WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES

TIMBER NOTICE OF SALE

***SALE NAME**: SARUS* ***AGREEMENT NO**: 30-104686*

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

SALE LOCATION: Sale located approximately 21 miles east of Mount Vernon, WA.

PRODUCTS SOLD AND SALE AREA: All timber bounded by white timber sale boundary tags, adjacent young stands, and the LK-ML and CN-47 roads, 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 Unit #1 (collectively labeled 1A, 1B and 1C).

All timber bounded by white timber sale boundary tags and the CN-54 Road, 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 Unit #2 (collectively labeled 2A, 2B and 2C).

All timber bounded by white timber sale boundary tags, 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 Unit #3.

All timber bounded by orange right-of-way tags and the LK-14 Road.

All timber bounded by orange right-of-way tags and all timber within 30 feet of centerline of roads to be constructed.

All forest products above located on part(s) of Sections 19, 20, 21, 28, 29 and 30 all in Township 33 North, Range 6 East, Sections 24 all in Township 33 North, Range 5 East, W.M., containing 119 acres, more or less.

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

ESTIMATED SALE VOLUMES AND QUALITY:

	Avg	Ring	Total	MBF by Grade								
Species	DBH	Count	MBF	1P	2P	3P	SM	1S	2S	3S	4S	UT
Douglas fir	17.6	7	2,766						1,277	1,261	196	32
Hemlock	12.9		517						38	368	89	22
Red alder	13.3		300						18	74	208	
Cottonwood	16.3		25						25			
Maple	10.5		4								3	1
Redcedar	13		4							4		
Sale Total			3,616									

MINIMUM BID: $0.00 **BID METHOD:** Sealed Bids

PERFORMANCE SECURITY: $0.00 **SALE TYPE:** Lump Sum

TIMBER NOTICE OF SALE

EXPIRATION DATE: March 31, 2027 **ALLOCATION:** Export Restricted

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

HARVEST METHOD: Cable OR tethered equipment (See below for restrictions); shovel, "6-wheeled rubber-tired skidders with over-the-tire tracks spanning both sets of rear tires" (See below for restrictions), tracked skidder or rubber-tired skidder on sustained slopes 35% or less; self-leveling equipment on sustained slopes 50% or less (See below for restrictions).

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.

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" can operate. If ground disturbance is causing excessive damage, as determined by the Contract Administrator, the equipment will no longer be authorized. Falling and Yarding will not be permitted from November 1 to March 31 unless authorized in writing by the Contract Administrator to reduce soil damage and erosion.

ROADS: 42.96 stations of required construction. 42.52 stations of required reconstruction. 29.31 stations of optional construction. 19.54 stations of optional reconstruction. 110.81 stations of required prehaul maintenance. 31.29 stations of abandonment. 36.01 stations of abandonment, if built.

Installation of a 66" pipe arch at station 264+60 of the CN-ML Road.

Rock may be obtained from the following sources on State land at no charge to the Purchaser: Acquisition Pit at station 5+00 of the LK-14 Road. Foothill Pit at station 61+09 of the CN-47 Road. Crane Creek Pit at station 16+68 of the CN-2006 Road.

Development of existing rock sources will involve drilling, shooting, and processing rock to generate riprap, ballast and stream sim rock.

An estimated total quantity of rock needed for this proposal: 438 cubic yards of riprap, 15,685 cubic yards of ballast, and 20 cubic yards of stream sim rock.

Additional restrictions apply, see Remarks section below.

All activities are restricted on the CN-54 Road from October 1 to June 15. This shall not be waived. On all other roads, 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. Cruise was conducted via variable plot sample type. See Cruise Narrative for further details. Shapefiles of units are available upon request, and on the DNR website after the BNR meeting in which the sale is presented.

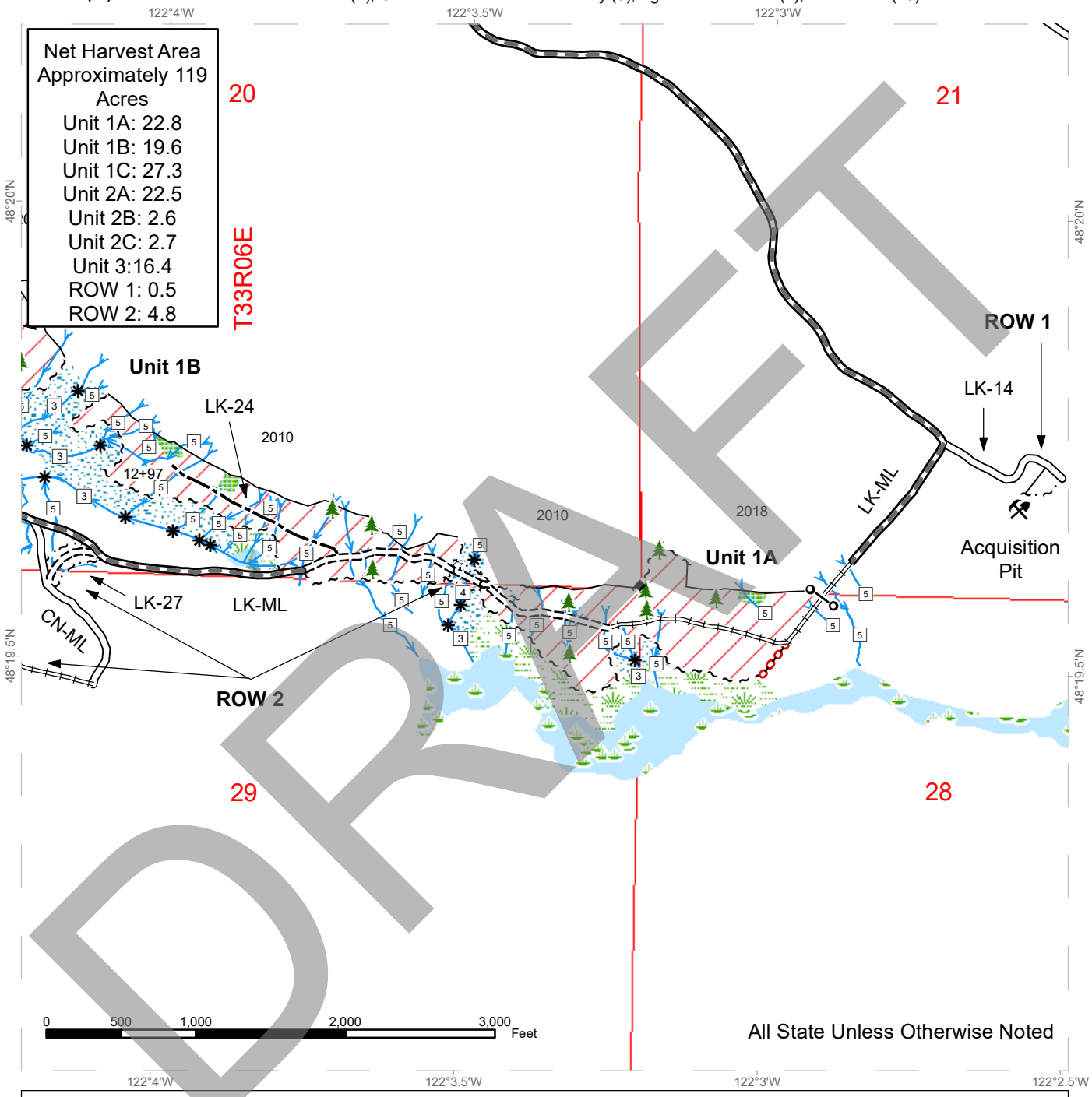
FEES: $61,472.00 is due on day of sale. $9.00 per MBF is due upon removal. These are in addition to the bid price.

SPECIAL REMARKS: 1. Fish culvert installation work on the CN-ML Road is restricted from October 1 to July 14. This work is listed as required prehaul maintenance, but the DNR will consider a request from the purchaser (per section 1-1 of the road plan) for this work to be performed as post-haul maintenance.
2. All activities are restricted on the CN-54 Road from October 1 to June 15. This shall not be waived.

TIMBER SALE MAP

SALE NAME: SARUS
AGREEMENT #: 30-104686
TOWNSHIP(S): T33R5E, T33R6E
TRUST(S): State Forest Transfer (1), Common School and Indemnity (3), Agricultural School (4), Land Bank (43)

REGION: Northwest Region
COUNTY(S): Skagit
ELEVATION RGE: 1040-1440



- Sale Area
- Wetlands - Non-forested
- Leave Tree Area
- Riparian Mgt Zone
- Forested Wetland
- Wetland Mgt Zone
- Existing Roads
- Required Pre-Haul Maintenance
- Required Construction
- Required Reconstruction
- Optional Construction
- Abandonment
- Stream Type
- Stream Type Break
- Leave Tree Area <1/4-acre
- Survey Monument
- Gate Installation
- Rock Pit
- Sale Boundary Tags
- Right of Way Tags
- Timber Type Change
- Stream Type
- Stream Type Break

N

Prepared By: jarm490
Accessed: 04/15/2024 14:57

Modification Date: jarm490 10/10/2023

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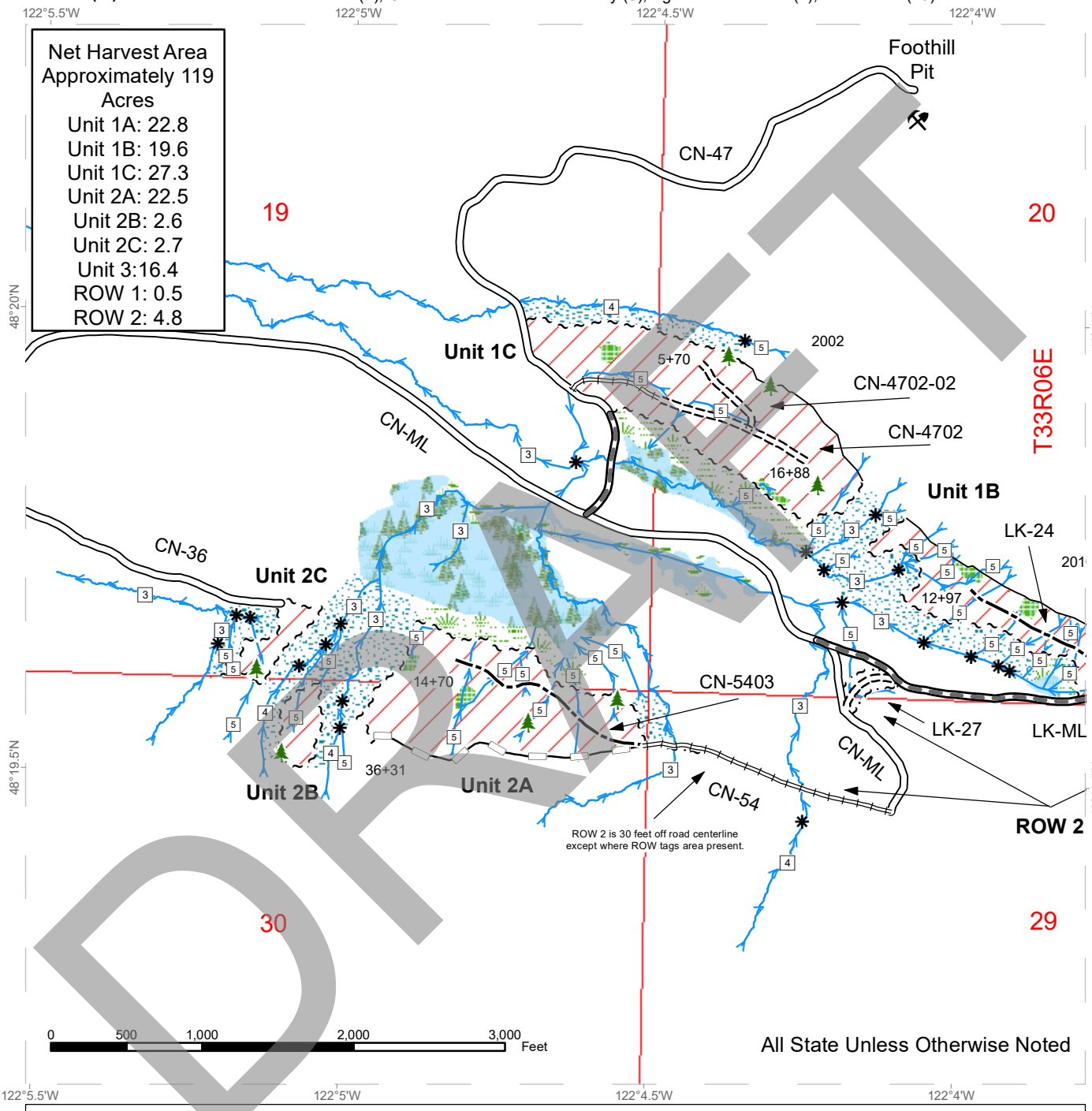

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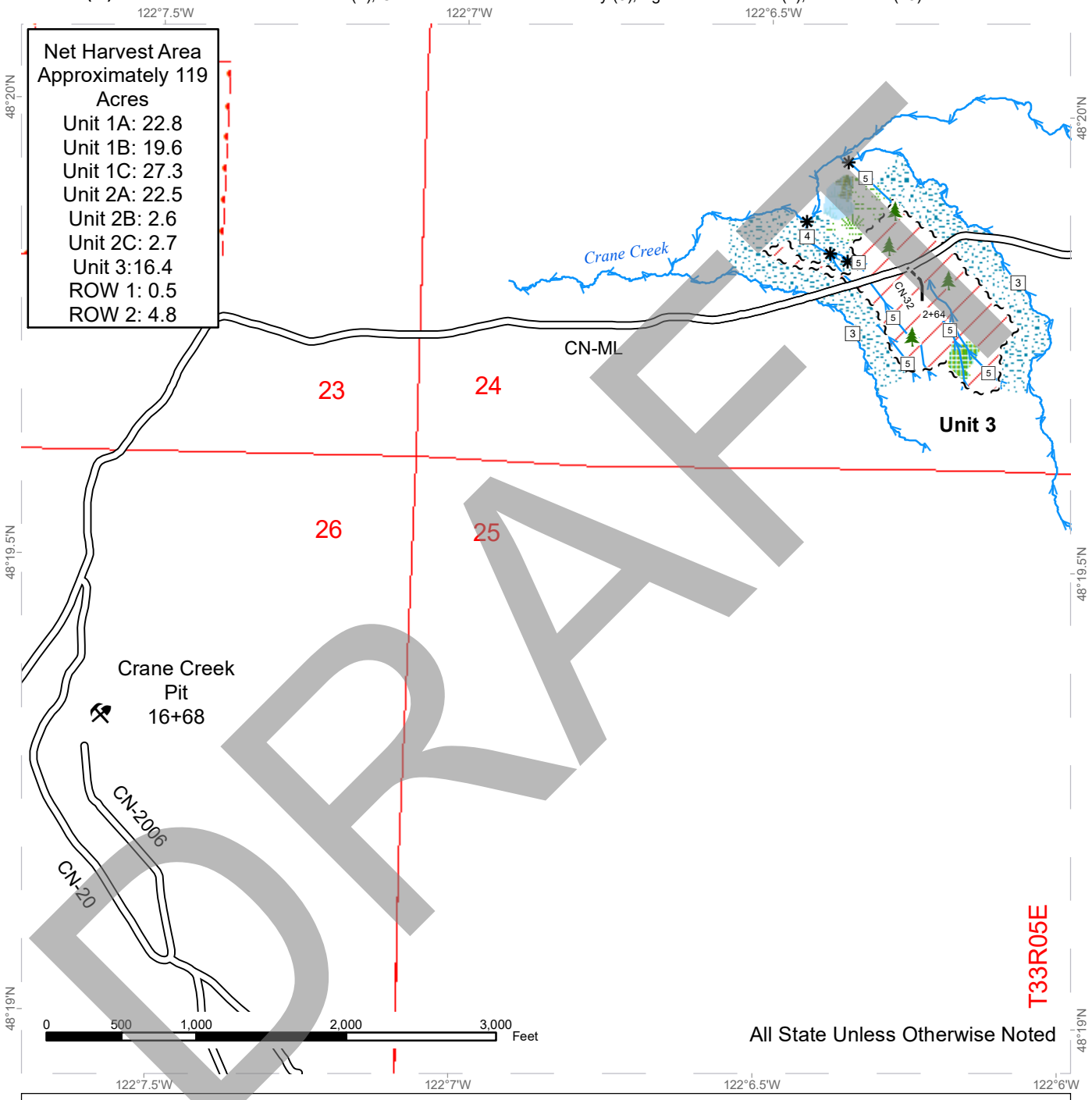

