**1-5 DESIGN DATA**

Bridge design data is available upon request at the Department of Natural Resources Northwest Region Office in Sedro Woolley, WA.

**1-6 ORDER OF PRECEDENCE**

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

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

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

**1-7 TEMPORARY ROAD CLOSURE**

Purchaser shall notify the Contract Administrator a minimum of 14 calendar days before the closure of any road. Construction may not close any road for more than 21 consecutive calendar days.

**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.

**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:

- Orange flagging and/or stakes for road centerline

**1-16 CONSTRUCTION STAKES SET BY STATE**

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

<u>Road</u>	<u>Stations</u>	<u>Type</u>
CV-ML	32+50	Survey and Construction Reference Points

**1-18 REFERENCE POINT DAMAGE**

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

**1-21 HAUL APPROVAL**

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

**1-22 WORK NOTIFICATIONS**

Purchaser shall notify the Contract Administrator a minimum of 3 business days before initial work begins and a minimum of 5 business days before fish culvert work begins.

**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 and compaction
- Drainage installation
- Rock application and compaction

**1-25 ACTIVITY TIMING RESTRICTION**

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

<u>Road</u>	<u>Activity</u>	<u>Closure Period</u>
*CV-ML	*BRIDGE INSTALLATION	*August 16 to July 14
ST-ML	**ROCK HAUL	**October 1 to April 30
ALL ROADS	ALL OTHER ACTIVITIES	November 1 to March 31

\*Not waivable without written permission from Forest Practices and WDFW

\*\*Not waivable without written permission from the Clear Lake or Cascade District Manager or their designee.

### **1-26 OPERATING DURING CLOSURE PERIOD**

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

Purchaser's maintenance plan must include a total volume of rock that will be provided at the Purchaser's expense in addition to what is specified in this road plan. This rock shall be available before permission is granted to operate during the closure period and will be used as necessary along the haul route. The Contract Administrator may direct the Purchaser where to apply this maintenance rock.

Rock from stockpiles may not be used for out of season maintenance.

### **1-29 SEDIMENT RESTRICTION**

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

### **1-30 CLOSURE TO PREVENT DAMAGE**

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

- Wheel track rutting exceeds 4 inches on crushed rock roads.
- Surface or base stability problems persist.
- Weather is such that satisfactory results cannot be obtained in an area of operations.
- When, in the opinion of the Contract Administrator excessive road damage or rutting may occur.

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

### **1-33 SNOW PLOWING RESTRICTION**

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

**1-40 ROAD APPROACHES TO COUNTY ROADS AND STATE HIGHWAYS**

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

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

**SECTION 2 – MAINTENANCE**

**2-1 GENERAL ROAD MAINTENANCE**

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

**2-2 ROAD MAINTENANCE – PURCHASER MAINTENANCE**

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

**2-3 ROAD MAINTENANCE – DESIGNATED MAINTAINER**

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

**2-4 PASSAGE OF LIGHT VEHICLES**

Purchaser shall maintain all roads in a condition that will allow the passage of light administrative vehicles.

**2-5 MAINTENANCE GRADING – EXISTING ROAD**

On prehaul maintenance roads, Purchaser shall use a grader to shape the existing surface before timber haul.

## SECTION 3 – CLEARING, GRUBBING, AND DISPOSAL

### 3-5 CLEARING

Purchaser shall fall all vegetative material larger than 2 inches DBH or over 5 feet high between the marked right-of-way boundaries 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 50%.
- Against standing trees.

### 3-10 GRUBBING

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

### 3-20 ORGANIC DEBRIS DEFINITION

Organic debris is defined as all vegetative material not eligible for removal by Contract Clause G-010 PRODUCTS SOLD AND SALE AREA or G-011 RIGHT TO REMOVE FOREST PRODUCTS AND CONTRACT AREA, that is larger than one cubic foot in volume within the clearing limits as shown on the TYPICAL SECTION SHEET and 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 the application of rock.



**3-22 DESIGNATED WASTE AREA FOR ORGANIC DEBRIS**

Waste areas for organic debris are located as listed below.

<u>Road</u>	<u>Disposal Location</u>	<u>Requirements</u>
CV-25	0+25 to 1+12	Keep separate from waste soils.
CV-ML	135+98	

**3-23 PROHIBITED DISPOSAL AREAS**

Purchaser shall not place organic debris in the following areas:

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

**3-24 BURYING ORGANIC DEBRIS RESTRICTED**

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

**3-25 SCATTERING ORGANIC DEBRIS**

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

**3-32 END HAULING ORGANIC DEBRIS**

On the following roads, and on slopes greater than 45%, Purchaser shall end haul or push organic debris to the designated waste areas specified in Clause 3-22 DESIGNATED WASTE AREA FOR ORGANIC DEBRIS or to a waste area located by the Contract Administrator.

<u>Road</u>	<u>Stations</u>	<u>Comments</u>
CV-ML	130+70 to 134+85	Full Bench End Haul
	136+94 to 138+62	
	139+54 to 142+14	Switchback

## SECTION 4 – EXCAVATION

### 4-2 PIONEERING

Pioneering may not extend past construction that will be completed during the current construction season. Pioneering may not extend more than 500 feet beyond completed construction unless approved in writing by the Contract Administrator. In addition, the following actions must be taken as pioneering progresses:

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

### 4-3 ROAD GRADE AND ALIGNMENT STANDARDS

Purchaser shall follow these standards for road grade and alignment:

- 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.

### 4-4 SWITCHBACK STANDARDS

A switchback is defined as a curved segment of road between a beginning and end of the same curve, where the change of traffic travel direction is greater than 90 degrees.

Purchaser shall follow these standards for switchbacks:

- Maximum adverse grades for switchbacks is 10%.
- Maximum favorable grades for switchbacks is 12%.
- Maximum transition grades entering and leaving switchbacks is a 5% grade change.
- Transition grades required to meet switchback grade limitations must be constructed on the tangents preceding and departing from the switchbacks.

### 4-5 CUT SLOPE RATIO

Purchaser shall construct excavation slopes no steeper than shown on the following table:

<u>Material Type</u>	<u>Excavation Slope Ratio</u>	<u>Excavation Slope Percent</u>
Common Earth (on side slopes up to 55%)	1:1	100
Common Earth (on side slopes 56-70%)	¾:1	150
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:

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

**4-7 SHAPING CUT AND FILL SLOPE**

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

**4-8 CURVE WIDENING**

The minimum widening placed on the inside of curves is:

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

**4-9 EMBANKMENT WIDENING**

The minimum embankment widening is:

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

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

**4-12 FULL BENCH CONSTRUCTION**

On the following roads, and where side slopes exceed 45%, Purchaser shall use full bench construction for the entire subgrade width. Purchaser shall end haul waste material to the location specified in Clause 4-37 WASTE AREA LOCATION.

<u>Road</u>	<u>Full Bench Location</u>	<u>Comments</u>
CV-ML	130+70 to 134+85 136+94 to 138+62	Full Bench End Haul

**4-21 TURNOUTS**

Purchaser shall construct turnouts intervisible with a maximum distance of 1,000 feet between turnouts unless otherwise shown on drawings. Locations may be adjusted to fit the final subgrade alignment and sight distances. Locations are subject to written approval by the Contract Administrator. Minimum dimensions are shown on the TYPICAL SECTION SHEET.

#### **4-22 TURNAROUNDS**

Purchaser shall construct turnarounds in accordance with the TURNAROUND DETAIL on all roads. Turnarounds must be no larger than 30 feet long and 30 feet wide. Locations are subject to written approval by the Contract Administrator.

#### **4-25 DITCH CONSTRUCTION AND RECONSTRUCTION**

Purchaser shall construct or 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 end hauled to the location specified in Clauses 4-36 through 4-38.

#### **4-28 DITCH DRAINAGE**

Ditches must drain to cross-drain culverts or ditchouts.

#### **4-29 DITCHOUTS**

Purchaser shall construct ditchouts as identified on the MATERIALS LIST and 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 55% if the waste material is compacted and free of organic debris. On side slopes greater than 55%, all waste material must be end hauled or pushed to the designated embankment sites identified by the Contract administrator.

**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.

<u>Road</u>	<u>Waste Area Location</u>	<u>Comments</u>	<u>Approx. Volume (C.Y.)</u>
CV-23	0+25 to 1+40	Potential Landing*	1,000
CV-25	0+25 to 1+12		1,200
CV-ML	135+98	Potential Landing*	2,500

\*Purchaser may use waste to build up cable landings. On the side of the waste area nearest haul roads Purchaser shall construct an access grade; the maximum allowable slope is 20% (5H : 1V). Purchaser shall apply a six inch layer of shotrock to the access grade and spread seed and straw on all other exposed soils in accordance with Clauses 8-16 through 8-27.