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DRIVING MAP

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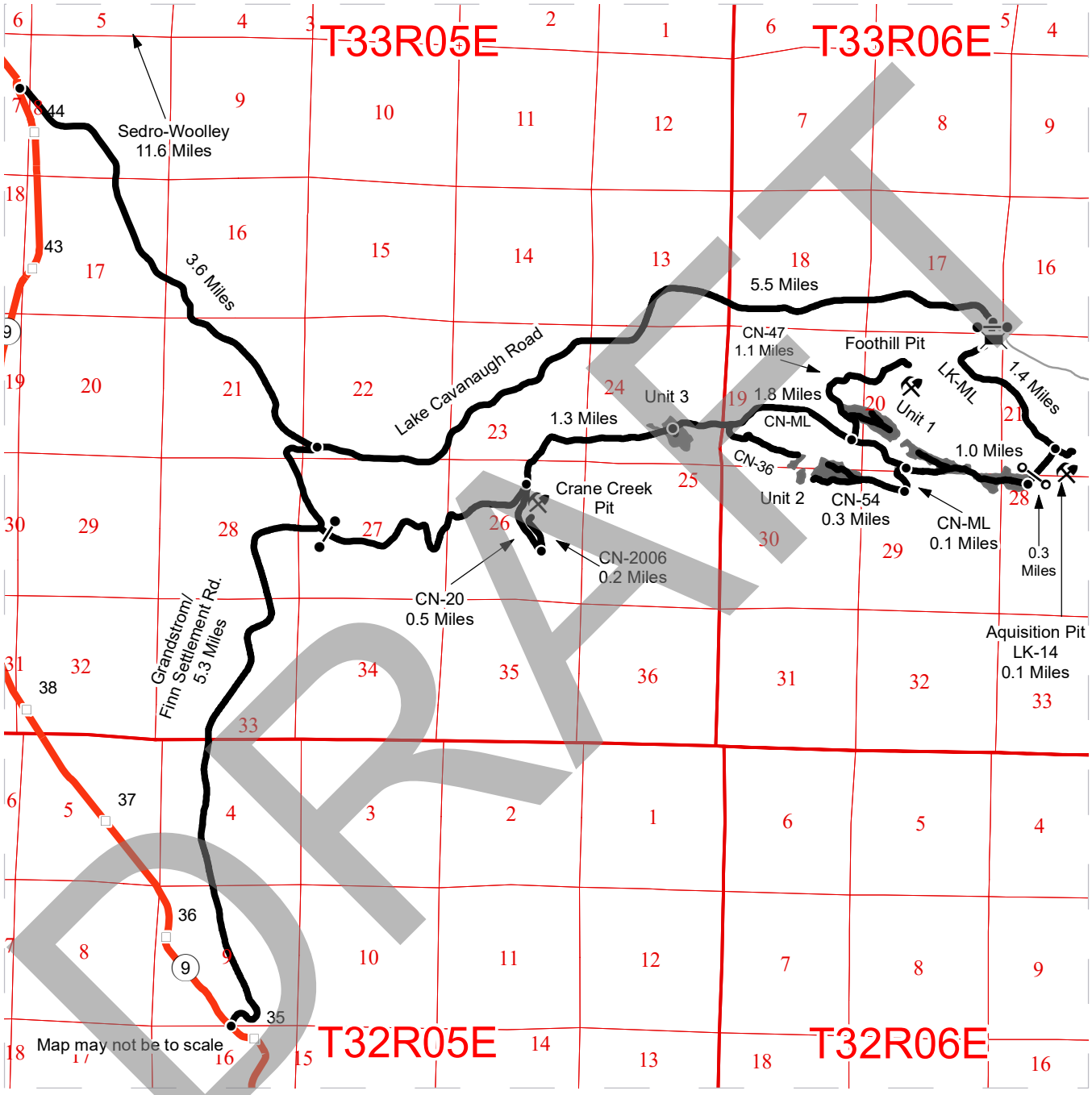

- Timber Sale Unit
- Haul Route
- Other Road
- Highway
- Milepost Markers
- Bridge
- Distance Indicator
- Gate (F1-3)
- Gate Installation
- Rock Pit

DRIVING DIRECTIONS:

From the junction of Highway 20 and Highway 9 in Sedro-Woolley, travel south 11.6 miles on Highway 9 to Lake Cavanaugh Road. Travel east on Lake Cavanaugh Road for 9.1 miles to the LK-ML gate.
Acquisition Pit - Follow LK-ML for 1.4 miles, continue on the LK-14 road 0.1 miles to Acquisition Pit.
Unit 1 – From the LK-ML gate, follow the LK-ML 1.7 miles to Unit 1.
Foothill Pit - Leaving the CN-ML, follow the CN-47 road for 1.1 miles to the Pit.
Unit 2 – From Unit 1 continue 1.0 miles on the LK-ML to the CN-ML, turn left and follow the CN-ML 0.1 Miles to the CN-54 road. Follow the CN-54 road 0.3 miles to Unit 2.
Unit 3 – From the junction of the LK-ML and CN-ML follow the CN-ML west for 1.8 miles.
Crane Creek Pit - From unit 3 travel 1.3 miles west, turn onto the CN-20 road, follow for 0.5 miles, turn onto the CN-2006 for 0.2 miles to arrive at the pit.

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Prepared By: jarm490
Accessed: 04/15/2024 14:57

Modification Date: jarm490 10/2/2023

Timber Sale Cruise Report
Sarus - NW

Sale Name: SARUS
Sale Type: LUMP SUM
Region: NORTHWEST
District: CLEAR LAKE
Lead Cruiser: Matt Llobet
Other Cruisers: Bailey Vos

Location:
Sarus is a three unit timber sale located south of Sedro Woolley off the Lake Cavanaugh road. The sale ranges from 1040 feet to 1440 feet in elevation and has excellent road access to all three units.

Cruise Design:
All VHR units were cruised using a 54.4/46.9/40 BAF combination and a 1:1 sample ratio was applied. The right of way units were cruised using a 46.9/40.0 BAF combination 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.

VRH Units:
The stand characteristics throughout the VRH units showed a homogenous timber type with mild brush throughout the understory. The terrain throughout was gentle/mild, making for productive operator ground. The species composition consists of Douglas fir, Western Hemlock, Western Red Cedar and scattered hardwoods. The Douglas fir made up 76% of the sale volume amounting to 2,767 mbf. Western Hemlock made up 14% of the sale volume amounting to 517 mbf.

Right of Way Units:
The right of way volume associated with Sarus is a combination of fully timbered new construction and partially timbered old road grade.

Logging:
Approximately 94% of the sale is ground base harvest and 6% cable harvest - with productive operator ground.

Timber Sale Notice Volume (MBF)

				MBF Volume by Grade				
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw	Utility
DF	17.6	6.8		2,766	1,277	1,261	196	33
WH	12.9			517	38	368	89	22
RA	13.3			300	18	74	208	
BC	16.3			25	25			
MA	10.5			4			3	2
RC	13.0			4		4		
ALL	15.8	6.8		3,616	1,359	1,707	495	56

Timber Sale Notice Weight (tons)

	Tons by Grade				
Sp	All	2 Saw	3 Saw	4 Saw	Utility
DF	20,606	8,810	9,765	1,764	267
WH	4,294	321	3,015	787	171
RA	2,323	133	507	1,683	
BC	166	166			
RC	34		34		
MA	32			22	11
ALL	27,455	9,430	13,321	4,255	448

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 (%)
222.2	4.1	133.4	1.4	30,339	4.5

Timber Sale Unit Cruise Design

Unit	Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
SARUS 1A	B2C: VR, 2 BAF (46.94, 40 for some species) Measure/Count Plots, Sighting Ht = 4.5 ft	22.8	24.5	15	11	0
SARUS 1B	B2C: VR, 2 BAF (46.94, 40 for some species) Measure/Count Plots, Sighting Ht = 4.5 ft	19.6	20.6	16	9	0
SARUS 1C	B2C: VR, 2 BAF (54.44, 40 for some species) Measure/Count Plots, Sighting Ht = 4.5 ft	27.3	29.3	14	8	0
SARUS 2A	B2C: VR, 2 BAF (46.94, 40 for some species) Measure/Count Plots, Sighting Ht = 4.5 ft	22.5	23.4	15	9	0
SARUS 2B	B2: VR, 2 BAF (46.94, 40 for some species) Measure All, Sighting Ht = 4.5 ft	2.6	2.7	3	3	0
SARUS 2C	B2: VR, 2 BAF (54.44, 40 for some species) Measure All, Sighting Ht = 4.5 ft	2.7	2.8	3	3	0
SARUS 3	B2C: VR, 2 BAF (54.44, 40 for some species) Measure/Count Plots, Sighting Ht = 4.5 ft	16.4	18.5	14	7	0
SARUS ROW 1	B1: VR, 1 BAF (40) Measure All, Sighting Ht = 4.5 ft	0.5	0.5	2	2	0
SARUS ROW 2	B2: VR, 2 BAF (46.94, 40 for some species) Measure All, Sighting Ht = 4.5 ft	4.8	4.8	3	3	0

Unit	Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
All		119.2	127.2	85	55	0

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	9.8	33	212	212	0.0	166.3	25.3
BC	LIVE	CULL	Cull	11.9	4	9	0	100.0	0.0	0.0
DF	LIVE	2 SAW	Domestic	14.3	38	10,449	10,349	1.0	8,502.3	1,233.6
DF	LIVE	2 SAW	Pole	13.1	40	368	368	0.0	307.6	43.9
DF	LIVE	3 SAW	Domestic	9.1	35	10,081	9,920	1.6	9,206.6	1,182.5
DF	LIVE	3 SAW	Pole	11.0	36	656	656	0.0	558.7	78.2
DF	LIVE	4 SAW	Domestic	6.3	25	1,489	1,455	2.3	1,564.0	173.5
DF	LIVE	4 SAW	Pole	8.4	23	186	186	0.0	199.7	22.1
DF	LIVE	CULL	Cull	16.5	7	103	0	100.0	0.0	0.0
DF	LIVE	UTILITY	Pulp	5.7	25	273	273	0.0	266.7	32.6
MA	LIVE	4 SAW	Domestic	7.6	20	22	22	0.0	21.6	2.6
MA	LIVE	UTILITY	Pulp	5.4	20	14	14	0.0	10.8	1.7
RA	LIVE	2 SAW	Domestic	12.9	29	156	152	2.8	132.6	18.1
RA	LIVE	3 SAW	Domestic	10.9	31	618	618	0.0	507.0	73.6
RA	LIVE	4 SAW	Domestic	7.6	26	1,751	1,746	0.3	1,683.4	208.1
RA	LIVE	CULL	Cull	14.2	12	28	0	100.0	0.0	0.0
RC	LIVE	3 SAW	Domestic	6.6	36	33	33	0.0	34.3	4.0
WH	LIVE	2 SAW	Domestic	13.7	40	317	317	0.0	321.2	37.7
WH	LIVE	3 SAW	Domestic	8.5	33	3,120	3,091	0.9	3,014.8	368.5
WH	LIVE	4 SAW	Domestic	5.9	24	746	744	0.2	786.7	88.7
WH	LIVE	CULL	Cull	12.0	8	88	0	100.0	0.0	0.0
WH	LIVE	UTILITY	Pulp	5.9	25	182	182	0.0	170.9	21.7

Timber Sale Log Sort x Diameter Bin Summary

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
BC	5+	LIVE	Domestic	9.7	33	212	0.0	166.3	25.3
BC	5+	LIVE	Cull	11.9	4	0	100.0	0.0	0.0
DF	5 - 7	LIVE	Pulp	5.7	26	273	0.0	266.7	32.6
DF	5 - 7	LIVE	Domestic	6.3	28	2,745	1.2	2,822.1	327.2
DF	8 - 11	LIVE	Pole	9.5	29	739	0.0	678.2	88.1
DF	8 - 11	LIVE	Domestic	9.7	35	8,631	1.8	7,948.6	1,028.8
DF	12 - 15	LIVE	Pole	12.9	38	471	0.0	387.8	56.2

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	12 - 15	LIVE	Domestic	13.8	39	7,982	0.8	6,717.7	951.4
DF	12 - 15	LIVE	Cull	14.5	6	0	100.0	0.0	0.0
DF	16 - 19	LIVE	Domestic	16.9	39	2,367	1.6	1,784.6	282.1
DF	16 - 19	LIVE	Cull	18.9	9	0	100.0	0.0	0.0
MA	5+	LIVE	Pulp	5.4	20	14	0.0	10.8	1.7
MA	5+	LIVE	Domestic	7.6	20	22	0.0	21.6	2.6
RA	5 - 7	LIVE	Domestic	6.7	24	725	0.3	676.3	86.4
RA	8+	LIVE	Domestic	9.7	30	1,791	0.4	1,646.7	213.5
RA	8+	LIVE	Cull	14.2	12	0	100.0	0.0	0.0
RC	5+	LIVE	Domestic	6.6	36	33	0.0	34.3	4.0
WH	5 - 7	LIVE	Pulp	5.9	25	182	0.0	170.9	21.7
WH	5 - 7	LIVE	Domestic	6.1	27	1,359	0.1	1,389.1	162.0
WH	8 - 11	LIVE	Domestic	9.5	33	2,477	1.1	2,412.3	295.3
WH	8 - 11	LIVE	Cull	11.9	5	0	100.0	0.0	0.0
WH	12 - 15	LIVE	Cull	12.5	40	0	100.0	0.0	0.0
WH	12 - 15	LIVE	Domestic	13.9	40	317	0.0	321.2	37.7

Cruise Unit Report
SARUS 1A

Unit Sale Notice Volume (MBF): SARUS 1A

				MBF Volume by Grade				
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw	Utility
DF	14.1	7.0		185	47	113	23	3
RA	12.8			143	8	25	110	
WH	10.8			101		80	15	6
BC	16.3			10	10			
ALL	12.7	7.0		440	65	218	148	9

Unit Cruise Design: SARUS 1A

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2C: VR, 2 BAF (46.94, 40 for some species) Measure/Count Plots, Sighting Ht = 4.5 ft	22.8	24.5	15	11	0

Unit Cruise Summary: SARUS 1A

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	13	22	1.5	1
RA	15	21	1.4	0
WH	9	12	0.8	0
BC	1	1	0.1	0
ALL	38	56	3.7	1

Unit Cruise Statistics: SARUS 1A

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	68.8	99.4	25.7	118.1	12.3	3.4	8,134	100.1	25.9
RA	56.0	110.7	28.6	112.2	16.4	4.2	6,284	111.9	28.9
WH	37.6	126.8	32.7	117.8	30.9	10.3	4,422	130.5	34.3
BC	3.1	387.3	100.0	145.6	0.0	0.0	456	387.3	100.0
ALL	165.5	38.9	10.0	116.6	19.5	3.2	19,295	43.5	10.5

Unit Summary: SARUS 1A

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
BC	LIVE	CUT	1	ALL	16.3	80	106	456	456	0.0	2.2	3.1	0.8	10.4
DF	LIVE	CUT	13	ALL	13.6	62	89	8,308	8,134	2.1	68.2	68.8	18.7	185.5
RA	LIVE	CUT	15	ALL	12.6	57	79	6,284	6,284	0.0	64.7	56.0	15.8	143.3
WH	LIVE	CUT	9	ALL	11.3	45	67	4,422	4,422	0.0	53.9	37.6	11.2	100.8
ALL	LIVE	CUT	38	ALL	12.7	56	79	19,469	19,295	0.9	189.0	165.5	46.4	439.9
ALL	ALL	ALL	38	ALL	12.7	56	79	19,469	19,295	0.9	189.0	165.5	46.4	439.9

Cruise Unit Report
SARUS 1B

Unit Sale Notice Volume (MBF): SARUS 1B

				MBF Volume by Grade				
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw	Utility
DF	16.9	7.0		476	194	242	29	11
RA	14.4			114	10	49	55	
WH	8.0			5			5	
MA	10.5			4			3	2
ALL	15.4	7.0		599	204	291	92	12

Unit Cruise Design: SARUS 1B

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2C: VR, 2 BAF (46.94, 40 for some species) Measure/Count Plots, Sighting Ht = 4.5 ft	19.6	20.6	16	9	0

Unit Cruise Summary: SARUS 1B

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	31	58	3.6	1
RA	16	20	1.3	0
WH	1	1	0.1	0
MA	1	1	0.1	0
ALL	49	80	5.0	1

Unit Cruise Statistics: SARUS 1B

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	170.2	61.2	15.3	142.7	19.6	3.5	24,286	64.2	15.7
RA	50.0	115.0	28.8	116.2	28.6	7.2	5,809	118.5	29.6
WH	2.9	400.0	100.0	85.9	0.0	0.0	252	400.0	100.0
MA	2.5	400.0	100.0	88.1	0.0	0.0	220	400.0	100.0
ALL	225.6	29.8	7.4	135.5	24.2	3.5	30,568	38.4	8.2

Unit Summary: SARUS 1B

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	31	ALL	16.4	76	98	24,575	24,286	1.2	116.0	170.2	42.0	476.0
MA	LIVE	CUT	1	ALL	10.5	55	67	220	220	0.0	4.2	2.5	0.8	4.3
RA	LIVE	CUT	16	ALL	14.1	64	90	6,018	5,809	3.5	46.1	50.0	13.3	113.9
WH	LIVE	CUT	1	ALL	8.0	32	55	252	252	0.0	8.4	2.9	1.0	4.9
ALL	LIVE	CUT	49	ALL	15.4	70	93	31,066	30,568	1.6	174.7	225.6	57.1	599.1
ALL	ALL	ALL	49	ALL	15.4	70	93	31,066	30,568	1.6	174.7	225.6	57.1	599.1

Cruise Unit Report
SARUS 1C

Unit Sale Notice Volume (MBF): SARUS 1C

				MBF Volume by Grade				
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw	Utility
DF	19.0	6.5		1,026	561	393	65	8
WH	12.2			77		46	15	16
RA	12.0			24			24	
BC	16.3			15	15			
ALL	17.0	6.5		1,142	575	439	104	23

Unit Cruise Design: SARUS 1C

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2C: VR, 2 BAF (54.44, 40 for some species) Measure/Count Plots, Sighting Ht = 4.5 ft	27.3	29.3	14	8	0

Unit Cruise Summary: SARUS 1C

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	35	62	4.4	2
WH	5	6	0.4	0
RA	1	3	0.2	0
BC	1	1	0.1	0
ALL	42	72	5.1	2

Unit Cruise Statistics: SARUS 1C

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	241.1	52.2	13.9	155.8	19.7	3.3	37,572	55.8	14.3
WH	23.3	176.4	47.1	120.7	7.0	3.1	2,815	176.5	47.2
RA	8.6	374.2	100.0	103.1	0.0	0.0	884	374.2	100.0
BC	3.9	374.2	100.0	140.1	0.0	0.0	545	374.2	100.0
ALL	276.9	40.4	10.8	151.0	20.7	3.2	41,816	45.4	11.3

Unit Summary: SARUS 1C

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
BC	LIVE	CUT	1	ALL	16.3	85	106	585	545	6.9	2.7	3.9	1.0	14.9
DF	LIVE	CUT	35	ALL	19.0	83	105	38,597	37,572	2.7	122.5	241.1	55.3	1,025.7
RA	LIVE	CUT	1	ALL	12.0	64	79	884	884	0.0	10.9	8.6	2.5	24.1
WH	LIVE	CUT	5	ALL	12.2	59	78	2,815	2,815	0.0	28.7	23.3	6.7	76.9
ALL	LIVE	CUT	42	ALL	17.6	78	99	42,881	41,816	2.5	164.8	276.9	65.4	1,141.6
ALL	ALL	ALL	42	ALL	17.6	78	99	42,881	41,816	2.5	164.8	276.9	65.4	1,141.6

Cruise Unit Report
SARUS 2A

Unit Sale Notice Volume (MBF): SARUS 2A

				MBF Volume by Grade				
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw	Utility
DF	14.3	7.0		370	70	240	51	8
WH	12.9			219	11	161	47	
ALL	13.7	7.0		589	81	401	98	8

Unit Cruise Design: SARUS 2A

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2C: VR, 2 BAF (46.94, 40 for some species) Measure/Count Plots, Sighting Ht = 4.5 ft	22.5	23.4	15	9	0

Unit Cruise Summary: SARUS 2A

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	27	43	2.9	1
WH	15	25	1.7	0
ALL	42	68	4.5	1

Unit Cruise Statistics: SARUS 2A

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	134.6	61.7	15.9	122.2	16.3	3.1	16,441	63.8	16.2
WH	78.2	119.3	30.8	124.2	16.0	4.1	9,719	120.3	31.1
ALL	212.8	28.7	7.4	122.9	16.0	2.5	26,159	32.9	7.8

Unit Summary: SARUS 2A

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	27	ALL	14.3	67	84	16,589	16,441	0.9	120.7	134.6	35.6	369.9
WH	LIVE	CUT	15	ALL	12.9	65	80	9,921	9,719	2.0	86.2	78.2	21.8	218.7
ALL	LIVE	CUT	42	ALL	13.7	66	83	26,510	26,159	1.3	206.9	212.8	57.4	588.6
ALL	ALL	ALL	42	ALL	13.7	66	83	26,510	26,159	1.3	206.9	212.8	57.4	588.6

Cruise Unit Report
SARUS 2B

Unit Sale Notice Volume (MBF): SARUS 2B

				MBF Volume by Grade			
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw
DF	15.0	7.0		77	4	60	13
WH	12.3			4		3	1
ALL	14.7	7.0		81	4	63	13

Unit Cruise Design: SARUS 2B

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2: VR, 2 BAF (46.94, 40 for some species) Measure All, Sighting Ht = 4.5 ft	2.6	2.7	3	3	0

Unit Cruise Summary: SARUS 2B

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	15	15	5.0	1
WH	1	1	0.3	0
ALL	16	16	5.3	1

Unit Cruise Statistics: SARUS 2B

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	234.7	20.0	11.5	126.1	8.0	2.1	29,590	21.5	11.7
WH	15.6	173.2	100.0	107.9	0.0	0.0	1,688	173.2	100.0
ALL	250.3	10.8	6.3	124.9	8.6	2.1	31,278	13.8	6.6

Unit Summary: SARUS 2B

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	15	ALL	15.0	73	91	30,223	29,590	2.1	191.3	234.7	60.6	76.9
WH	LIVE	CUT	1	ALL	12.3	60	73	1,688	1,688	0.0	19.0	15.6	4.5	4.4
ALL	LIVE	CUT	16	ALL	14.8	72	90	31,911	31,278	2.0	210.3	250.3	65.1	81.3
ALL	ALL	ALL	16	ALL	14.8	72	90	31,911	31,278	2.0	210.3	250.3	65.1	81.3

Cruise Unit Report
SARUS 2C

Unit Sale Notice Volume (MBF): SARUS 2C

				MBF Volume by Grade			
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw
DF	18.7	7.0		39	25	10	4
WH	15.2			37	6	28	4
ALL	16.6	7.0		77	31	38	8

Unit Cruise Design: SARUS 2C

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2: VR, 2 BAF (54.44, 40 for some species) Measure All, Sighting Ht = 4.5 ft	2.7	2.8	3	3	0

Unit Cruise Summary: SARUS 2C

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	5	5	1.7	1
WH	6	6	2.0	0
ALL	11	11	3.7	1

Unit Cruise Statistics: SARUS 2C

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	90.7	34.6	20.0	161.1	17.9	8.0	14,619	39.0	21.5
WH	108.9	50.0	28.9	127.4	17.2	7.0	13,869	52.9	29.7
ALL	199.6	31.5	18.2	142.7	20.8	6.3	28,488	37.8	19.2

Unit Summary: SARUS 2C

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	5	ALL	18.7	85	108	14,881	14,619	1.8	47.6	90.7	21.0	39.5
WH	LIVE	CUT	6	ALL	15.2	70	87	14,355	13,869	3.4	86.4	108.9	27.9	37.4
ALL	LIVE	CUT	11	ALL	16.5	76	95	29,237	28,488	2.6	134.0	199.6	48.9	76.9
ALL	ALL	ALL	11	ALL	16.5	76	95	29,237	28,488	2.6	134.0	199.6	48.9	76.9

Cruise Unit Report
SARUS 3

Unit Sale Notice Volume (MBF): SARUS 3

				MBF Volume by Grade				
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw	Utility
DF	19.3	7.0		573	366	195	9	3
WH	15.5			61	21	40		
ALL	18.6	7.0		635	387	235	9	3

Unit Cruise Design: SARUS 3

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2C: VR, 2 BAF (54.44, 40 for some species) Measure/Count Plots, Sighting Ht = 4.5 ft	16.4	18.5	14	7	0

Unit Cruise Summary: SARUS 3

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	31	58	4.1	1
WH	5	7	0.5	0
ALL	36	65	4.6	1

Unit Cruise Statistics: SARUS 3

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	225.5	26.5	7.1	155.0	14.2	2.6	34,954	30.1	7.5
WH	27.2	171.0	45.7	137.5	26.6	11.9	3,744	173.0	47.2
ALL	252.8	27.5	7.4	153.1	16.1	2.7	38,698	31.9	7.8

Unit Summary: SARUS 3

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	31	ALL	19.3	84	107	35,179	34,954	0.6	111.0	225.5	51.3	573.3
WH	LIVE	CUT	5	ALL	15.5	68	89	3,744	3,744	0.0	20.8	27.2	6.9	61.4
ALL	LIVE	CUT	36	ALL	18.8	82	104	38,923	38,698	0.6	131.8	252.8	58.3	634.6
ALL	ALL	ALL	36	ALL	18.8	82	104	38,923	38,698	0.6	131.8	252.8	58.3	634.6

Cruise Unit Report
SARUS ROW 1

Unit Sale Notice Volume (MBF): SARUS ROW 1

				MBF Volume by Grade		
Sp	DBH	Rings/In	Age	All	3 Saw	4 Saw
DF	10.9			5	4	2
ALL	10.9			5	4	2

Unit Cruise Design: SARUS ROW 1

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1: VR, 1 BAF (40) Measure All, Sighting Ht = 4.5 ft	0.5	0.5	2	2	0

Unit Cruise Summary: SARUS ROW 1

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	6	6	3.0	0
ALL	6	6	3.0	0

Unit Cruise Statistics: SARUS ROW 1

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	120.0	0.0	0.0	90.9	18.7	7.6	10,905	18.7	7.6
ALL	120.0	0.0	0.0	90.9	18.7	7.6	10,905	18.7	7.6

Unit Summary: SARUS ROW 1

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	6	ALL	10.9	54	66	10,905	10,905	0.0	185.2	120.0	36.3	5.5
ALL	LIVE	CUT	6	ALL	10.9	54	66	10,905	10,905	0.0	185.2	120.0	36.3	5.5
ALL	ALL	ALL	6	ALL	10.9	54	66	10,905	10,905	0.0	185.2	120.0	36.3	5.5

Cruise Unit Report
SARUS ROW 2

Unit Sale Notice Volume (MBF): SARUS ROW 2

				MBF Volume by Grade			
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw
RA	12.6			19			19
DF	23.3			14	10	4	1
WH	16.9			12		10	2
RC	13.0			4		4	
ALL	14.3			49	10	18	21

Unit Cruise Design: SARUS ROW 2

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2: VR, 2 BAF (46.94, 40 for some species) Measure All, Sighting Ht = 4.5 ft	4.8	4.8	3	3	0

Unit Cruise Summary: SARUS ROW 2

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
RA	4	4	1.3	0
DF	1	1	0.3	0
WH	2	2	0.7	0
RC	1	1	0.3	0
ALL	8	8	2.7	0

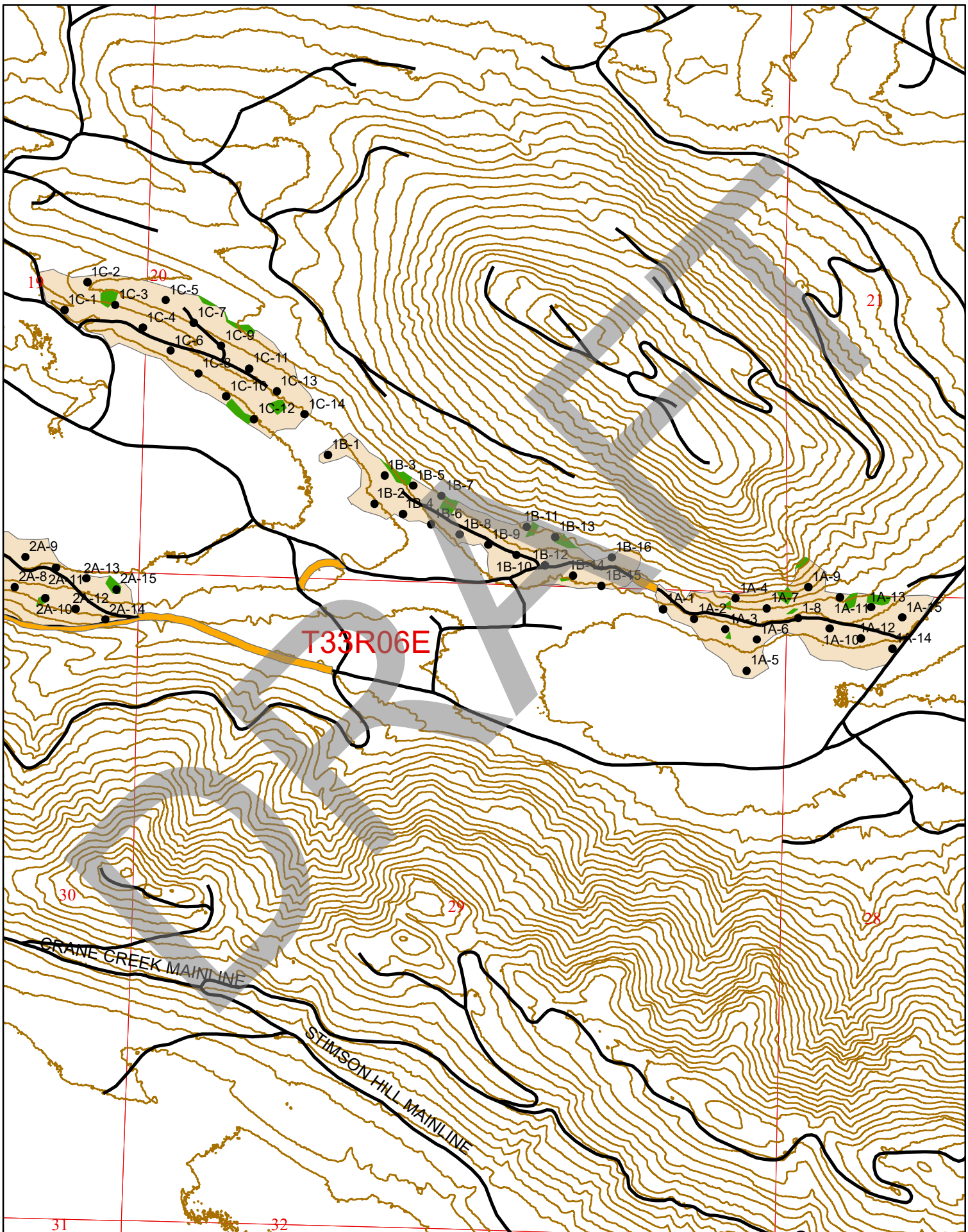
Unit Cruise Statistics: SARUS ROW 2

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	53.3	173.2	100.0	72.7	6.0	3.0	3,879	173.3	100.0
DF	15.6	173.2	100.0	188.8	0.0	0.0	2,953	173.2	100.0
WH	31.3	86.6	50.0	80.8	84.6	59.8	2,528	121.1	78.0
RC	13.3	173.2	100.0	61.8	0.0	0.0	825	173.2	100.0
ALL	113.6	69.0	39.8	89.6	54.3	19.2	10,184	87.8	44.2