**4-38 PROHIBITED WASTE DISPOSAL AREAS**

Purchaser shall not deposit waste material in the following areas:

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

**4-47 BORROW MATERIAL**

Borrow material may not contain more than organic debris, or trash by volume

**4-50 BORROW APPLICATION**

Purchaser shall apply borrow in accordance with specifications listed below. Borrow must be spread, shaped, and compacted full width concurrent with hauling operations.

<u>Road</u>	<u>Stations</u>	<u>Comments</u>
CV-24	0+00 to 1+35	If the CV-24 is constructed, use waste from full bench end haul segments listed in Clause 4-12 to build up subgrade height to achieve a maximum 12% grade and smooth transition with the CV-ML.

**4-55 ROAD SHAPING**

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

**4-60 FILL COMPACTION**

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

**4-61 SUBGRADE COMPACTION**

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

SECTION 5 – DRAINAGE

**5-5 CULVERTS**

Purchaser shall install culverts as part of this contract. Culverts must be installed concurrently with subgrade work and must be installed before subgrade compaction and rock application. Culvert locations and the minimum requirements for culvert length and diameter are designated on MATERIALS LIST. Culvert, downspout, and flume lengths may be adjusted to fit as-built conditions and may not terminate directly on unprotected soil. Culverts must be new material and must meet the specifications in Clauses 10-15 through 10-24.

**5-12 UNUSED MATERIALS STATE PROPERTY**

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

**5-13 CONTINGENCY CULVERTS**

The following culverts will be supplied by the Purchaser and are available for installation as directed by the Contract Administrator.

<u>Road</u>	<u>Size</u>
On any portion of road used for haul.	Two: 18" x 30' HDPE culverts

**5-15 CULVERT INSTALLATION**

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

**5-16 APPROVAL FOR LARGER CULVERT INSTALLATION**

Purchaser shall obtain written approval from the Contract Administrator for the installation of culverts 36 inches in diameter and over before backfilling.

**5-17 CROSS DRAIN SKEW AND SLOPE**

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

**5-18 CULVERT DEPTH OF COVER**

Cross drain culverts must be installed with a depth of cover of not less than 1 foot of compacted subgrade over the top of the culvert at the shallowest point. Stream crossing culverts must be installed with a depth of cover recommended by the culvert manufacturer for the type and size of the pipe.

**5-20 ENERGY DISSIPATERS**

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

The type of energy dissipater and the amount of material must be consistent with the specifications listed on the CULVERT AND DRAINAGE SPECIFICATION DETAIL.

**5-25 CATCH BASINS**

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

**5-26 HEADWALLS FOR CROSS DRAIN CULVERTS**

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

**5-27 ARMORING FOR STREAM CROSSING CULVERTS**

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

SECTION 6 – ROCK AND SURFACING

**6-2 ROCK SOURCE ON STATE LAND**

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

<u>Source</u>	<u>Location</u>	<u>Rock Type</u>
CEDARVALE PIT	8+70 of the CV-11	3-INCH MINUS BALLAST, SHOTROCK, RIPRAP
OCEANVIEW PIT	21+12 of the ST-37	2-INCH MINUS CRUSHED

**6-3 ROCK SOURCE STATE LAND, EXISTING STOCKPILE**

Rock used in accordance with the quantities on the TYPICAL SECTION and MATERIALS LIST may be obtained from the following existing stockpile on state land at no charge to the Purchaser. Purchaser shall not remove additional yardage without prior written approval from the Contract Administrator.

<u>Source</u>	<u>Location</u>	<u>Rock Type</u>	<u>Quantity</u>
OCEANVIEW PIT	21+12 of the ST-37	2-INCH MINUS CRUSHED	510

**6-5 ROCK FROM COMMERCIAL SOURCE**

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

**6-11 ROCK SOURCE DEVELOPMENT PLAN BY PURCHASER**

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

<u>Source</u>	<u>Rock Type</u>
CEDARVALE PIT	3-INCH MINUS BALLAST



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

- Rock source location.
- Rock source overview showing access roads, development areas, stockpile locations, waste areas, and floor drainage.
- Rock source profiles showing development areas, bench locations including widths, and wall faces including heights.
- Rock source reclamation plan describing how the area will be left in a condition that will ensure public safety and minimize environmental impacts.

#### 6-12 ROCK SOURCE SPECIFICATIONS

Rock sources must be in accordance with the following specifications:

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

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

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

**6-14 DRILL AND SHOOT**

Rock drilling and shooting must meet the following specifications:

- Oversize material remaining in the rock source at the conclusion of the timber sale may not exceed 5% of the total volume mined in that source.
- Oversize material is defined as rock fragments too large to be converted by the Purchaser to a size that will meet specifications used for the roads in this sale.
- All operations must be carried out in compliance with the Regulations and Standards Applicable to Metal and Nonmetal Mining and Milling Operations (30 CFR) U.S. Department of Labor, Mine Safety and Health Administration and the Safety Standards for Construction Work (296-155 WAC), Washington Department of Labor and Industries.
- Purchaser shall block access roads before blasting operations.

**6-21 IN-PLACE PROCESSING**

Purchaser may use in-place processing, such as a grid roller or other method, if suitable crushing can be demonstrated to meet the surfacing size specified in Clause 6-34 3-INCH MINUS BALLAST. Purchaser shall remove any existing organic debris before the start of in-place crushing operations. The use of in-place processing methods is subject to written approval by the Contract Administrator.

**6-23 ROCK GRADATION TYPES**

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

**6-30 2-INCH MINUS CRUSHED ROCK**

% Passing 2" square sieve	100%
% Passing 1" square sieve	55 - 75%
% Passing U.S. #4 sieve	20 - 45%

Of the fraction passing the No. 4 sieve, 40% to 60% must pass the No. 10 sieve.

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

**6-34 3-INCH MINUS BALLAST ROCK**

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

Rock may contain no more than 5 percent organic debris, dirt, and trash.

**6-42 SHOTROCK**

No more than 10 percent of the rock by visual inspection may exceed 8 inches in any dimension and no rock may be larger than 12 inches in any dimension. Shotrock may not contain more than 5 percent by weight of organic debris, dirt, and trash.

**6-44 STREAM SIMULATION ROCK**

Stream simulation rock must be manufactured on site or in a rock pit by mixing the components shown below with an excavator or front-end loader.

- 10% 12 – 18” round boulders
- 40% 6 – 12” round cobble
- 30% 1 – 6” round rock
- 20% Well graded pitrun round gravels and sand

**6-50 LIGHT LOOSE RIP RAP**

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

<u>Quantity</u>	<u>Approximate Size Range</u>
20% to 90%	500 lbs. to 1 ton (18”- 28”)
15% to 80%	50 lbs. to 500 lbs. (8”- 18”)
10% to 20%	3 inch to 50 lbs. (3”- 8”)

**6-51 HEAVY LOOSE RIP RAP**

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

<u>Quantity</u>	<u>Size Range</u>
30% to 90%	1 ton to 2 ton (28”- 36”)
30% to 70%	500 lbs. to 1 ton (18”- 28”)
20% to 50%	50 lbs. to 500 lbs. (8”- 18”)
10% to 20%	3 inch to 50 lbs. (3”- 8”)

**6-55 ROCK APPLICATION MEASURED BY COMPACTED DEPTH**

Measurement of specified rock depths, are defined as the compacted depths using the compaction methods required in this road plan. Estimated quantities specified in the TYPICAL SECTION are loose yards. Purchaser shall apply adequate amounts of rock to meet the specified rock depths. Specified rock depths are minimum requirements, and are not subject to reduction.

**6-70 APPROVAL BEFORE ROCK APPLICATION**

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

**6-71 ROCK APPLICATION**

Purchaser shall apply rock in accordance with the specifications and quantities shown on the TYPICAL SECTION. Rock must be spread, shaped, and compacted full width concurrent with rock hauling operations. The Contract Administrator will direct locations for rock that is to be applied as spot patching. Road surfaces must be compacted in accordance with the TYPICAL SECTION by routing equipment over the entire width.

**6-73 ROCK FOR WIDENED PORTIONS**

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

**6-75 OPTIONAL ROCK EXCEPTION**

On the following roads, if hauling takes place from May 1 to September 30 Purchaser may provide and place less rock than shown on the TYPICAL SECTION and MATERIALS 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.

<u>Road</u>	<u>Stations</u>	<u>Options</u>
CV-10	0+00 to 3+00	Minimum acceptable rock depth of 9".
CV-1101	0+00 to 10+12	
CV-12	0+00 to 8+84	
CV-13	0+00 to 4+28	
CV-22	0+00 to 0+74	

## SECTION 7 – STRUCTURES

### **7-5 STRUCTURE DEBRIS**

Purchaser shall not allow debris from the installation or removal of structures to enter any stream. Components removed from existing structures must be removed from state land. Purchaser shall maintain a clean jobsite, with all materials stored away from the high water mark or other area presenting a risk of the materials entering a stream. Debris entering any stream must be removed immediately, and placed in the site designated for stockpiling or disposal. Purchaser shall retrieve all material carried downstream from the jobsite.

### **7-6 STREAM CROSSING INSTALLATION**

Purchaser shall install stream crossing structures in accordance with the manufacturer's requirements, and the CV-ML 32+50 BRIDGE INSTALLATION DESIGN.

### **7-15 DRAWING AND CALCULATION REVIEW FOR ACCEPTANCE**

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

Send submittals to:

Department of Natural Resources  
Attn.: Tamra Zylstra  
919 N. Township St.  
Sedro Woolley, WA 98284  
(360)856-3500  
tamra.zylstra@dnr.wa.gov

Reports and plans will be accepted or rejected within 30 working days of receipt. Delays in work because of the possibility of rejection, revision, and resubmittal of documents are deemed a risk of the Purchaser and may not be the basis for claims of additional compensation.

### **7-17 STRUCTURE ACCEPTANCE**

The Region Engineer or designee will inspect the structure upon delivery. Acceptance will be issued if the structure meets all specifications and certifications. Structures that are not accepted may not be installed.

**7-18 INSTALLATION PRODUCTION SCHEDULE**

Purchaser shall provide the Contract Administrator or their designee, with a production schedule showing projected completion dates for the following items before starting construction of the structure. Production schedule must include:

- Dewatering
- Excavation, removal of existing culvert
- Stream channel realignment and placement of stream simulation mix
- Placement of precast block walls and footings
- Installation of bridge superstructure
- Backfill compaction, rock application and compaction

**7-19 INSTALLATION FINAL ACCEPTANCE**

Purchaser shall notify the Contract Administrator in writing when each structure is complete. Within 15 working days of final construction acceptance, Purchaser shall submit two complete sets of finalized plans to the Region Engineer and one to the Contract Administrator. Any omissions to the plans are the responsibility of the Purchaser to correct and include in the finalized set of plans. Submit finalized plans to the same location stated in Clause 7-15 DRAWING AND CALCULATION REVIEW FOR ACCEPTANCE.

**7-45 PURCHASER SUPPLIED BRIDGE**

Purchaser shall provide, and construct the bridge listed below. Refer to Technical Bridge Specifications and design sheets for details.

Road	Station	Length (ft)	W.B.S.R. <sup>1</sup> (ft)	Bridge Type	Footing / Abutment	Running Surface
CV-ML	32+80 to 33+15	35	14	Concrete Slab	Spread Footing on Precast Block Wall	Concrete

<sup>1</sup>W.B.S.R. = Width between shear rails.

## SECTION 8 – EROSION CONTROL

### **8-2 PROTECTION FOR EXPOSED SOIL**

Purchaser shall provide and evenly spread a 3-inch layer of straw to all exposed soils at culvert installations. Soils must be covered before the first anticipated storm event. Soils may not sit exposed during any rain event.

### **8-15 REVEGETATION**

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

### **8-16 REVEGETATION SUPPLY**

The Purchaser shall provide the seed and fertilizer.

### **8-17 REVEGETATION TIMING**

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

### **8-18 PROTECTION FOR SEED**

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

### **8-19 ASSURANCE FOR SEEDED AREA**

Purchaser shall ensure the growth of a uniform and dense crop (at least 50% coverage) of 3-inch tall grass. Purchaser shall reapply the grass seed and fertilizer in areas that have failed to germinate or have been damaged through any cause. Restore eroded or disturbed areas, clean up and properly dispose of eroded materials, and reapply the seed and fertilizer at no addition cost to the state.

**8-25 GRASS SEED**

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

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

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

**8-27 FERTILIZER**

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

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



## SECTION 9 – POST-HAUL ROAD WORK

### 9-3 CULVERT MATERIAL REMOVED FROM STATE LAND

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

### 9-5 POST-HAUL MAINTENANCE

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

### 9-10 LANDING DRAINAGE

Purchaser shall provide for drainage of the landing surface.

### 9-11 LANDING EMBANKMENT

Purchaser shall slope landing embankments to the original construction specifications.

## SECTION 10 MATERIALS

### 10-15 CORRUGATED STEEL CULVERT

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

### 10-17 CORRUGATED PLASTIC CULVERT

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

### 10-18 CORRUGATED STEEL STRUCTURAL PLATE

Structural plate culverts must be galvanized steel meeting AASHTO M-167 (ASTM A-761) specifications.

### 10-21 METAL BAND

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

**10-22 PLASTIC BAND**

Plastic coupling and end bands must meet the AASHTO specification designated for the culvert. Only fittings supplied or recommended by the culvert manufacturer may be used.

**10-24 GAUGE AND CORRUGATION**

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

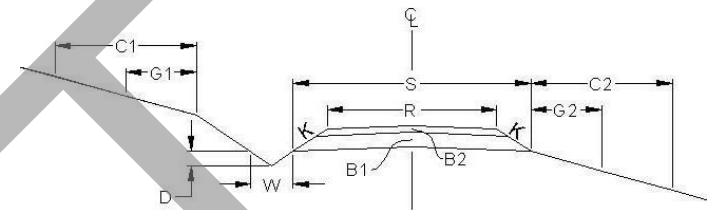
<u>Diameter</u>	<u>Gage</u>	<u>Corrugation</u>
18"	16 (0.064")	2 2/3" X 1/2"
24" to 48"	14 (0.079")	2 2/3" X 1/2"
54" to 96"	14 (0.079")	3" X 1"

DRAFT

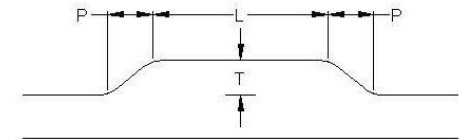
ROAD #		CV-ML	CV-ML	CV-ML	CV-ML
REQUIRED / OPTIONAL		REQUIRED	REQUIRED	REQUIRED	REQUIRED
CONSTRUCT / RECONSTRUCT		PREHAUL	RECONSTRUCT	RECONSTRUCT	PREHAUL
TOLERANCE CLASS (A/B/C)		C	C	A	C
STATION / MP TO		0+00	30+80	32+80	100+34
STATION / MP		19+45	32+80	33+15	108+52
ROAD WIDTH	R	12	12		12
CROWN (INCHES @ C/L)		3	3		3
DITCH WIDTH	W	3	3		3
DITCH DEPTH	D	1	1		1
TURNOUT LENGTH	L	--	--		--
TURNOUT WIDTH	T	--	--		--
TURNOUT TAPER	P	--	--		--
GRUBBING	G1	--	--		--
	G2	--	--		--
CLEARING	C1	--	--		--
	C2	--	--		--
ROCK FILLSLOPE	K:1	1 ½ : 1	1 ½ : 1		1 ½ : 1
❖ BALLAST DEPTH	B1	--	15		--
CUBIC YARDS / STATION		--	93		--
➤ TOTAL CY BALLAST		--	186 <sup>B</sup>		--
❖ SURFACING DEPTH	B2	3	3		3
CUBIC YARDS / STATION		17	17		17
➤ TOTAL CY SURFACING		330 <sup>A</sup>	35 <sup>A</sup>		140 <sup>A</sup>
➤ TOTAL CUBIC YARDS		330	185		140
SUBGRADE WIDTH	S	13	13		13
BRUSHCUT (Y/N)		N	N	N	N
BLADE, SHAPE, & DITCH (Y/N)		Y	N	N	Y

35-FOOT SPAN, 14-FOOT WIDE, PRECAST CONCRETE BRIDGE ON  
 22.5-FOOT BY 2-FOOT BY 1.5' PRECAST CONCRETE FOOTINGS SET ON  
 PRECAST CONCRETE BLOCK WALLS

TYPICAL SECTION



TURNOUT DETAIL (PLAN VIEW)



**SYMBOL NOTES**

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

A: 2-Inch Minus Surfacing  
 B: 3-Inch Minus Ballast

Rock Totals Summary

Type	Quantity (Cubic Yards)
Stream Simulation Mix	40
5/8-Inch Minus Bedding	20
2-Inch Minus Surfacing	515
3-Inch Minus Ballast	5,936
Rip Rap	135