Unit Summary: SARUS ROW 2

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	1	ALL	23.3	98	125	3,059	2,953	3.5	5.3	15.6	3.2	14.2
RA	LIVE	CUT	4	ALL	12.6	61	75	3,951	3,879	1.8	61.6	53.3	15.0	18.6
RC	LIVE	CUT	1	ALL	13.0	45	55	825	825	0.0	14.5	13.3	3.7	4.0
WH	LIVE	CUT	2	ALL	16.9	75	93	4,244	2,528	40.4	20.1	31.3	7.6	12.1
ALL	LIVE	CUT	8	ALL	14.3	63	78	12,079	10,184	15.7	101.5	113.6	29.6	48.9
ALL	ALL	ALL	8	ALL	14.3	63	78	12,079	10,184	15.7	101.5	113.6	29.6	48.9

Sarus Timber Sale



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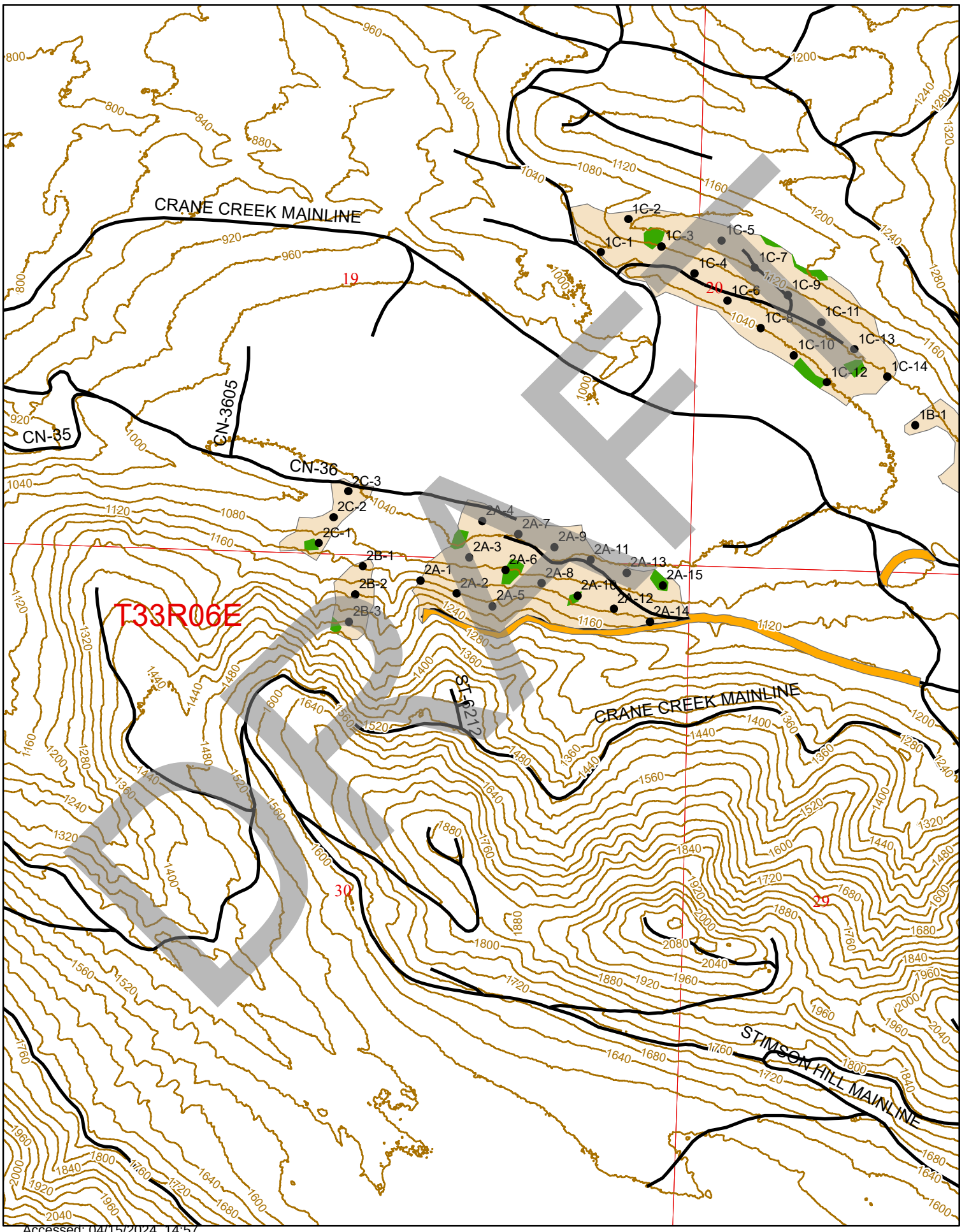
Matt Llobet 9/19/23

Sarus Timber Sale



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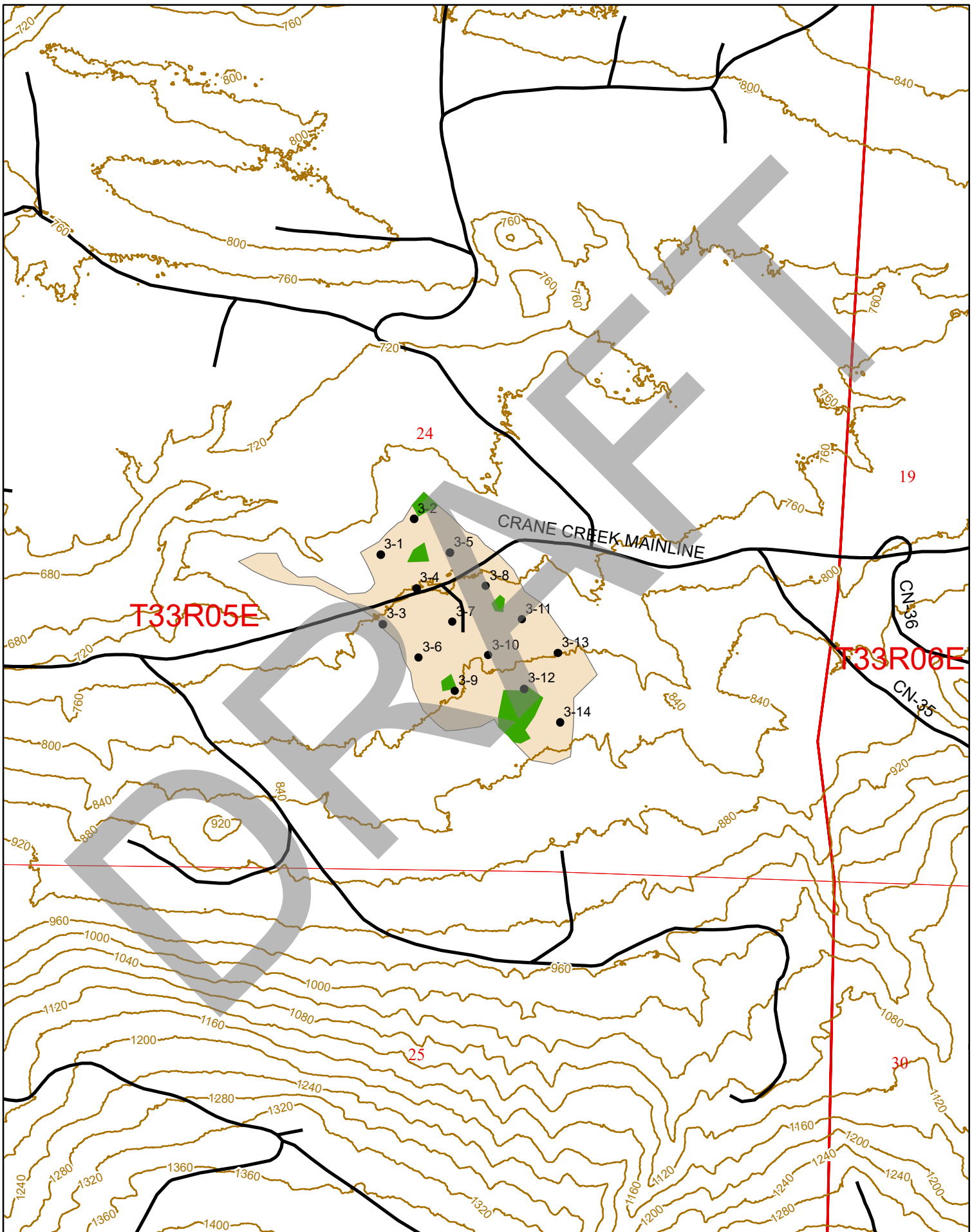
Sarus Timber Sale



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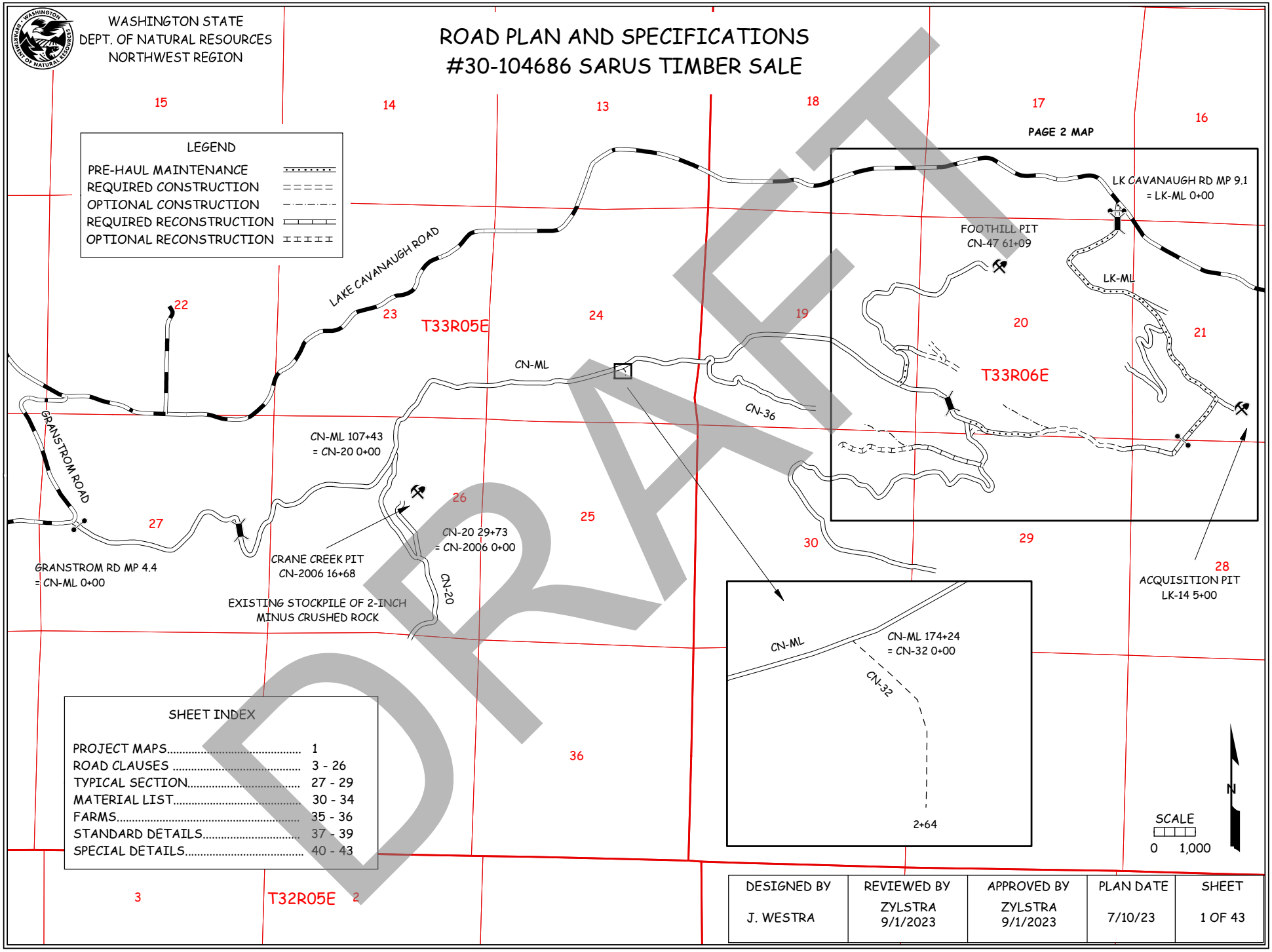
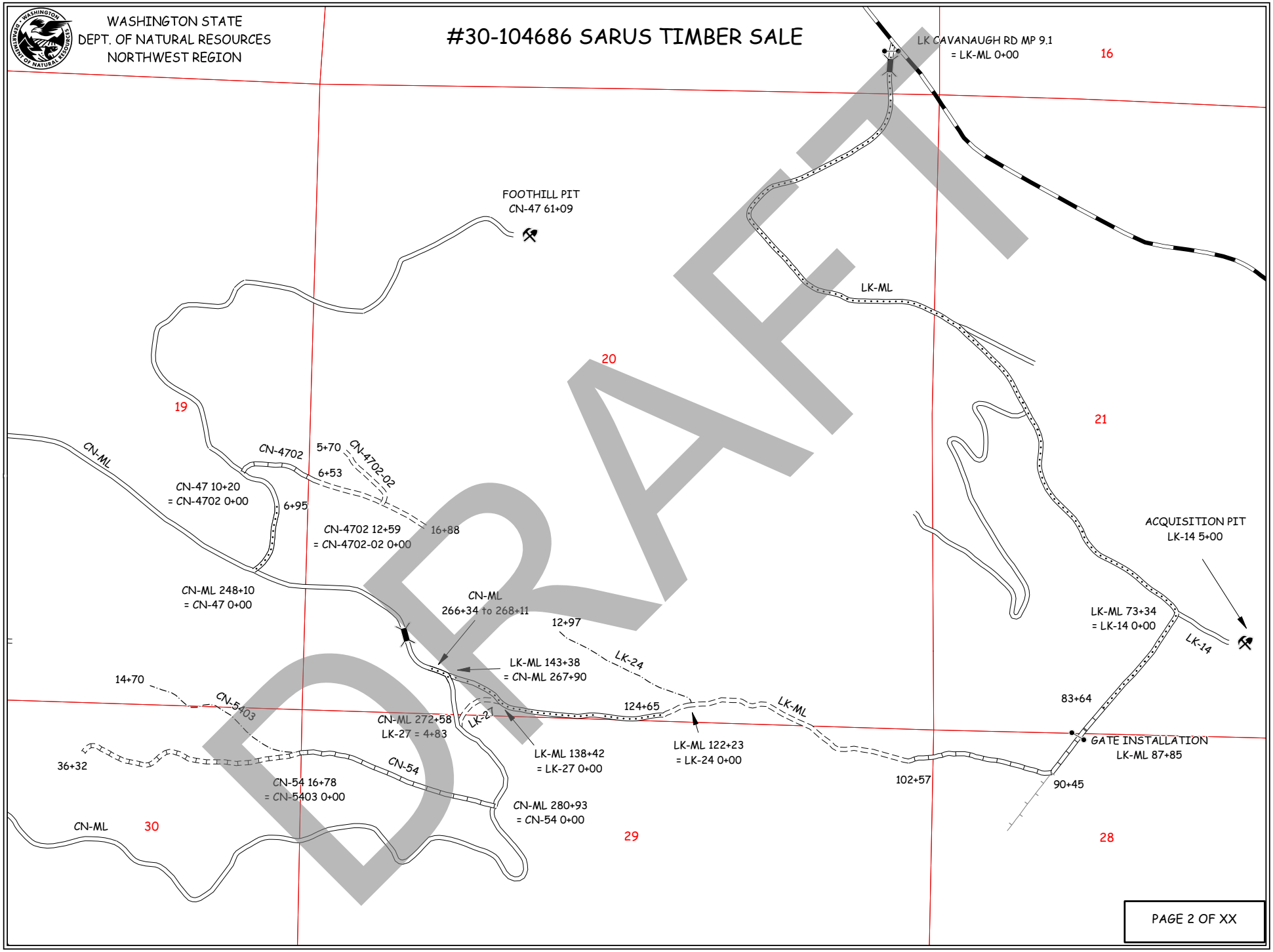
WASHINGTON STATE
DEPT. OF NATURAL RESOURCES
NORTHWEST REGION

ROAD PLAN AND SPECIFICATIONS
#30-104686 SARUS TIMBER SALE



SHEET INDEX

DESIGNED BY	REVIEWED BY	APPROVED BY	PLAN DATE	SHEET
J. WESTRA	ZYLSTRA 9/1/2023	ZYLSTRA 9/1/2023	7/10/23	1 OF 43



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STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

SARUS TIMBER SALE ROAD PLAN
SKAGIT COUNTY
CLEAR LAKE DISTRICT
NORTHWEST REGION

AGREEMENT NO.: 30-104686 STAFF ENGINEER: J. WESTRA

DATE: JULY 10, 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.