ROAD #		CV-ML	CV-ML	CV-10	CV-1001	CV-1101	CV-12	CV-13
REQUIRED / OPTIONAL		REQUIRED	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
CONSTRUCT / RECONSTRUCT		CONSTRUCT	CONSTRUCT	RECONSTRUCT	CONSTRUCT	RECONSTRUCT	RECONSTRUCT	RECONSTRUCT
TOLERANCE CLASS (A/B/C)		C	C	C	C	C	C	C
STATION / MP TO		127+39	135+98	0+00	0+00	0+00	0+00	0+00
STATION / MP		135+98	145+91	3+00	5+16	10+12	8+84	4+28
ROAD WIDTH	R	12	12	12	12	12	12	12
CROWN (INCHES @ C/L)		3	3	3	3	3	3	3
DITCH WIDTH	W	3	3	3	3	3	3	3
DITCH DEPTH	D	1	1	1	1	1	1	1
TURNOUT LENGTH	L	50	50	--	--	--	--	--
TURNOUT WIDTH	T	10	10	--	--	--	--	--
TURNOUT TAPER	P	25	25	--	--	--	--	--
GRUBBING	G1	5	5	2	5	2	2	2
	G2	5	5	2	5	2	2	2
CLEARING	C1	10	10	5	5	5	5	5
	C2	10	10	5	5	5	5	5
ROCK FILLSLOPE	K:1	1 ½ : 1	1 ½ : 1	1 ½ : 1	1 ½ : 1	1 ½ : 1	1 ½ : 1	1 ½ : 1
❖ BALLAST DEPTH	B1	18	18	12	18	12	18	18
CUBIC YARDS / STATION		114	114	72	114	72	114	114
➤ TOTAL CY BALLAST		980 <sup>B</sup>	1,130 <sup>B</sup>	215 <sup>B</sup>	590 <sup>B</sup>	730 <sup>B</sup>	1,010 <sup>B</sup>	490 <sup>B</sup>
❖ SURFACING DEPTH	B2	--	--	--	--	--	--	--
CUBIC YARDS / STATION		--	--	--	--	--	--	--
➤ TOTAL CY SURFACING		--	--	--	--	--	--	--
➤ TOTAL CUBIC YARDS		980	1,130 <sup>B</sup>	215	590	730	1,010	490
SUBGRADE WIDTH	S	16.5	16.5	14	16.5	14	16.5	16.5
BRUSHCUT (Y/N)		N	N	N	N	N	N	N
BLADE, SHAPE, & DITCH (Y/N)		N	N	N	N	N	N	N

ROAD #		CV-22	CV-24				
REQUIRED / OPTIONAL		OPTIONAL	OPTIONAL				
CONSTRUCT / RECONSTRUCT		CONSTRUCT	CONSTRUCT				
TOLERANCE CLASS (A/B/C)		C	C				
STATION / MP TO		0+00	0+00				
STATION / MP		0+74	4+54				
ROAD WIDTH	R	12	12				
CROWN (INCHES @ C/L)		3	3				
DITCH WIDTH	W	3	3				
DITCH DEPTH	D	1	1				
TURNOUT LENGTH	L	--	--				
TURNOUT WIDTH	T	--	--				
TURNOUT TAPER	P	--	--				
GRUBBING	G1	5	5				
	G2	5	5				
CLEARING	C1	10	10				
	C2	10	10				
ROCK FILLSLOPE	K:1	1 ½ : 1	1 ½ : 1				
❖ BALLAST DEPTH	B1	18	18				
CUBIC YARDS / STATION		114	114				
➤ TOTAL CY BALLAST		85 <sup>B</sup>	520 <sup>B</sup>				
❖ SURFACING DEPTH	B2	--	--				
CUBIC YARDS / STATION		--	--				
➤ TOTAL CY SURFACING		--	--				
➤ TOTAL CUBIC YARDS		85	520				
SUBGRADE WIDTH	S	16.5	16.5				
BRUSHCUT (Y/N)		N	N				
BLADE, SHAPE, & DITCH (Y/N)		N	N				

## MATERIALS LIST

LOCATION		CULVERT			DWNSPT		RIPRAP			FILL TYPE	TOLERANCE	REMARKS											
ROAD #	STATION	DIAMETER	LENGTH	TYPE	LENGTH	TYPE	INLET	OUTLET	TYPE														
<p><b>Note:</b> Galvanized metal culverts shall conform to the following specifications for gage and corrugation as a function of the diameter:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Diameter</th> <th style="text-align: center;">Gage</th> <th style="text-align: center;">Corrugation</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">18"</td> <td style="text-align: center;">16</td> <td style="text-align: center;">2 2/3" x 1/2"</td> </tr> <tr> <td style="text-align: center;">24" – 48"</td> <td style="text-align: center;">14</td> <td style="text-align: center;">2 2/3" x 1/2"</td> </tr> <tr> <td style="text-align: center;">54" – 96"</td> <td style="text-align: center;">14</td> <td style="text-align: center;">3" x 1"</td> </tr> </tbody> </table>												Diameter	Gage	Corrugation	18"	16	2 2/3" x 1/2"	24" – 48"	14	2 2/3" x 1/2"	54" – 96"	14	3" x 1"
Diameter	Gage	Corrugation																					
18"	16	2 2/3" x 1/2"																					
24" – 48"	14	2 2/3" x 1/2"																					
54" – 96"	14	3" x 1"																					
CV-ML	32+80	--	--	--	--	--	--	--	--	--	A	Construct precast block wall consisting of: - 26 Full blocks - 2 3X Beams - 5 Full bench blocks											
CV-ML	32+80 to 33+15	--	--	--	--	--	--	--	--	--	A	35' by 14' Precast Concrete Bridge Set on precast concrete footings. Install 40 CY stream simulation mix. 50 CY riprap armoring. Type 3 stream.											
CV-ML	33+15	--	--	--	--	--	--	--	--	--	A	Construct precast block wall consisting of: - 26 Full blocks - 2 3X Beams 5 Full bench blocks											
CV-ML	42+26	--	--	--	--	--	--	--	--	--	--	Spot patch with 10 cubic yards 2-Inch Minus											
CV-ML	129+16	18	30	PD	--	--	2	3	L	NT	C												
CV-ML	131+85	18	30	PD	--	--	2	3	L	NT	C												
CV-ML	134+61	18	30	PD	--	--	2	3	L	NT	C												
CV-ML	138+17	18	30	PD	--	--	2	3	L	NT	C												
CV-ML	143+21	18	30	PD	--	--	2	3	L	NT	C												
CV-10	0+20	18	30	PD	--	--	2	3	L	NT	C												
CV-1001	2+77	24	30	PD	--	--	2	3	L	NT	C	Type 5 Stream											
CV-1001	3+15	18	30	PD	--	--	2	3	L	NT	C												

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

### MATERIALS LIST

LOCATION		CULVERT			DWNSPT		RIPRAP			FILL TYPE	TOLERANCE	REMARKS											
ROAD #	STATION	DIAMETER	LENGTH	TYPE	LENGTH	TYPE	INLET	OUTLET	TYPE														
<p><b>Note:</b> Galvanized metal culverts shall conform to the following specifications for gage and corrugation as a function of the diameter:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Diameter</th> <th style="text-align: center;">Gage</th> <th style="text-align: center;">Corrugation</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">18"</td> <td style="text-align: center;">16</td> <td style="text-align: center;">2 2/3" x 1/2"</td> </tr> <tr> <td style="text-align: center;">24" – 48"</td> <td style="text-align: center;">14</td> <td style="text-align: center;">2 2/3" x 1/2"</td> </tr> <tr> <td style="text-align: center;">54" – 96"</td> <td style="text-align: center;">14</td> <td style="text-align: center;">3" x 1"</td> </tr> </tbody> </table>												Diameter	Gage	Corrugation	18"	16	2 2/3" x 1/2"	24" – 48"	14	2 2/3" x 1/2"	54" – 96"	14	3" x 1"
Diameter	Gage	Corrugation																					
18"	16	2 2/3" x 1/2"																					
24" – 48"	14	2 2/3" x 1/2"																					
54" – 96"	14	3" x 1"																					
CV-1101	7+81	18	30	PD	--	--	2	3	L	NT	C												
CV-1101	9+34	18	30	PD	--	--	2	3	L	NT	C												
CV-12	0+85	18	30	PD	--	--	2	3	L	NT	C												
CV-12	1+32	18	30	PD	--	--	2	3	L	NT	C												
CV-12	3+73	18	30	PD	--	--	2	3	L	NT	C												
CV-12	6+97	18	30	PD	--	--	2	3	L	NT	C												
CV-13	0+71	18	30	PD	--	--	2	3	L	NT	C												
CV-13	3+22	18	30	PD	--	--	2	3	L	NT	C												
CV-24	3+21	18	30	PD	--	--	2	3	L	NT	C												

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

## FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS

### Cuts and Fills

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

### Surface

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

### Drainage

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



## FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS

### Preventative Maintenance

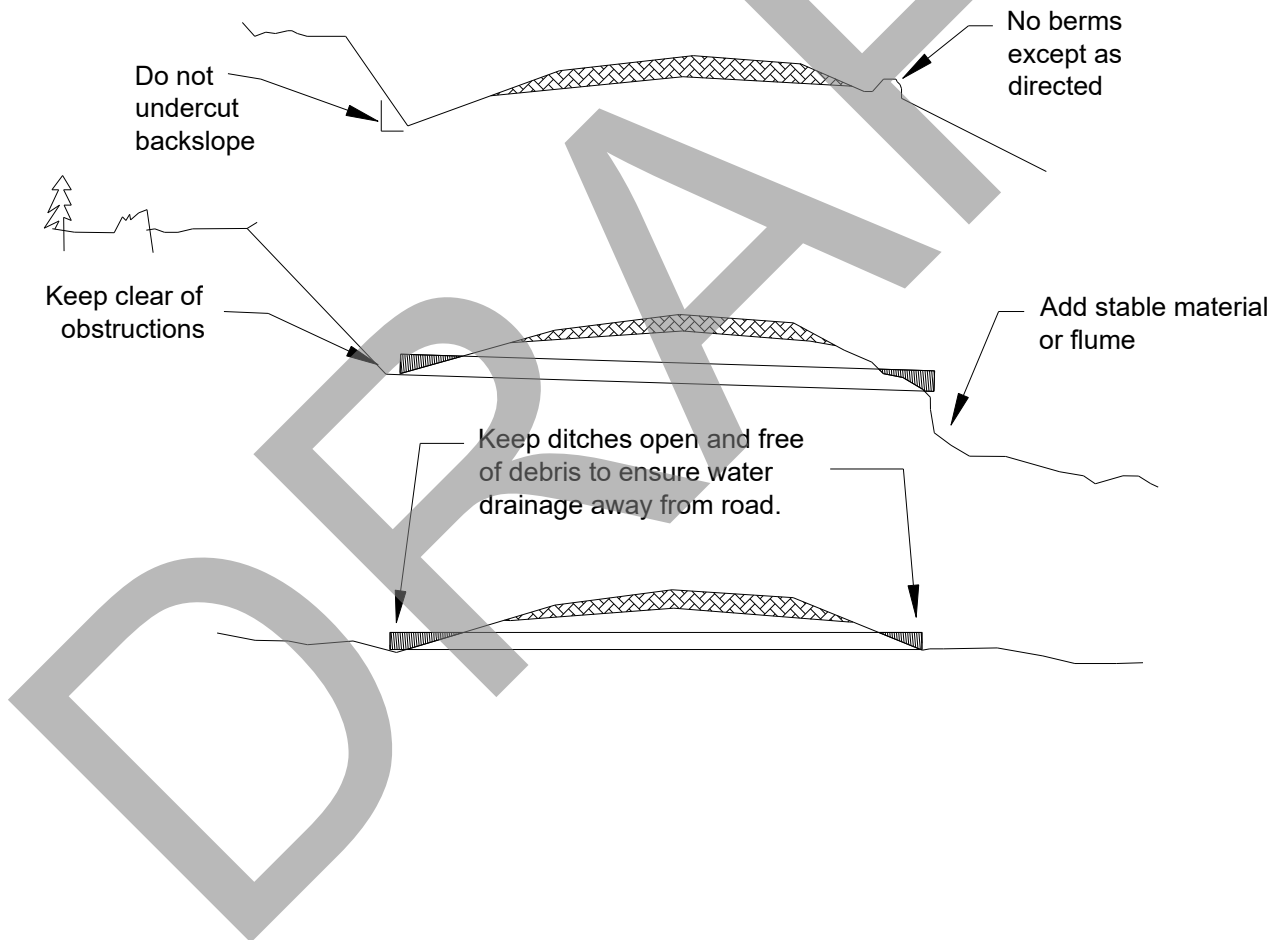
- Perform preventative maintenance work to safeguard against storm damage, such as blading to ensure correct runoff, ditch and culvert cleaning, and waterbar maintenance.

### Termination of Use or End of Season

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

### Debris

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



## TECHNICAL BRIDGE SPECIFICATIONS

### PART B.1 – MATERIALS

#### B.1.1 ELASTOMERIC BEARING PADS

Elastomeric bearing pads shall conform to the requirements of AASHTO M251.

### PART B.2 – CONSTRUCTION REQUIREMENTS

#### B.2.1 PRECAST CONCRETE FABRICATOR QUALIFICATIONS

Precast concrete fabricator shall be certified under the Precast/Prestressed Concrete Institute's (PCI) Plant Certification Program at a level equivalent or higher than B1 – Precast Bridge Products (No Prestressed Reinforcement).

### PART B.3 – STRUCTURE DESIGN

#### B.3.1 PURCHASER'S DESIGN ENGINEER

All design work shall be completed by (or under the direct supervision of) a Professional Engineer, licensed in the state or province of manufacture, in the branch of Civil or Structural Engineering.

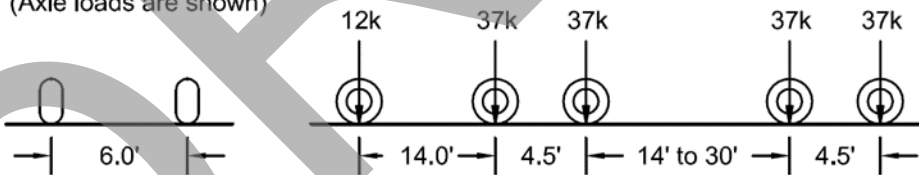
#### B.3.2 DESIGN METHOD

All design work shall be in conformance with the current edition of the AASHTO LRFD Bridge Design Specifications and all subsequent interim specifications. Design details not covered by the AASHTO Specifications shall be in accordance with normally accepted structural design standards.

#### B.3.3 DESIGN LOADING

Bridge and foundation shall be designed to HL-93 loading and U-80 special design vehicle with full impact (IM=33%).

U80 TRUCK LOADING - GVW = 80 TONS  
(Axle loads are shown)



#### B.3.4 BRIDGE DESIGN – GENERAL

- A. Bridge shall have integral bridge rails, which shall be thrie-beam or W-Beam with steel posts and shall be designed for TL-1 force requirements in accordance with AASHTO LRFD Appendix A13.2. Bridge Rails are not required to be crash tested. End sections shall conform to WSDOT Standard Plan C-7a, Design C. All rail elements shall be formed with minimum 12-gauge galvanized steel.
- B. Top of rail shall be a minimum of 18" above the top of the wearing surface.
- C. Bridge deck shall be continuous full width, with no gaps that allow water and sediment to drain through the bridge deck.
- D. Bridge components shall include functional lifting points to facilitate unloading and placement.
- E. Maximum individual component weight shall not exceed 20,000 lbs.

**B.3.5 BRIDGE SUPERSTRUCTURE DESIGN – CONCRETE SLAB**

Bridge superstructure members must meet or exceed the following parameters:

- A. All manufactured components of this bridge including, but not limited to, girders, deck, wingwalls, endwalls, and curbs shall be constructed of reinforced concrete with a minimum 28-day compressive strength of 4,000 psi.
- B. LRFD Article 2.5.2.6.2 – Criteria for Deflection shall be considered required. Vehicle load deflection limit of L/800 shall apply.
- C. Design shall include specifications for:
  - i. Required concrete strength at release and at 28 days.
  - ii. Maximum slump of concrete.
  - iii. Air content of concrete.
  - iv. Reinforcing steel size, grade, and coating if applicable.

**B.3.6 BRIDGE FOUNDATION DESIGN – SPREAD FOOTING**

The foundation shall meet or exceed the parameters outlined below.

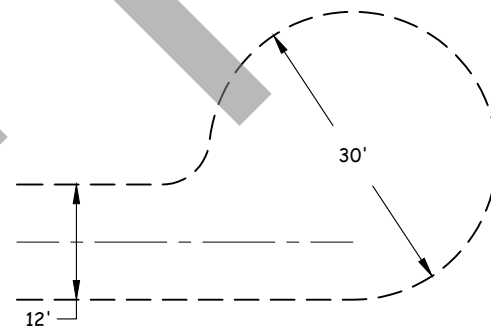
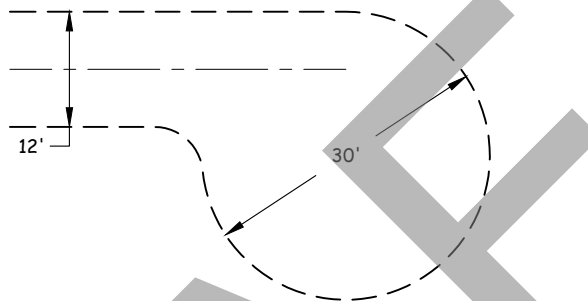
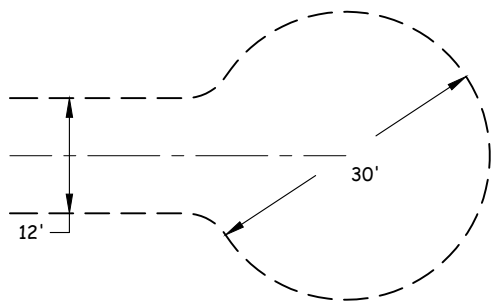
- A. Foundation shall consist of pre-cast concrete spread footings, sized to meet design elevations shown on the plans.
- B. Nominal bearing resistance of the soil is assumed to be 4,000 pounds per square foot.
- C. Design of pre-cast components provided by Purchaser's Engineer shall include specifications for:
  - i. Required concrete strength at release.
  - ii. Required concrete strength for transport.
  - iii. Required concrete strength for exposure to construction loads.
  - iv. Required concrete strength at 28 days.
  - v. Reinforcing steel configuration, size, grade, and coating if applicable.