Road	Stations	Type
CN-ML	266+34 to 268+11	PREHAUL MAINTENANCE
CN-47	0+00 to 6+95	PREHAUL MAINTENANCE
CN-4702	0+00 to 6+53	RECONSTRUCTION
CN-4702	6+53 to 16+88	CONSTRUCTION
CN-4702-02	0+00 to 5+70	CONSTRUCTION
CN-54	0+00 to 16+78	RECONSTRUCTION
LK-ML	0+00 to 83+36 124+65 to 143+38	PREHAUL MAINTENANCE
LK-ML	83+36 to 102+57	RECONSTRUCTION
LK-ML	102+57 to 124+65	CONSTRUCTION
LK-27	0+00 to 4+83	CONSTRUCTION

0-3 OPTIONAL ROADS

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

Road	Stations	Type
CN-32	0+00 to 2+64	CONSTRUCTION
CN-54	16+78 to 36+32	RECONSTRUCTION
CN-5403	0+00 to 14+70	CONSTRUCTION
LK-24	0+00 to 12+97	CONSTRUCTION

0-4 CONSTRUCTION

Construction may include, 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.

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.

0-6 PRE-HAUL MAINTENANCE

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

Road	Stations	Requirements
CN-ML	266+34 to 268+11	– Culvert replacement and installation – Application of 3” crushed rock
CN-47	0+00 to 6+95	– Rip potholes, grade – Application of 3” of crushed rock
LK-ML	0+00 to 83+36	– Grade and rip potholes – Application of 3” of crushed rock – Bridge maintenance
LK-ML	110+67 to 129+40	– Rip potholes, remove waterbars, grade – Application of 3” of crushed rock – Turnout construction

0-7 POST-HAUL MAINTENANCE

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

0-10 ABANDONMENT

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

0-12 DEVELOP ROCK SOURCE

Purchaser may develop existing rock sources. Rock source development will involve drilling, shooting and processing rock. Work for developing rock sources is listed in Section 6 ROCK AND SURFACING.

0-13 STRUCTURES

Purchaser shall provide and install a 66" equivalent pipe-arch fish passable culvert and a tubular steel gate. Requirements for these structures are listed in Section 7 STRUCTURES.

SECTION 1 – GENERAL

1-1 ROAD PLAN CHANGES

If the Purchaser desires a change from this road plan including, but not limited to, relocation, extension, change in design, or adding roads; a revised road plan 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 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.

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

1-5 DESIGN DATA

Fish culvert installation design data is available upon request at the Department of Natural Resources NW 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.

1-8 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

1-18 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 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.

Road	Activity	Closure Period
ALL ROADS	ALL ACTIVITIES	November 1 to March 31
CN-ML	FISH CULVERT INSTALLATION	October 1 to July 14
*CN-54	*ALL ACTIVITIES	*October 1 to June 15

*Fish window for temporary culverts, not waivable by Contract Administrator.

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 Contact Administrator upon request. If damage occurs while plowing, further permission to plow may be revoked by the Contract Administrator.

1-40 ROAD APPROACHES TO COUNTY ROADS AND STATE HIGHWAYS

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

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

SECTION 2 – MAINTENANCE

2-1 GENERAL ROAD MAINTENANCE

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

2-2 ROAD MAINTENANCE – PURCHASER MAINTENANCE

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

2-3 ROAD MAINTENANCE – DESIGNATED MAINTAINER

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

2-4 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.

3-23 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.

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:

Material Type	Excavation Slope Ratio	Excavation Slope Percent
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:

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

4-7 SHAPING CUT AND FILL SLOPE

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

4-8 CURVE WIDENING

The minimum widening placed on the inside of curves is:

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

4-9 EMBANKMENT WIDENING

The minimum embankment widening is:

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

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

4-21 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.

4-38 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.

4-55 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.

5-8 TEMPORARY STREAM CULVERT INSTALLATION

Purchaser shall install temporary culverts as listed in the MATERIALS LIST. Temporary stream culverts must be located in the natural channel of the stream. Temporary culverts must be removed as indicated in Clause 1-25 ACTIVITY TIMING RESTRICTION. Geotextile fabric must meet the specifications in Clause 10-2 GEOTEXTILE FOR SEPARATION.

Road	Stations	Notes:
CN-54	6+01	Lay culvert on geotextile fabric and backfill with clean fill. Remove all fill and fabric with culvert removal.
	15+10	

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.

Road	Size
On any portion of road used for timber or rock haul.	Two: 18” x 30’ 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.

Source	Location	Rock Type
Acquisition Pit	5+00 of the LK-14	3-Inch Minus Ballast, Riprap
Foothill Pit	61+09 of the CN-47	3-Inch Minus Ballast, Riprap
Crane Creek Pit	16+68 of the CN-2006	2-Inch Minus Crushed Rock 3-Inch Minus Ballast, Riprap

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.

Source	Location	Rock Type	Quantity
Crane Creek Pit	16+68 of the CN-2006	2-Inch Minus Crushed Rock	1,870

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.

Source	Rock Type
Acquisition Pit	3-Inch Minus Ballast, Riprap
Foothill Crane Pit	
Crane Creek Pit	

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

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

6-23 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.

6-44 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% 1 – 3 inch round cobble
90% clean fines

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:

Quantity	Approximate Size Range
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:

Quantity	Size Range
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.

SECTION 7 – STRUCTURES

7-6 STREAM CROSSING INSTALLATION

Purchaser shall install stream crossing structures in accordance with the manufacturer's requirements, and the CN-ML 267+60 CULVERT REPLACEMENT DESIGN.

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:

- Removal of existing culvert
- Excavation of new stream channel alignment
- Placement of fish passable culvert
- Backfill, infill of stream-sim rock, compaction and rock surfacing

7-19 INSTALLATION STAGE ACCEPTANCE

Purchaser shall ensure that all materials and procedures used during construction comply with the design. Purchaser shall obtain written approval from the Contract Administrator or their designee for each stage of construction, listed in Clause 7-18 INSTALLATION PRODUCTION SCHEDULE, before starting construction on the next stage.

7-30 BRIDGE MAINTENANCE

Purchaser shall conduct bridge maintenance as listed and as shown on the LK-ML ROSCOE BRIDGE DETAIL. Purchaser shall remove all old bridge material from state land before the termination of the contract.

Road	Station	Requirements
LK-ML	1+60 to 2+10	Remove wood plank running surface, patch holes in steel deck, install 3”x3/8” steel plate and cover bridge deck with 2-inch minus crushed rock.

7-55 LARGE CULVERT INSTALLATION

Purchaser shall provide and install large culverts in accordance with the CN-ML 266+84 CULVERT REPLACEMENT DESIGN. Culvert designs must meet or exceed the following specifications:

Road	Station	Type	Material and Coating Type*	Span	Rise	Length	Corrugations and Gauge
CN-ML	267+60	Arch	Galvanized Steel	77”	52”	34’	3” x 1” 12 gauge

* See Clause 10-15 CORRUGATED STEEL CULVERT

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

Purchaser shall install steel pipe, pipe arches, and structural plate culverts in accordance with the National Corrugated Steel Pipe Association "Installation Manual for Corrugated Steel Pipe, Pipe Arches, and Structural Plate.” Installation is subject to the inspection and approval of the Contract Administrator before placement and backfill. The latest edition of the NCSPA Installation Manual can be found at www.ncspa.org.

7-57 CULVERT SHAPE CONTROL

Purchaser shall monitor the culvert shape during backfill and compaction. Special attention must be paid to maintaining the structure’s rise dimensions, concentricity, and smooth uniform curvature. If compaction methods are resulting in peaking or deflection of the culvert, Purchaser shall modify the compaction method to achieve the appropriate end result.

7-58 MATERIAL INSIDE CULVERT

Purchaser shall provide and install STREAM SIMULATION rock inside the following culvert as specified in the CN-ML 267+60 CULVERT REPLACEMENT DESIGN. STREAM SIMULATION must meet the specifications in Clause 6-44 STREAM SIMULATION ROCK and quantities in the CN-ML 267+60 CULVERT REPLACEMENT DESIGN..

Road	Stations
CN-ML	267+60

7-76 GATE INSTALLATION

Purchaser shall install the listed gate**.**

Road	Station	Type	Provided by
LK-ML	87+85	Tubular Steel with Bell Housing	Purchaser

Tubular gate installation must be in accordance with the METAL GATE DETAIL.

The gate and bell housing must be installed plumb and aligned to ensure all mating components match with precision. Each post must be filled with concrete and set in a minimum of 2 cubic yards of poured-in-place concrete.

If Purchaser wishes to install an alternate design, detailed plans for the construction of the gate must be submitted to the Contract Administrator. Purchaser shall obtain written approval for the plans from the Contract Administrator or their designee, before gate installation begins.

The gate must be primed and painted yellow.

Purchaser shall provide and place 20 cubic yards of stumps with root wads to prevent vehicles driving around the gate.

7-78 GATE SUPPLIED BY PURCHASER

Purchaser shall provide all gates specified for installation in Clause 7-76 GATE INSTALLATION. Purchaser shall obtain written approval for the gates from the Contract Administrator before installation.

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.

Kind and Variety of Seed in Mixture	% by Weight
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:

Chemical Component	% by Weight
Nitrogen	16
Phosphorous	16
Potassium	16
Sulphur	3
Inerts	49

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 and as specified below.

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.

9-21 ROAD ABANDONMENT

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

Road	Stations
CN-32	0+00 to 2+64
CN-4702-02	0+00 to 5+70
CN-54	5+03 to 36+32
CN-5403	0+00 to 14+70
LK-24	0+00 to 12+97

9-22 ABANDONMENT

- Remove all ditch relief culverts. The resulting slopes must be 1:1 or flatter. Place and compact the removed fill material in a location that will not erode into any Type 1 through 5 waters or wetlands.
- Remove all culverts in natural drainages. The resulting slopes must be 1.5:1 or flatter. Strive to match the existing native stream bank gradient. The natural streambed width must be re-established. Place and compact the removed fill material in a location that will not erode into any Type 1 through 5 waters or wetlands.
- Transport all removed culverts off site. All removed culverts are the property of the Purchaser.
- Construct non-drivable waterbars at natural drainage points and at a spacing that will produce a vertical drop of no more than 20 feet between waterbars and with a maximum horizontal spacing of 400 feet.
- Skew waterbars at least 30 degrees from perpendicular to the road centerline on roads in excess of 3 percent grade.
- Key waterbars into the cut-slope to intercept the ditch. Waterbars must be outsloped to provide positive drainage. Outlets must be on stable locations.
- Inslope or outslope the road as appropriate.
- Remove bridges and other structures.
- Pull back unstable fill that has potential of failing and entering any Type 1 through 5 waters or wetlands. Place and compact removed material in a stable location.
- Remove berms except as designed.
- Block the road by constructing an aggressive barrier of dense interlocked large woody debris (logs, stumps, root wads, etc.) so that four wheel highway vehicles cannot pass the point of abandonment. Typical barrier dimensions are 10 feet high by 20 feet deep, spanning the entire road prism from top of cutslope to toe of fillslope. Long term effectiveness is the primary objective. If necessary construct a vehicular turn-around near the point of abandonment.
- Apply grass seed to all exposed soils resulting from the abandonment work and in accordance with Section 8 EROSION CONTROL.

SECTION 10 MATERIALS

10-15 CORRUGATED STEEL CULVERT

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

10-17 CORRUGATED PLASTIC CULVERT

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

10-21 METAL BAND

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

10-22 PLASTIC BAND

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

10-24 GAUGE AND CORRUGATION

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

Diameter	Gage	Corrugation
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"

SECTION 11 SPECIAL NOTES

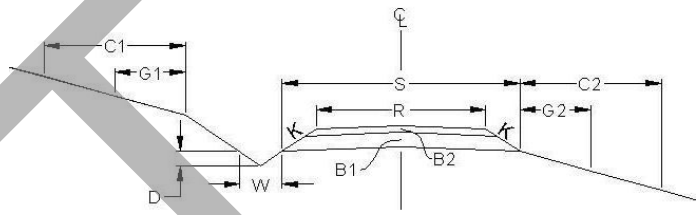
11-1 ABANDONED ROAD BLOCKAGE

On the following road, Purchaser shall block access to abandoned road grades concurrent with construction activities. Purchaser shall block the road by constructing an aggressive barrier of dense interlocked large woody debris (logs, stumps, root wads, etc.) so that four wheel highway vehicles cannot pass the point of abandonment. Typical barrier dimensions are 10 feet high by 20 feet deep, spanning the entire road prism from top of cutslope to toe of fillslope. Long term effectiveness is the primary objective. If necessary construct a vehicular turn-around near the point of abandonment.