**B.3.7 BRIDGE FOUNDATION DESIGN – PRECAST BLOCK ABUTMENT**

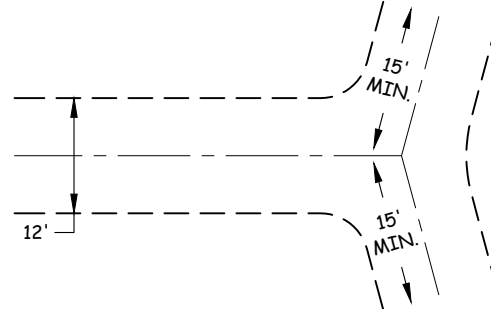
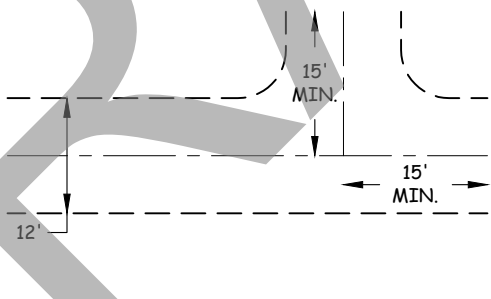
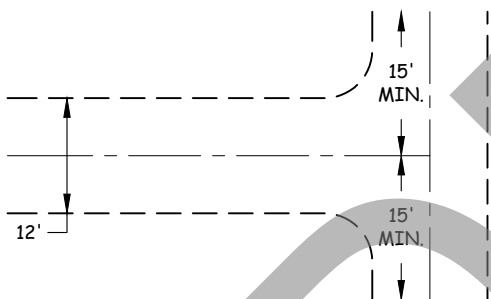
Abutment wall shall consist of Ultrablock®-style precast concrete blocks. Blocks shall meet or exceed the parameters outlined below.

- A. Concrete shall have 28-day compressive strength of at least 2,200 psi and shall be air entrained 4-7% to protect the surface from freeze thaw degradation.
- B. Blocks shall be cast monolithically, no cold joints allowed.
- C. All exposed surfaces shall have a smooth finish.
- D. Block size shall be 2.5 feet wide x 2.5 feet deep x 5 feet long, unless special blocks as shown in the design. Dimensional tolerance shall be ½-inch for length, width, and height.
- E. Edges shall be chamfered.
- F. Blocks shall interlock with a shear key system.
- G. Each block shall include a satisfactory embedded lifting device.

# TURNAROUND DETAILS



CUL-DE-SAC



HAMMERHEAD

3-POINT SIDE

3-POINT WYE

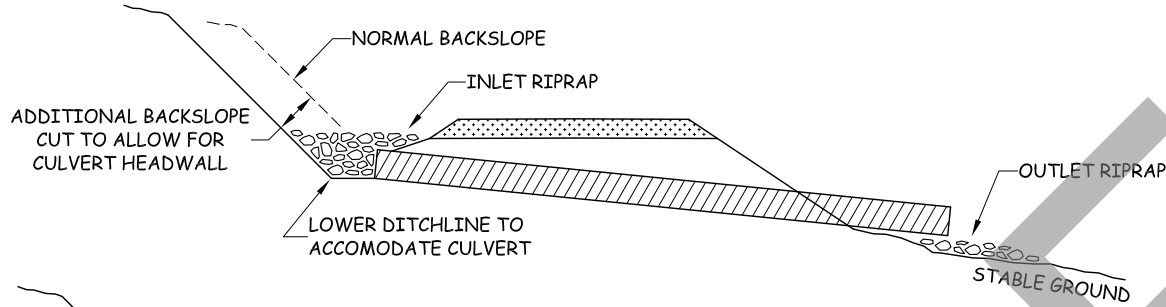
TURNAROUND TYPE AND TURNAROUND LOCATION ARE SUBJECT TO THE APPROVAL OF THE CONTRACT ADMINISTRATOR.

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

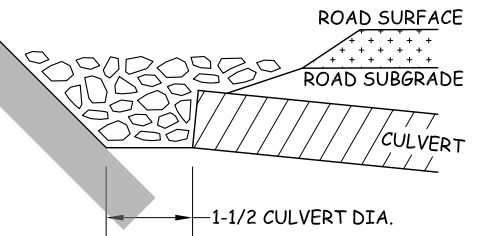
CONTRACT # 30-104695	PROJECT FARMVIEW	SHEET 38 OF 42
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# CULVERT AND DRAINAGE SPECIFICATIONS

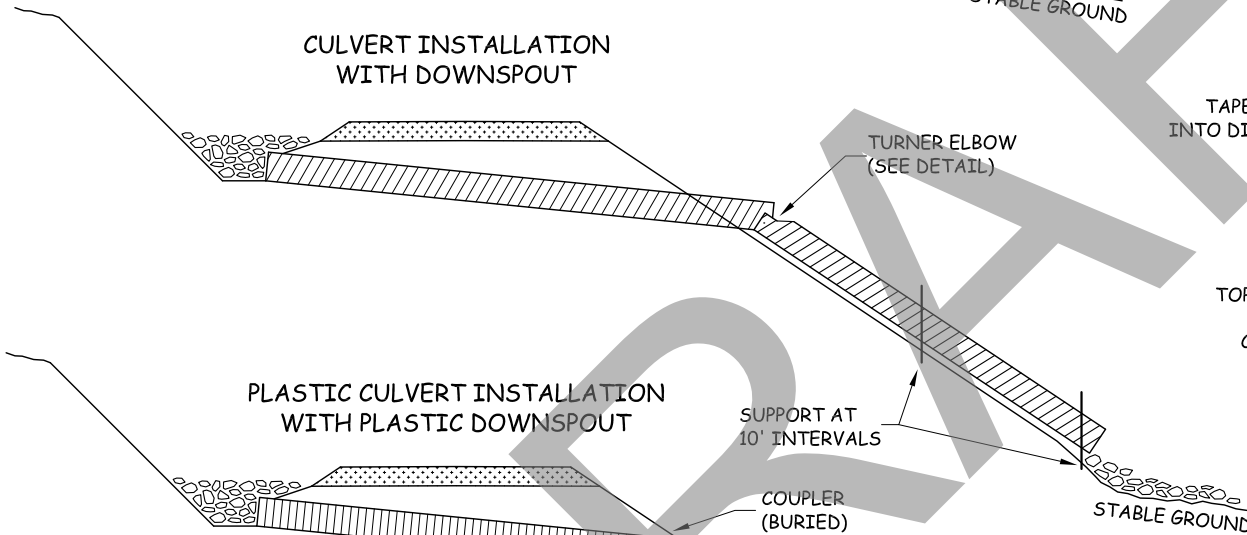
CULVERT INSTALLATION (TYPICAL)