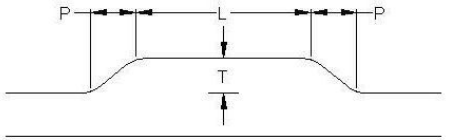
Road	Stations
LK-ML	90+45

ROAD #		CN-ML	CN-32	CN-47	CN-4702
REQUIRED / OPTIONAL		REQUIRED	OPTIONAL	REQUIRED	REQUIRED
CONSTRUCT / RECONSTRUCT		PREHAUL	CONSTRUCTION	PREHAUL	RECONSTRUCT
TOLERANCE CLASS (A/B/C)		C	C	C	C
STATION / MP TO		266+34	0+00	0+00	0+00
STATION / MP		268+11	2+64	6+95	6+53
ROAD WIDTH	R	12	12	12	12
CROWN (INCHES @ C/L)		3	3	3	3
DITCH WIDTH	W	3	3	3	3
DITCH DEPTH	D	1	1	1	1
TURNOUT LENGTH	L	--	--	--	--
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	1 ½ : 1	1 ½ : 1
❖ BALLAST DEPTH	B1	--	18	--	18
CUBIC YARDS / STATION		--	114	--	114
➢ TOTAL CY BALLAST		--	300	--	745
❖ SURFACING DEPTH	B2	3	--	3	--
CUBIC YARDS / STATION		17	--	17	--
➢ TOTAL CY SURFACING		30	--	120	--
➢ TOTAL CUBIC YARDS		30[A]	300[B]	120[A]	745[B]
SUBGRADE WIDTH	S	12.5	16.5	12.5	16.5
BRUSHCUT (Y/N)		N	N	N	N
BLADE, SHAPE, & DITCH (Y/N)		N	N	Y	N

TYPICAL SECTION



TURNOUT DETAIL (PLAN VIEW)



SYMBOL NOTES

❖ Specified Rock Depth is FINISHED COMPACTED DEPTH in inches.

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

Rock Totals Summary

Type	Quantity (Cubic Yards)
A: 2-Inch Minus	1,885
B: Ballast	13,800
Rip Rap	438
Stream Sim Rock	20

ROAD #		CN-4702	CN-4702-02	CN-54	CN-54	CN-5403	LK-ML	LK-ML
REQUIRED / OPTIONAL		REQUIRED	REQUIRED	REQUIRED	OPTIONAL	OPTIONAL	REQUIRED	REQUIRED
CONSTRUCT / RECONSTRUCT		CONSTRUCT	CONSTRUCT	RECONSTRUCT	RECONSTRUCT	CONSTRUCT	PREHAUL	RECONSTRUCT
TOLERANCE CLASS (A/B/C)		C	C	C	C	C	C	C
STATION / MP TO		6+53	0+00	0+00	16+78	0+00	0+00	83+36
STATION / MP		16+88	5+70	16+78	36+32	14+70	83+36	102+57
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	25	--	25	25	25	--	--
TURNOUT WIDTH	T	10	--	10	10	10	--	--
TURNOUT TAPER	P	25	--	25	25	25	--	--
GRUBBING	G1	5	5	5	5	5	--	5
	G2	5	5	5	5	5	--	5
CLEARING	C1	10	10	10	10	10	--	10
	C2	10	10	10	10	10	--	10
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	18	12	18	--	12
CUBIC YARDS / STATION		114	114	114	72	114	--	72
➢ TOTAL CY BALLAST		1,180	650	1,915	1,405	1,675	--	1,385
❖ SURFACING DEPTH	B2	--	--	--	--	--	3	--
CUBIC YARDS / STATION		--	--	--	--	--	17	--
➢ TOTAL CY SURFACING		--	--	--	--	--	1,415	--
➢ TOTAL CUBIC YARDS		1,180[B]	650[B]	1,915[B]	1,405[B]	1,675[B]	1,415 [A]	1,385
SUBGRADE WIDTH	S	16.5	16.5	16.5	16.5	16.5	12.5	16.5
BRUSHCUT (Y/N)		N	N	N	N	N	N	N
BLADE, SHAPE, & DITCH (Y/N)		N	N	N	N	N	Y	N

ROAD #		LK-ML	LK-ML	LK-24	LK-27			
REQUIRED / OPTIONAL		REQUIRED	REQUIRED	OPTIONAL	REQUIRED			
CONSTRUCT / RECONSTRUCT		CONSTRUCT	PREHAUL	CONSTRUCT	CONSTRUCT			
TOLERANCE CLASS (A/B/C)		C	C	C	C			
STATION / MP TO		102+57	124+65	0+00	0+00			
STATION / MP		124+65	143+38	12+97	4+83			
ROAD WIDTH	R	12	12	12	12			
CROWN (INCHES @ C/L)		3	3	3	3			
DITCH WIDTH	W	3	3	3	3			
DITCH DEPTH	D	1	1	1	1			
TURNOUT LENGTH	L	25	--	25	--			
TURNOUT WIDTH	T	10	--	10	--			
TURNOUT TAPER	P	25	--	25	--			
GRUBBING	G1	5	--	5	5			
	G2	5	--	5	5			
CLEARING	C1	10	--	10	10			
	C2	10	--	10	10			
ROCK FILLSLOPE	K:1	1 ½ : 1	1 ½ : 1	1 ½ : 1	1 ½ : 1			
❖ BALLAST DEPTH	B1	18	--	18	18			
CUBIC YARDS / STATION		114	--	114	114			
➢ TOTAL CY BALLAST		2,515	--	1,480	550			
❖ SURFACING DEPTH	B2	--	3	--	--			
CUBIC YARDS / STATION		--	17	--	--			
➢ TOTAL CY SURFACING		--	320	--	--			
➢ TOTAL CUBIC YARDS		2,515[B]	320 [A]	1,480[B]	550[B]			
SUBGRADE WIDTH	S	16.5	12.5	16.5	16.5			
BRUSHCUT (Y/N)		N	N	N	N			
BLADE, SHAPE, & DITCH (Y/N)		N	Y	N	N			

MATERIALS LIST

LOCATION		CULVERT			DWNSPT		RIPRAP			FILL TYPE	TOLERANCE	REMARKS
ROAD #	STATION	DIAMETER	LENGTH	TYPE	LENGTH	TYPE	INLET	OUTLET	TYPE			**Note: Galvanized metal culverts shall conform to the following specifications for gage and corrugation as a function of the diameter:** **Diameter / Gage / Corrugation** **18" / 16 / 2 2/3" x 1/2"** **24" – 48" / 14 / 2 2/3" x 1/2"** **54" – 96" / 14 / 3" x 1"**
CN-ML	267+60	77/52	34	GM	--	--	2	3	L	NT	C	66" EQUIVAENT PIPE ARCH. SEE DESIGN.
CN-ML	268+57	18	30	XX	--	--	2	3	L	NT	C	
CN-32	0+10	18	40	XX	--	--	2	3	L	NT	C	DITCHLAY
CN-4702	4+25	18	40	XX	--	--	2	3	L	NT	C	COLLECT DITCHWATER FROM 3+75 TO 4+25
CN-4702	8+24	18	40	XX	--	--	2	3	L	NT	C	PUNCH THROUGH BERM. TYPE 5 STREAM.
CN-4702	10+75	18	40	XX	--	--	2	3	L	NT	C	PUNCH THROUGH BERM.
CN-4702	14+63	18	30	XX	--	--	2	3	L	NT	C	
CN-4702	15+57	18	30	XX	--	--	2	3	L	NT	C	
CN-4702-02	0+42	18	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
CN-4702-02	3+10	18	30	XX	--	--	2	3	L	NT	C	
CN-54	3+05	18	30	XX	--	--	2	3	L	NT	C	
CN-54	6+01	30	30	XX	--	--	3	5	L	NT	C	TYPE 4 STREAM. TEMPORARY FISH CULVERT
CN-54	9+35	18	30	XX	--	--	2	3	L	NT	C	
CN-54	12+13	18	30	XX	--	--	2	3	L	NT	C	
CN-54	14+18	18	30	XX	--	--	2	3	L	NT	C	
CN-54	15+10	48	60	GM			20	30	L/H	NT	C	TYPE 4 STREAM. TEMPORARY FISH CULVERT

GM – Galvanized Metal PS – Polyethylene Pipe Single Wall PD – Polyethylene Pipe Dual Wall AM – Aluminized Metal C – Concrete XX – PD or GM
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MATERIALS LIST

LOCATION		CULVERT			DWNSPT		RIPRAP			FILL TYPE	TOLERANCE	REMARKS
ROAD #	STATION	DIAMETER	LENGTH	TYPE	LENGTH	TYPE	INLET	OUTLET	TYPE			Note: Galvanized metal culverts shall conform to the following specifications for gage and corrugation as a function of the diameter: Diameter / Gage / Corrugation 18" / 16 / 2 2/3" x 1/2" 24" – 48" / 14 / 2 2/3" x 1/2" 54" – 96" / 14 / 3" x 1"
CN-54	16+36	18	30	XX	--	--	2	3	L	NT	C	
CN-54	19+12	18	30	XX	--	--	2	3	L	NT	C	
CN-54	21+90	18	30	XX	--	--	2	3	L	NT	C	
CN-54	25+36	18	30	XX	--	--	2	3	L	NT	C	
CN-54	29+04	18	30	XX	--	--	2	3	L	NT	C	
CN-54	30+51	18	30	XX	--	--	2	3	L	NT	C	
CN-54	31+63	18	30	XX	--	--	2	3	L	NT	C	
CN-54	33+36	18	30	XX	--	--	2	3	L	NT	C	
CN-5403	2+71	18	30	XX	--	--	2	3	L	NT	C	
CN-5403	4+79	18	30	XX	--	--	2	3	L	NT	C	
CN-5403	5+46	24	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
CN-5403	7+43	18	30	XX	--	--	2	3	L	NT	C	
CN-5403	8+06	24	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
CN-5403	9+17	18	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
CN-5403	11+13	18	30	XX	--	--	2	3	L	NT	C	
CN-5403	12+00	18	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
CN-5403	12+86	18	30	XX	--	--	2	3	L	NT	C	
CN-5403	13+28	24	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM

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MATERIALS LIST

LOCATION		CULVERT			DWNSPT		RIPRAP			FILL TYPE	TOLERANCE	REMARKS
ROAD #	STATION	DIAMETER	LENGTH	TYPE	LENGTH	TYPE	INLET	OUTLET	TYPE			Note: Galvanized metal culverts shall conform to the following specifications for gage and corrugation as a function of the diameter: Diameter / Gage / Corrugation 18" / 16 / 2 2/3" x 1/2" 24" – 48" / 14 / 2 2/3" x 1/2" 54" – 96" / 14 / 3" x 1"
LK-ML	83+77	18	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
LK-ML	85+98	18	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
LK-ML	87+49	18	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
LK-ML	90+41	18	40	XX	--	--	2	3	L	NT	C	DRAIN TO EAST, DO NOT RUN WATER DOWN OLD GRADE
LK-ML	90+45	--	--	--	--	--	--	--	--	--	--	CONSTRUCT BLOCKAGE, SEE 11-1
LK-ML	92+81	18	30	XX	--	--	2	3	L	NT	C	
LK-ML	97+97	18	30	XX	--	--	2	3	L	NT	C	
LK-ML	98+97	18	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
LK-ML	102+73	18	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
LK-ML	103+24	18	30	XX	--	--	2	3	L	NT	C	
LK-ML	104+48	18	30	XX	--	--	2	3	L	NT	C	
LK-ML	104+99	18	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
LK-ML	105+54	18	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
LK-ML	106+89	18	30	XX	--	--	2	3	L	NT	C	
LK-ML	107+22	24	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
LK-ML	108+22	18	30	XX	--	--	2	3	L	NT	C	
LK-ML	108+83	24	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
LK-ML	109+22	18	30	XX	--	--	2	3	L	NT	C	
LK-ML	110+35	18	30	XX	--	--	2	3	L	NT	C	
LK-ML	111+68	18	30	XX	--	--	2	3	L	NT	C	
LK-ML	112+92	30	30	XX	--	--	2	3	L	NT	C	TYPE 4 STREAM
LK-ML	113+42	18	30	XX	--	--	2	3	L	NT	C	

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MATERIALS LIST

LOCATION		CULVERT			DWNSPT		RIPRAP			FILL TYPE	TOLERANCE	REMARKS
ROAD #	STATION	DIAMETER	LENGTH	TYPE	LENGTH	TYPE	INLET	OUTLET	TYPE			Note: Galvanized metal culverts shall conform to the following specifications for gage and corrugation as a function of the diameter: Diameter / Gage / Corrugation: 18" / 16 / 2 2/3" x 1/2"; 24" – 48" / 14 / 2 2/3" x 1/2"; 54" – 96" / 14 / 3" x 1"
LK-ML	113+91	18	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
LK-ML	115+64	30	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
LK-ML	117+48	18	30	XX	--	--	2	3	L	NT	C	
LK-ML	117+87	30	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
LK-ML	119+52	18	30	XX	--	--	2	3	L	NT	C	
LK-ML	120+32	24	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
LK-ML	121+34	24	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
LK-ML	122+81	18	30	XX	--	--	2	3	L	NT	C	
LK-ML	124+33	18	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
LK-24	1+94	24	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
LK-24	4+06	18	30	XX	--	--	2	3	L	NT	C	
LK-24	4+65	18	30	XX	--	--	2	3	L	NT	C	
LK-24	4+97	24	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
LK-24	5+70	24	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
LK-24	6+53	18	30	XX	--	--	2	3	L	NT	C	
LK-24	6+96	24	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
LK-24	9+05	18	30	XX	--	--	2	3	L	NT	C	
LK-24	9+38	18	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
LK-24	11+48	18	30	XX	--	--	2	3	L	NT	C	
LK-24	12+22	24	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM

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MATERIALS LIST

LOCATION		CULVERT			DWNSPT		RIPRAP			FILL TYPE	TOLERANCE	REMARKS
ROAD #	STATION	DIAMETER	LENGTH	TYPE	LENGTH	TYPE	INLET	OUTLET	TYPE			Note: Galvanized metal culverts shall conform to the following specifications for gage and corrugation as a function of the diameter: Diameter / Gage / Corrugation 18" / 16 / 2 2/3" x 1/2" 24" – 48" / 14 / 2 2/3" x 1/2" 54" – 96" / 14 / 3" x 1"
LK-27	1+45	18	30	XX	--	--	2	3	L	NT	C	
LK-27	2+95	18	30	XX	--	--	2	3	L	NT	C	
LK-27	3+42	24	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM

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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

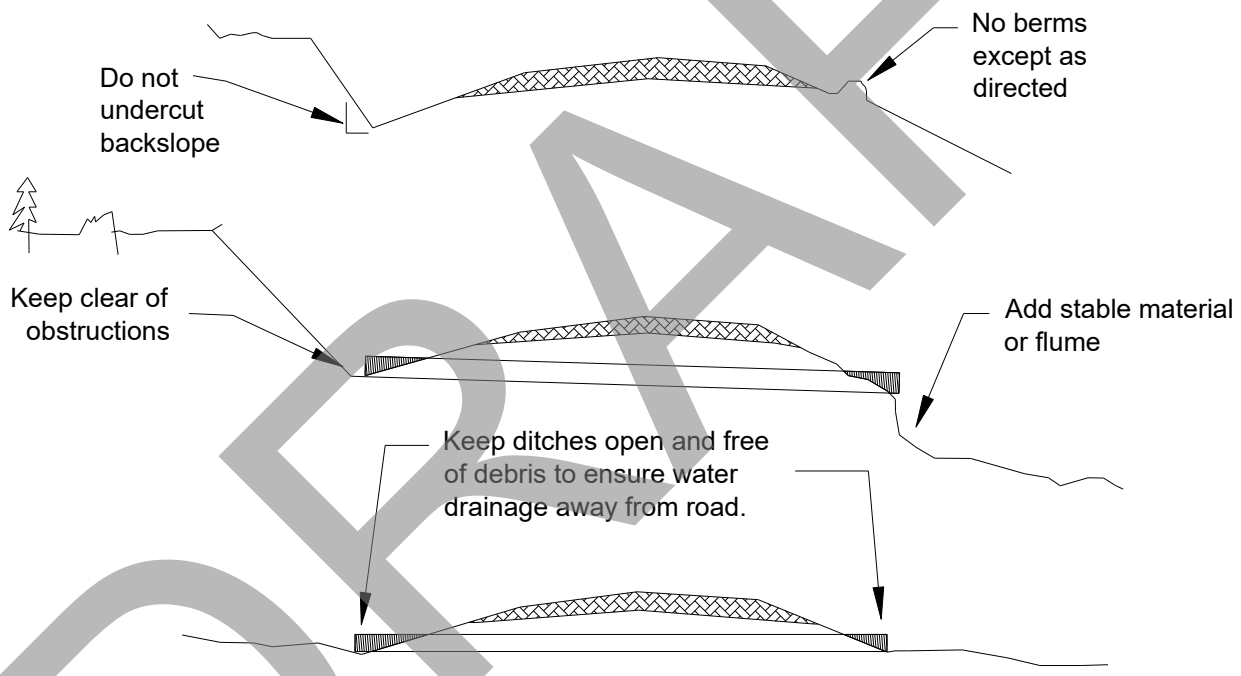
- Perform preventative maintenance work to safeguard against storm damage, such as blading to ensure correct runoff, ditch and culvert cleaning, and waterbar maintenance.