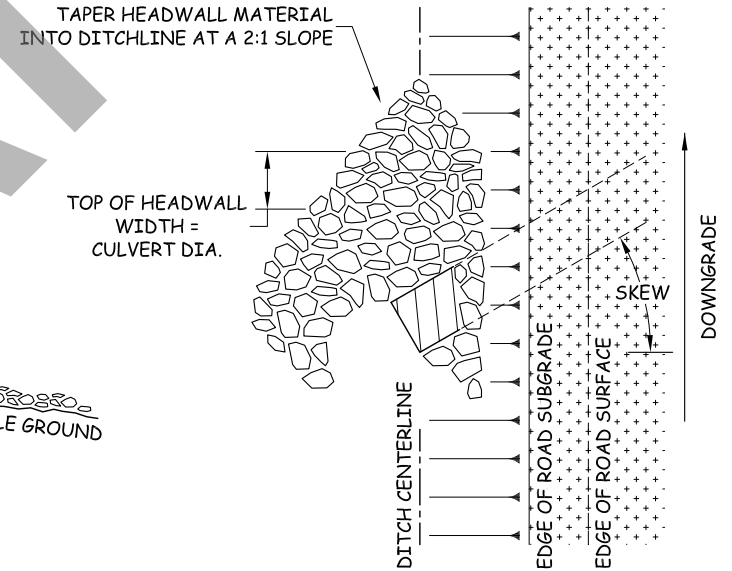
CULVERT HEADWALL - SECTION VIEW



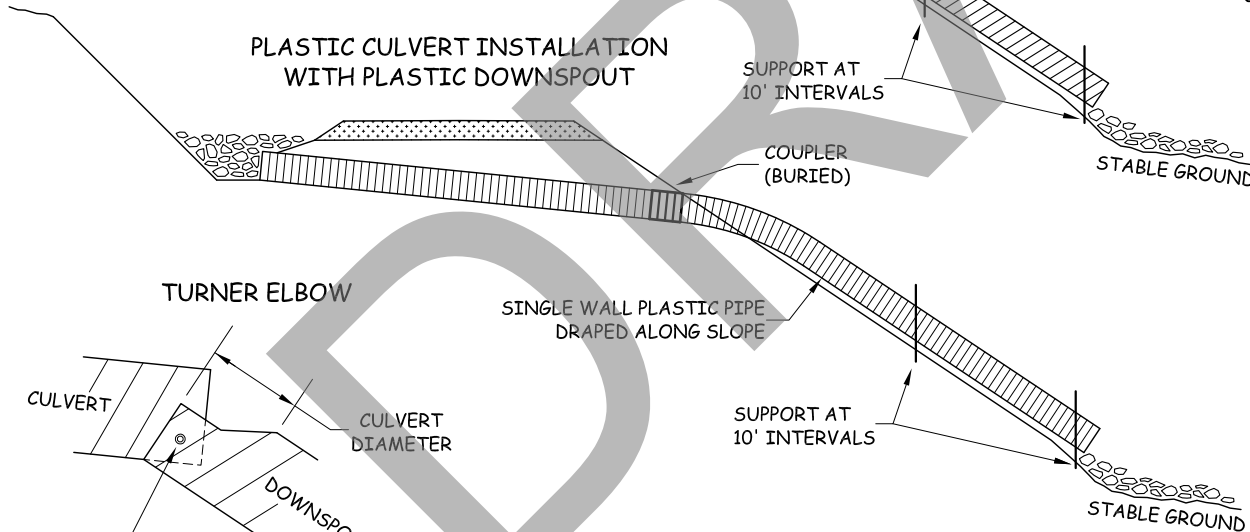
CULVERT INSTALLATION WITH DOWNSPOUT



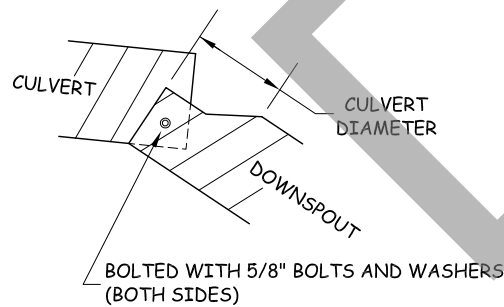
CULVERT HEADWALL - PLAN VIEW



PLASTIC CULVERT INSTALLATION WITH PLASTIC DOWNSPOUT



TURNER ELBOW

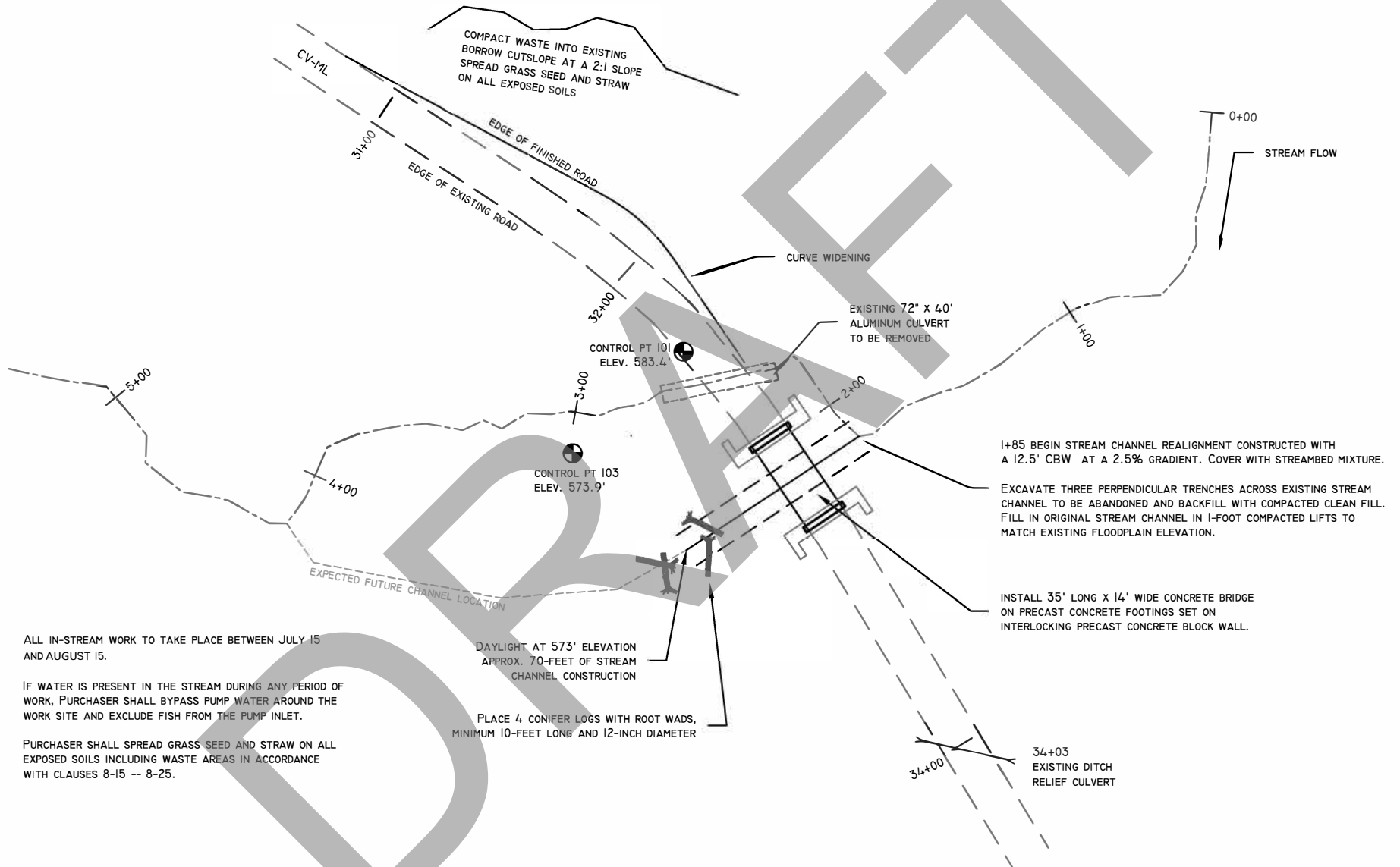


**HEADWALL NOTE:**  
 HEADWALL TO BE CONSTRUCTED OF IMPERVIOUS MATERIAL THAT WILL RESIST EROSION AND ARMORED WITH RIPRAP QUANTITY SPECIFIED IN ROAD PLAN.

CONTRACT # 30-104695	PROJECT FARMVIEW	SHEET 39 OF 42
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# CV-ML 32+50 PLAN VIEW

WA DNR STATE LANDS  
TOWNSHIP 32, RANGE 06 EAST, SECTION 8  
48.2753 NORTH  
122.06445 WEST  
DRAWN JANUARY 4, 2024  
NO REVISIONS



COMPACT WASTE INTO EXISTING BORROW CUTSLOPE AT A 2:1 SLOPE SPREAD GRASS SEED AND STRAW ON ALL EXPOSED SOILS

1+85 BEGIN STREAM CHANNEL REALIGNMENT CONSTRUCTED WITH A 12.5' CBW AT A 2.5% GRADIENT. COVER WITH STREAMBED MIXTURE.

EXCAVATE THREE PERPENDICULAR TRENCHES ACROSS EXISTING STREAM CHANNEL TO BE ABANDONED AND BACKFILL WITH COMPACTED CLEAN FILL. FILL IN ORIGINAL STREAM CHANNEL IN 1-FOOT COMPACTED LIFTS TO MATCH EXISTING FLOODPLAIN ELEVATION.

INSTALL 35' LONG X 14' WIDE CONCRETE BRIDGE ON PRECAST CONCRETE FOOTINGS SET ON INTERLOCKING PRECAST CONCRETE BLOCK WALL.

ALL IN-STREAM WORK TO TAKE PLACE BETWEEN JULY 15 AND AUGUST 15.

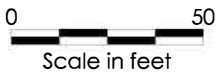
IF WATER IS PRESENT IN THE STREAM DURING ANY PERIOD OF WORK, PURCHASER SHALL BYPASS PUMP WATER AROUND THE WORK SITE AND EXCLUDE FISH FROM THE PUMP INLET.

PURCHASER SHALL SPREAD GRASS SEED AND STRAW ON ALL EXPOSED SOILS INCLUDING WASTE AREAS IN ACCORDANCE WITH CLAUSES 8-15 -- 8-25.

DAYLIGHT AT 573' ELEVATION APPROX. 70-FEET OF STREAM CHANNEL CONSTRUCTION

PLACE 4 CONIFER LOGS WITH ROOT WADS, MINIMUM 10-FEET LONG AND 12-INCH DIAMETER

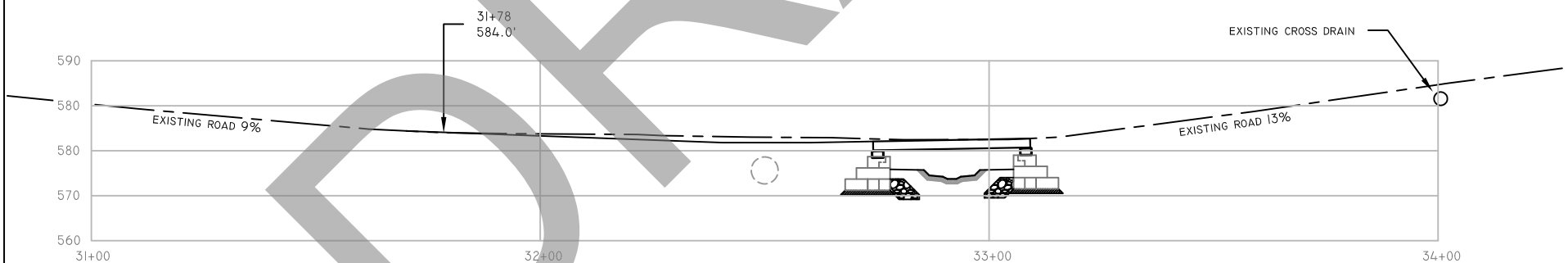
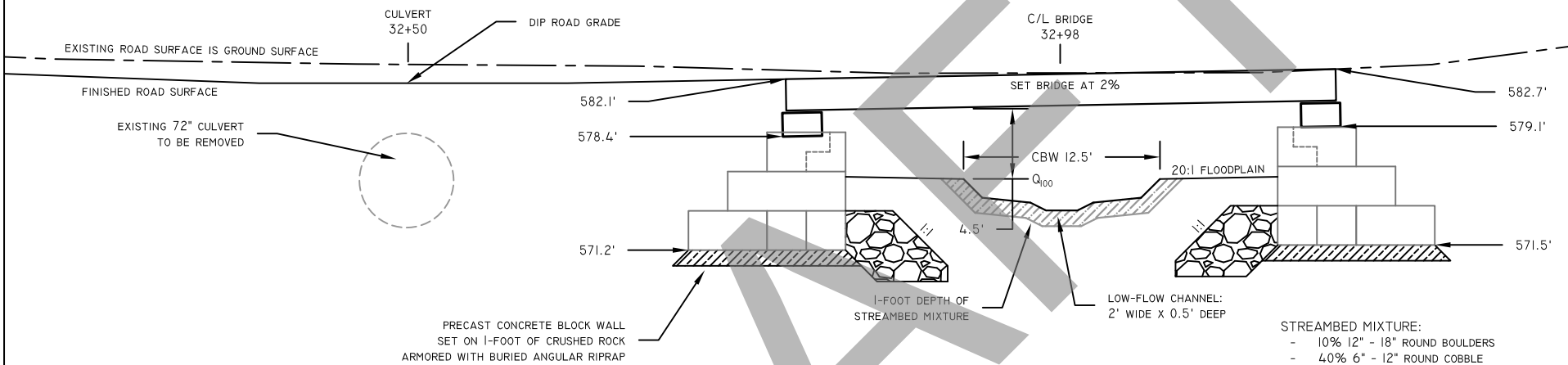
34+03 EXISTING DITCH RELIEF CULVERT



CONTRACT #	PROJECT	SHEET
30-104695	FARMVIEW	40 OF 42

# CV-ML 32+50 ROAD PROFILE

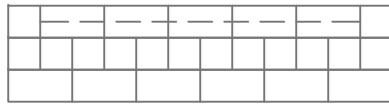
WA DNR STATE LANDS  
TOWNSHIP 32, RANGE 06 EAST, SECTION 8  
48.2753 NORTH  
122.06445 WEST  
DRAWN JANUARY 4, 2024  
NO REVISIONS



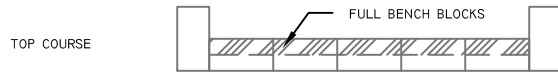
CONTRACT #	PROJECT	SHEET
30-104695	FARMVIEW	41 OF 42

# PRECAST BLOCK WALL DETAIL

WA DNR STATE LANDS  
 TOWNSHIP 32, RANGE 06 EAST, SECTION 8  
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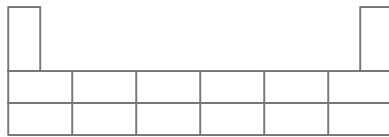
SECTION VIEW



TOP COURSE



MIDDLE COURSE

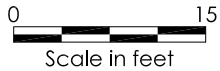


BOTTOM COURSE

PLAN VIEW:  
COURSE DETAIL

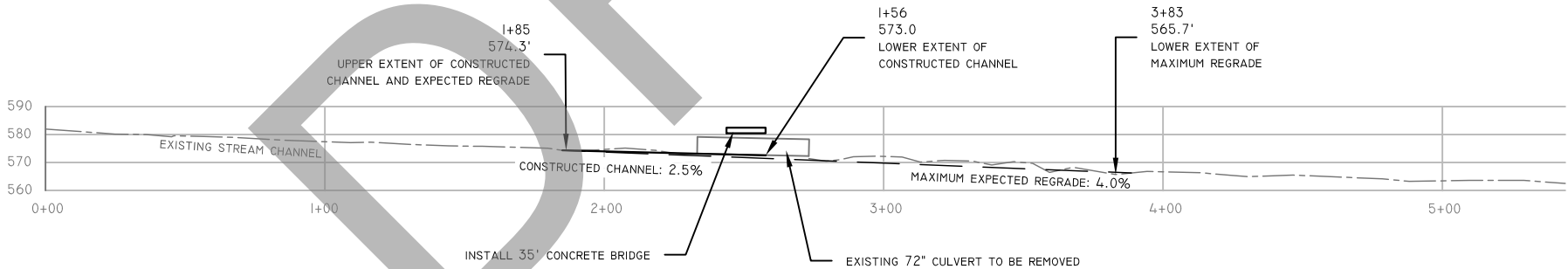
TOP INSIDE COURSE OF FULL  
 BENCH BLOCKS.  
 BACKFILLED WITH COMPACTED  
 CRUSHED GRAVEL.

PRECAST FOOTING:  
 16' LONG X 2' WIDE X 1.5' TALL



- BLOCK TOTALS:
- FULL: 2.5' x 2.5' x 5' -- 52 TOTAL
  - 3X BEAM: 2.5' x 2.5' x 7.5' -- 4 TOTAL
  - FULL BENCH: 2.5' x 2.5' x 5' -- 10 TOTAL

# CV-ML 32+50 STREAM PROFILE



CONTRACT #	PROJECT	SHEET
30-104695	FARMVIEW	42 OF 42



# SUMMARY - Road Development Costs

REGION: NW

DISTRICT: Clear Lake

SALE/PROJECT NAME: Farmview

CONTRACT #: 30-104695

ROAD NUMBERS:	CV-ML, CV-1001, CV-22, CV-24	CV-ML, CV-10, CV-1101, CV-12, CV-13	CV-ML
ROAD STANDARD:	Construction	Reconstruction	Pre-Haul Maintenance
NUMBER OF STATIONS:	28.96	29.83	27.63
CLEARING & GRUBBING:	\$10,233	\$7,344	\$0
EXCAVATION & FILL:	\$46,296	\$8,372	\$0
MISC. MAINTENANCE:	\$0	\$0	\$2,242
ROAD ROCK:	\$50,631	\$39,590	\$9,584
ROCK STOCKPILE PROD:	\$0	\$0	\$0
CULVERTS & FABRIC:	\$5,214	\$5,760	\$0
STRUCTURES:	\$0	\$63,460	\$0
MOBILIZATION:	\$1,924	\$1,924	\$246
TOTAL COSTS:	\$114,298	\$126,449	\$12,072
COST PER STATION:	\$3,947	\$4,239	\$437
ROAD DEACTIVATION & ABANDONMENT COSTS:		\$0	

**TOTAL (All Roads) = \$252,819**  
**ESTIMATED PRECRUISE SALE VOLUME MBF = 2750**  
**ESTIMATED TOTAL \$/MBF = \$91.93**

Compiled by: J. Westra

Date: 3/21/2023