Termination of Use or End of Season

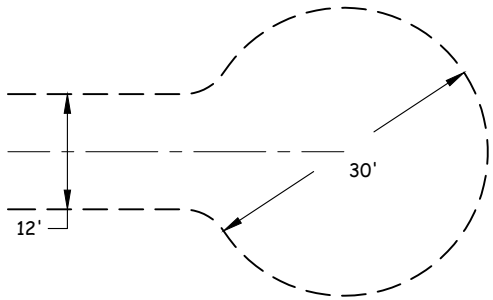
- At the conclusion of logging operations, ensure all conditions of these specifications have been met.

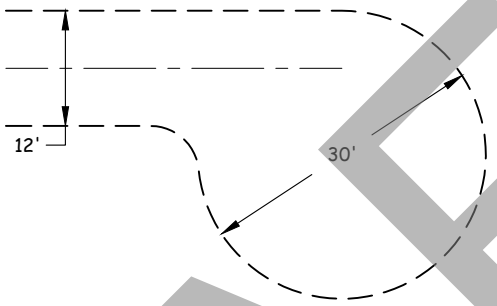
Debris

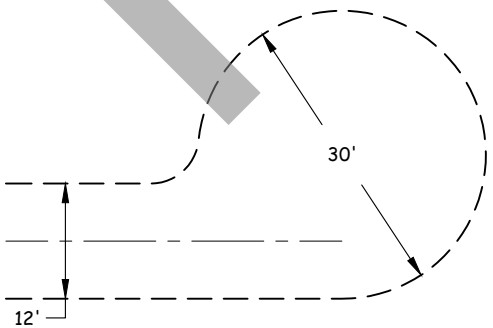
- Remove fallen timber, limbs, and stumps from the slopes, roadway, ditchlines, and culvert inlets.



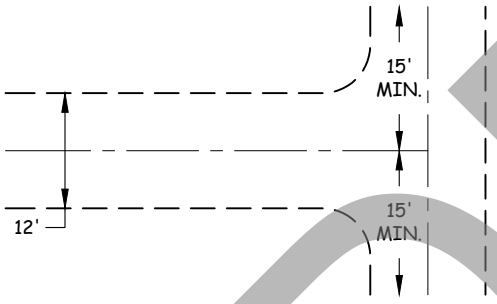
TURNAROUND DETAILS

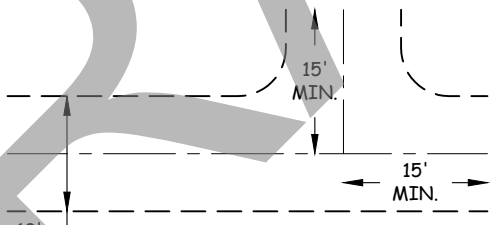


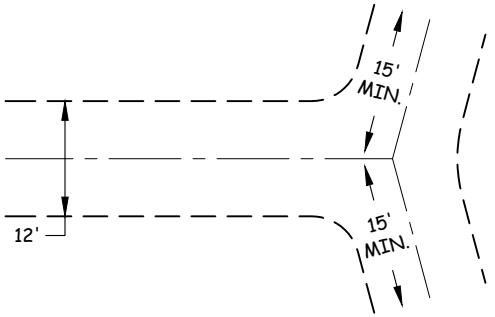




CUL-DE-SAC







HAMMERHEAD

3-POINT SIDE

3-POINT WYE

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

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

CONTRACT #	PROJECT	SHEET
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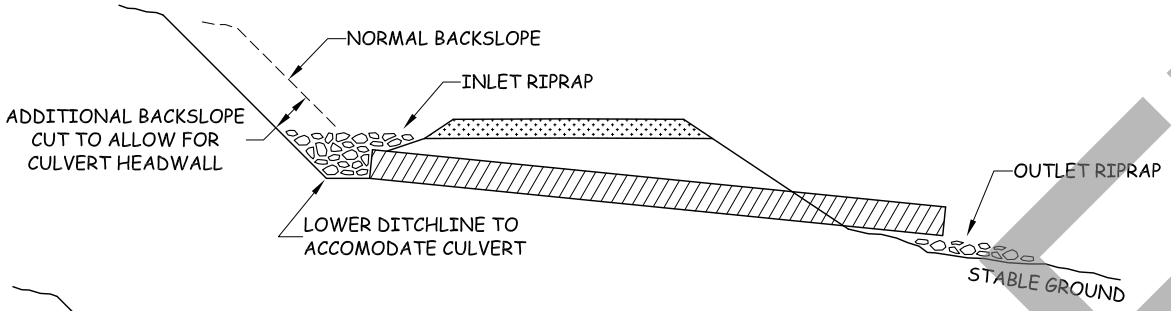
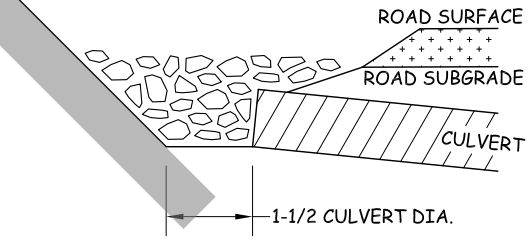
CULVERT AND DRAINAGE SPECIFICATIONS

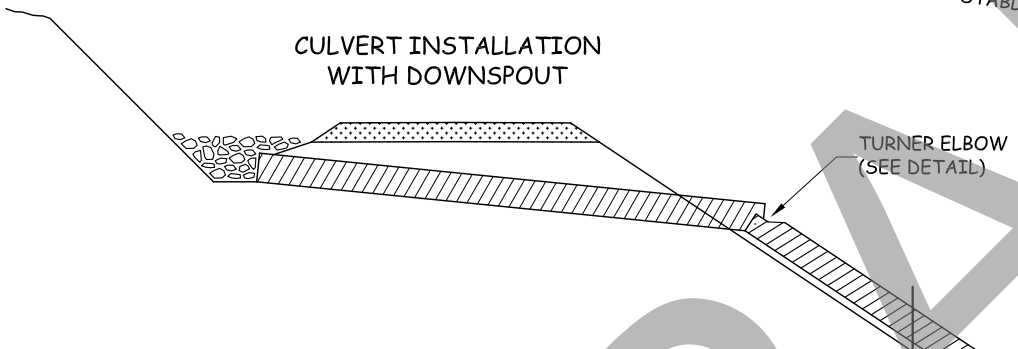
CULVERT INSTALLATION (TYPICAL)



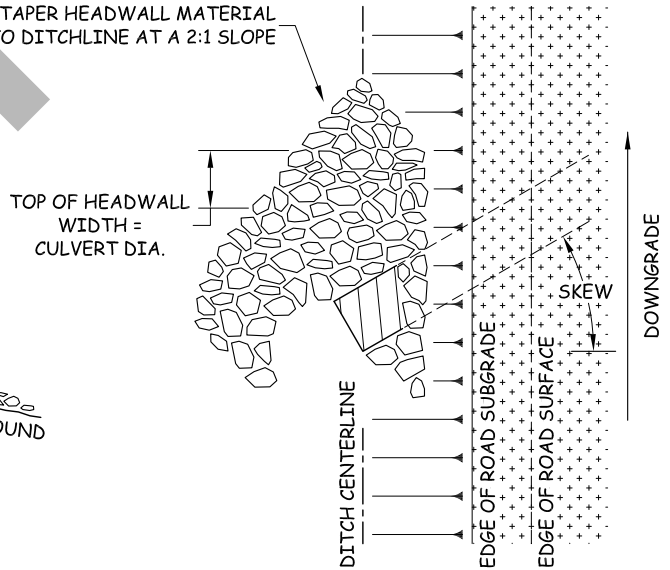
CULVERT HEADWALL - SECTION VIEW



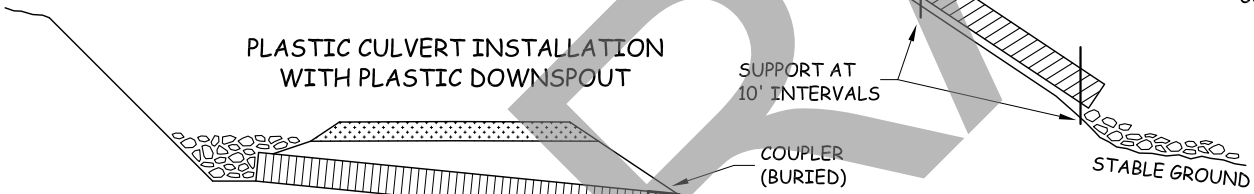
CULVERT INSTALLATION WITH DOWNSPOUT



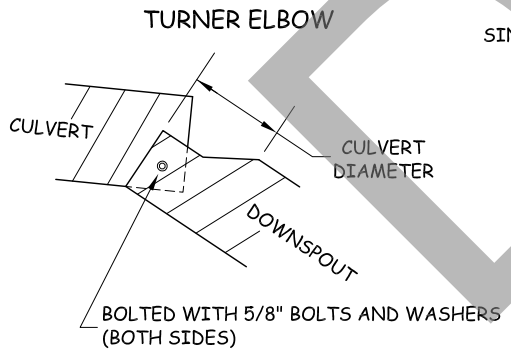
CULVERT HEADWALL - PLAN VIEW

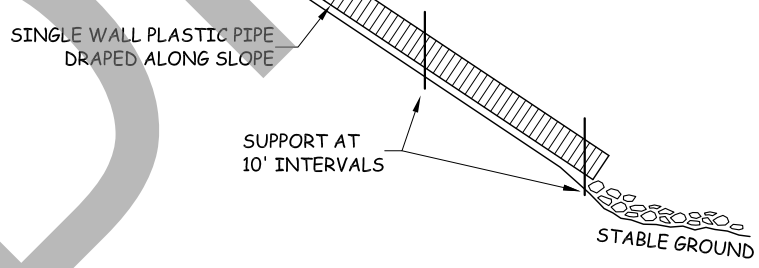


PLASTIC CULVERT INSTALLATION WITH PLASTIC DOWNSPOUT



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 #	PROJECT	SHEET
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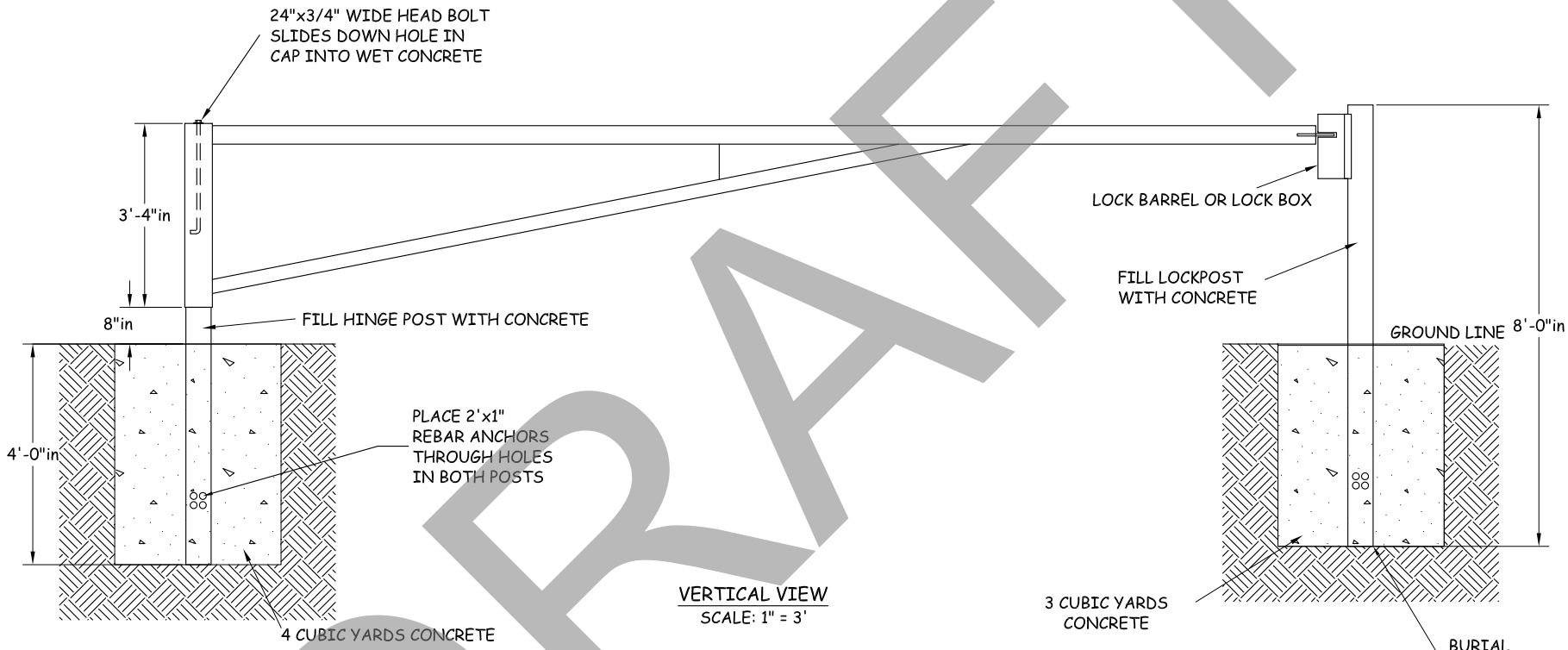
STEEL GATE INSTALLATION

LK-ML 87+85



VERTICAL VIEW
SCALE: 1" = 3'

CONSTRUCTION NOTES
1. ALL WELDS ARE FILLET WELDS.
2. ACTUAL LOCATION SHALL BE DESIGNATED BY THE CONTRACT ADMINISTRATOR.
3. ALL CONCRETE SHALL MEET MINIMUM REQUIREMENTS FOR CLASS B CONCRETE.

CONTRACT #	PROJECT	SHEET
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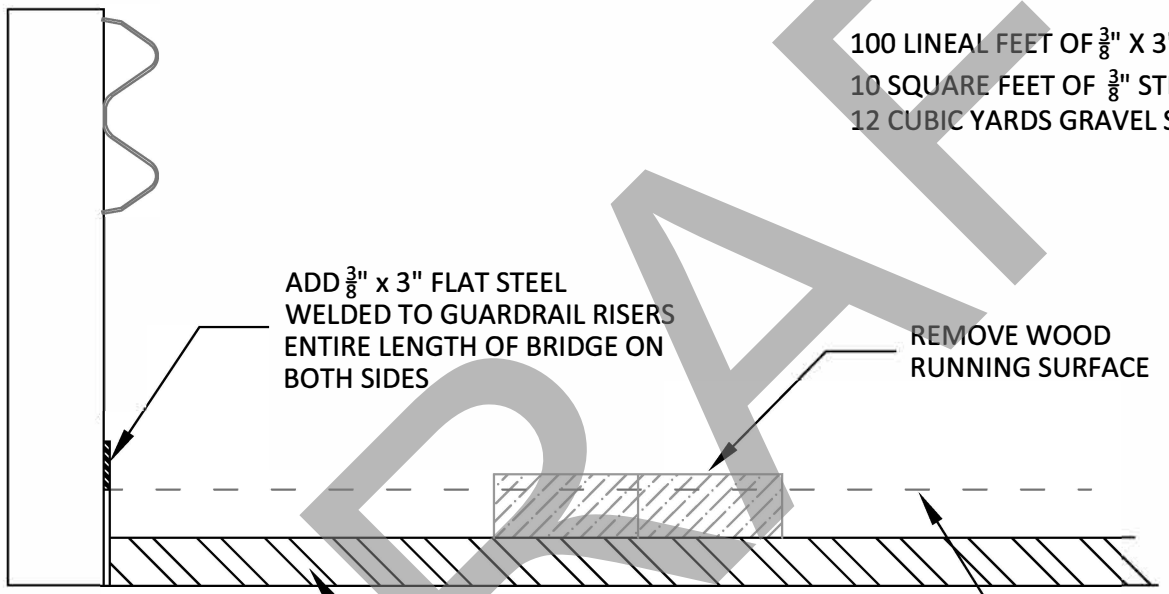
LK-ML ROSCOE BRIDGE DETAIL

MATERIALS LIST:

100 LINEAL FEET OF $\frac{3}{8}$" X 3" FLAT STEEL
10 SQUARE FEET OF $\frac{3}{8}$" STEEL PLATE FOR PATCHING
12 CUBIC YARDS GRAVEL SURFACING



CONTRACT #	PROJECT	SHEET
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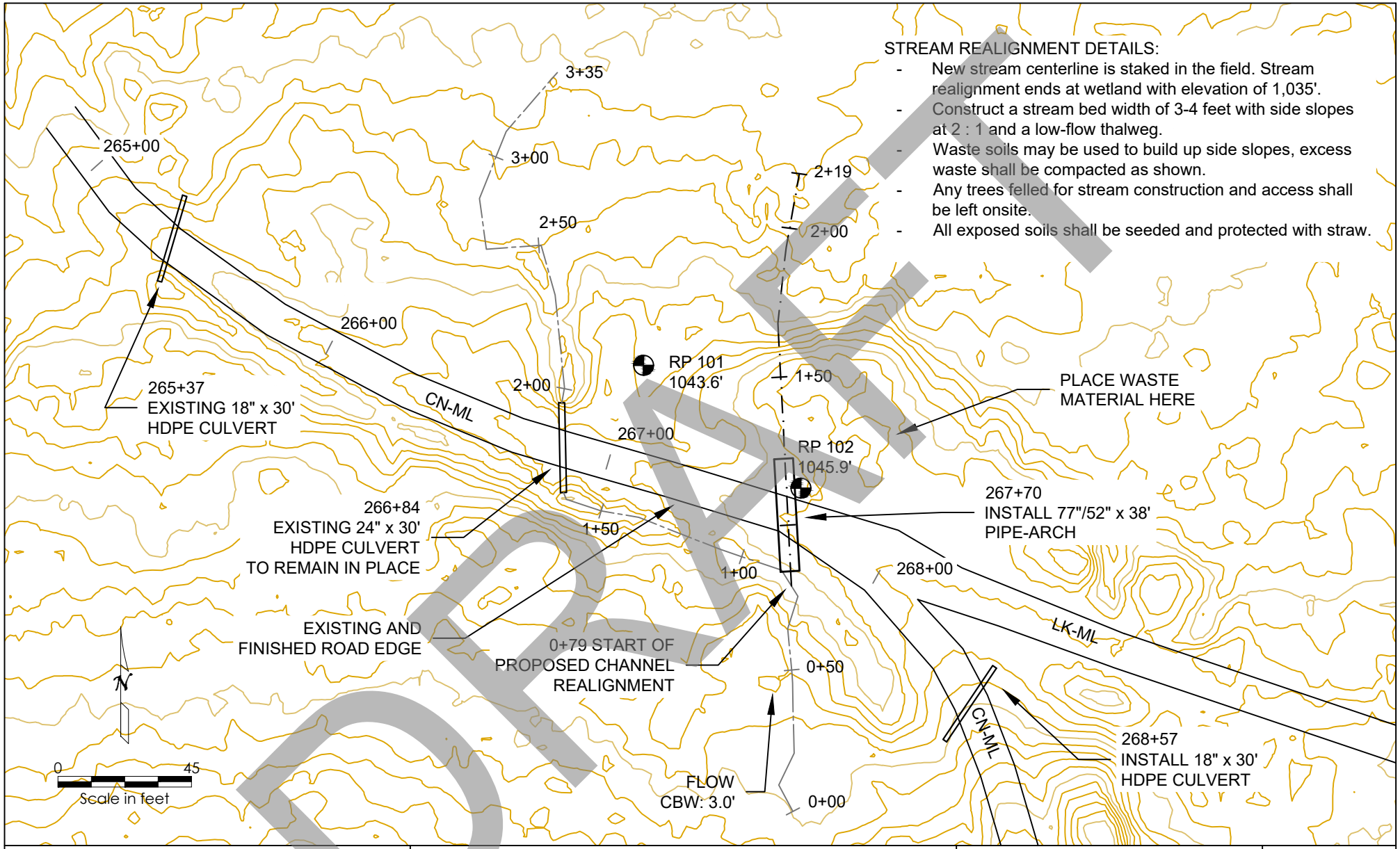

Revisions:	By	Date

SITE PLAN
WA DNR STATE LANDS
SARUS TIMBER SALE 30-104686

Sec 20 T33 N R06 E
Lat & Long: 47˚19'39.4" N
122˚04'14.3" W
Date: July 17, 2023

Sheet
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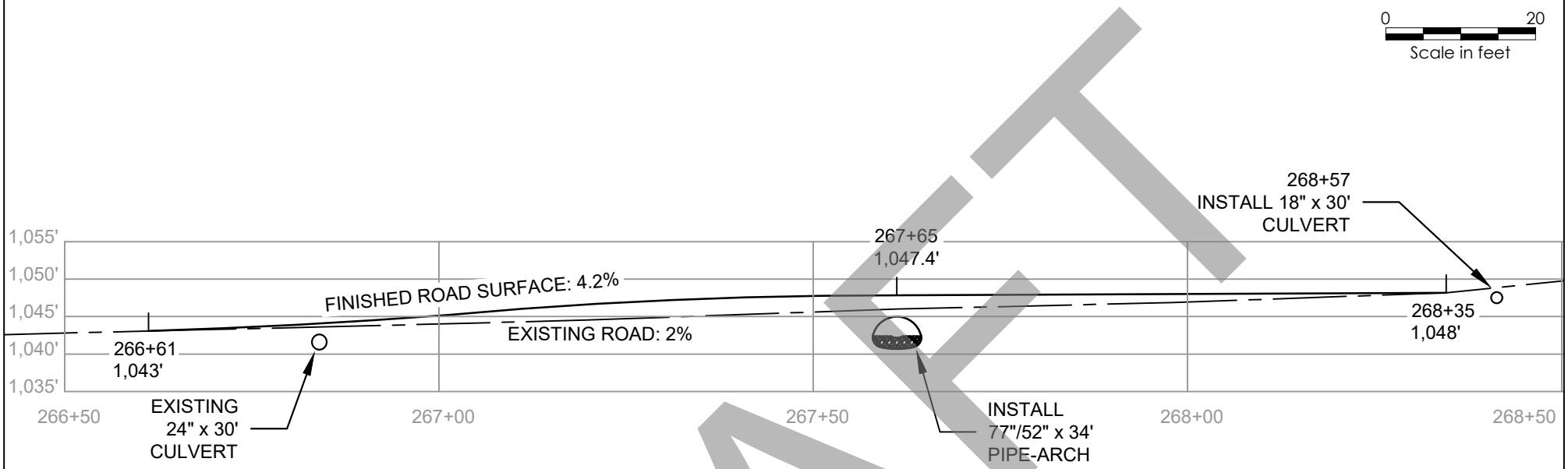
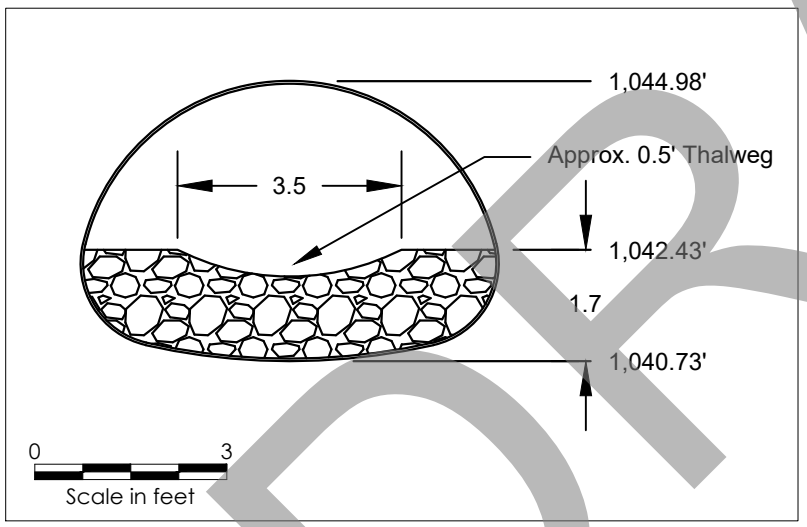
Accessed: 04/15/2024 14:57





INSTALL CULVERT WITH A MINIMUM OF 1' COMPACTED FILL. COVER WITH 15" BALLAST AND 3" OF CRUSHED SURFACING. SEE TYPICAL SECTION SHEET.

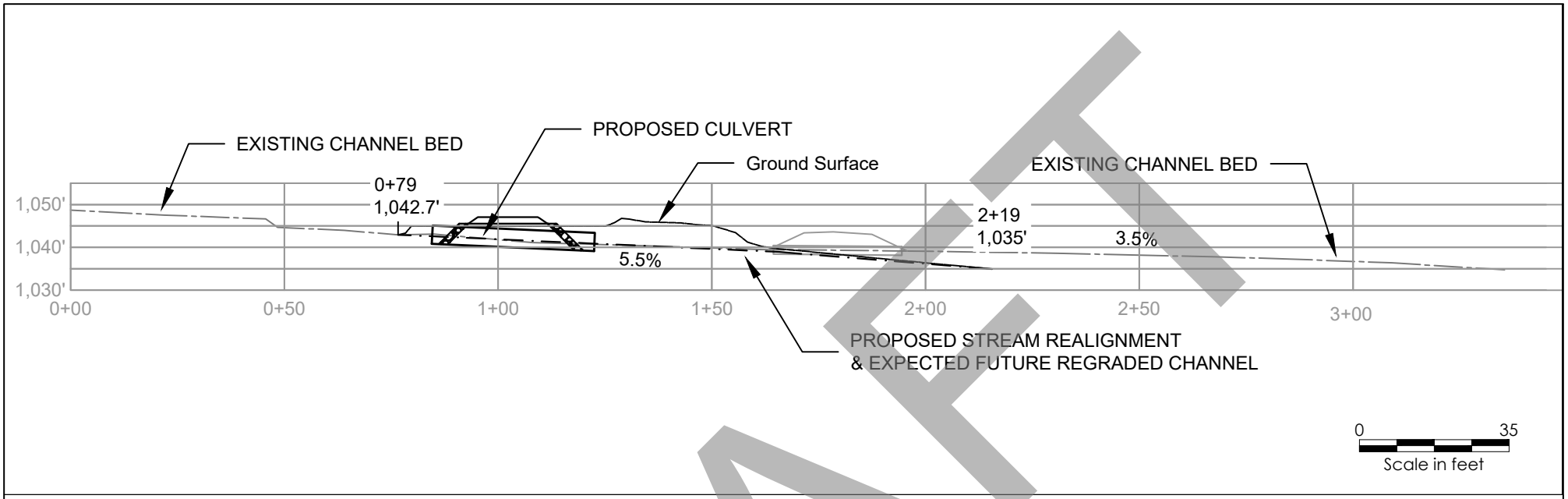
STREAMBED MIX:
- 10% 1 - 3 INCH ROUND COBBLE
- 90% PITRUN SAND AND GRAVEL

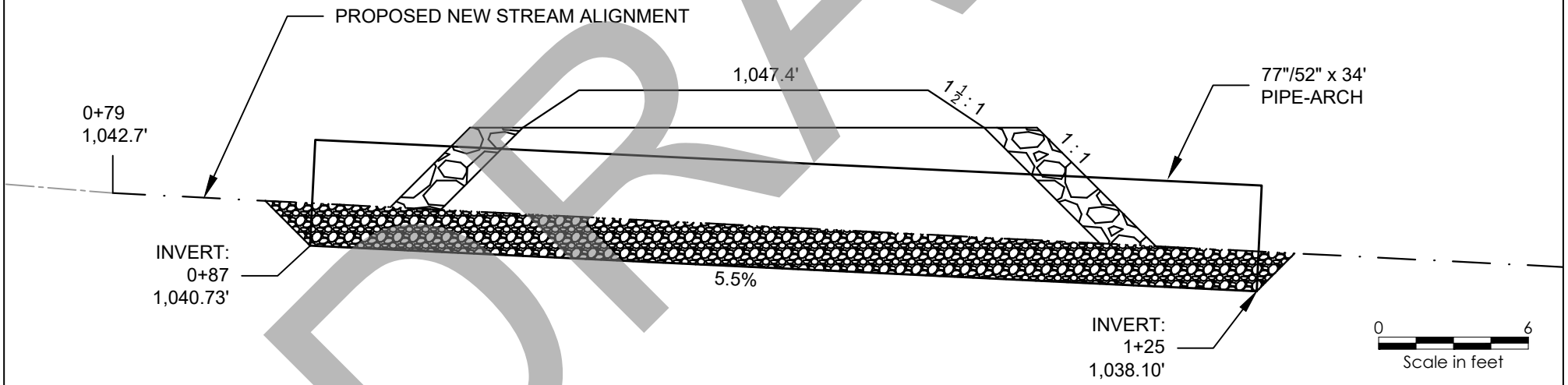
PURCHASED COMMERCIALLY, MIXED ONSITE OR AT QUARRY.

Revisions:	By	Date

ROAD PROFILE
WA DNR STATE LANDS
SARUS TIMBER SALE 30-104686

Sec 20 T33 N R06 E
Lat & Long: 47˚19'39.4" N
122˚04'14.3" W
Date: July 17, 2023





Revisions:	By	Date

CHANNEL & CULVERT PROFILE
WA DNR STATE LANDS
SARUS TIMBER SALE 30-104686

Sec 20 T33 N R06 E
Lat & Long: 47˚19'39.4" N
122˚04'14.3" W
Date: July 17, 2023

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SUMMARY - Road Development Costs

REGION: NW
DISTRICT: Clear Lake

SALE/PROJECT NAME: Sarus CONTRACT #: 30-104686

ROAD NUMBERS:	CN-32, CN-4702, CN-4702-02, CN-5403, LK-ML, LK-27	CN-4702, CN-54, LK-ML	CN-ML, CN-47, LK-ML,
ROAD STANDARD:	Construction	Reconstruction	Pre-Haul Maintenance
NUMBER OF STATIONS:	73.27	62.05	110.81
CLEARING & GRUBBING:	$26,810	$8,784	$0
EXCAVATION & FILL:	$54,623	$31,278	$0
MISC. MAINTENANCE:	$0	$0	$8,847
ROAD ROCK:	$79,702	$51,652	$33,402
ROCK STOCKPILE PROD:	$0	$0	$0
CULVERTS & FABRIC:	$38,880	$18,419	$0
STRUCTURES:	$0	$5,000	$10,682
MOBILIZATION:	$1,524	$1,524	$1,046
TOTAL COSTS:	$201,540	$116,657	$53,977
COST PER STATION:	$2,751	$1,880	$487

ROAD DEACTIVATION & ABANDONMENT COSTS: $6,742

TOTAL (All Roads) = $378,915
ESTIMATED PRECRUISE SALE VOLUME MBF = 3750
ESTIMATED TOTAL $/MBF = $101.04

Compiled by: J. Westra Date: 7/10/2023