WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES

TIMBER NOTICE OF SALE

***SALE NAME**: EL DUDERINO* ***AGREEMENT NO**: 30-107584*

AUCTION: March 26, 2025 starting at 10:00 a.m., Northwest Region Office, Sedro-Woolley, WA

COUNTY: Snohomish

SALE LOCATION: Sale located approximately 13 miles northeast of Sultan, WA.

PRODUCTS SOLD AND SALE AREA: 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 #1.

All timber bounded by white timber sale boundary tags and adjacent young stands, 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.

All timber bounded by white timber sale boundary tags, adjacent young stands, and the BM-ML and BM-26 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 #3 (collectively labeled 3A, 3B, 3C, 3D, and 3E).

All timber bounded by orange right-of-way tags and all timber within 30 feet of centerline of roads to be constructed, except that title to the timber within the right-of-way associated with areas of road construction (located outside of units) is not conveyed to the Purchaser unless the road segment is actually constructed.

All forest products above located on part(s) of Sections 1 and 2 all in Township 28 North, Range 8 East, Sections 31 all in Township 29 North, Range 9 East, Sections 35 and 36 all in Township 29 North, Range 8 East, W.M., containing 102 acres, more or less.

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

ESTIMATED SALE VOLUMES AND QUALITY:

Species	Avg DBH	Ring Count	Total MBF	MBF by Grade 1P	2P	3P	SM	1S	2S	3S	4S	UT
Hemlock	15.8		3,660						1,701	1,650	290	19
Douglas fir	22	9	1,337						1,013	277	42	5
Silver fir	17.2		248						93	134	21	
Red alder	14.5		69							17	52	
Redcedar	13.6		49							18	31	
Sale Total			5,363									

MINIMUM BID: $640,000.00

BID METHOD: Sealed Bids

PERFORMANCE SECURITY: $100,000.00

SALE TYPE: Lump Sum

WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES

TIMBER NOTICE OF SALE

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

BID DEPOSIT: $64,000.00 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, feller-buncher, or "6-wheeled rubber-tired skidders with over-the-tire tracks spanning both sets of rear tires" (See below for restrictions) on sustained slopes 40% or less; self-leveling equipment on sustained slopes 55% 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 (Use shall not be allowed in Unit #8). 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 (THIS PERTAINS TO GROUND-BASED EQUIPMENT ONLY) to reduce soil damage and erosion.

ROADS: 23.29 stations of required construction. 8.30 stations of required reconstruction. 18.28 stations of optional construction. 19.82 stations of optional reconstruction. 567.81 stations of required prehaul maintenance. 8.07 stations of abandonment, if built.

Rock may be obtained from the following source(s) on State land at no charge to the Purchaser: Marsh Creek Gravel Pit at station 64+82 of the MC-ML Road. Puget View Pit at station 9+36 of the MC-28 Road.

Development of existing rock sources will involve drilling, shooting, and processing rock to generate riprap, pitrun, and 3-inch-minus ballast rock.

An estimated total quantity of rock needed for this proposal: 205 cubic yards of riprap, 850 cubic yards of pitrun and 6,995 cubic yards of ballast rock.

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.

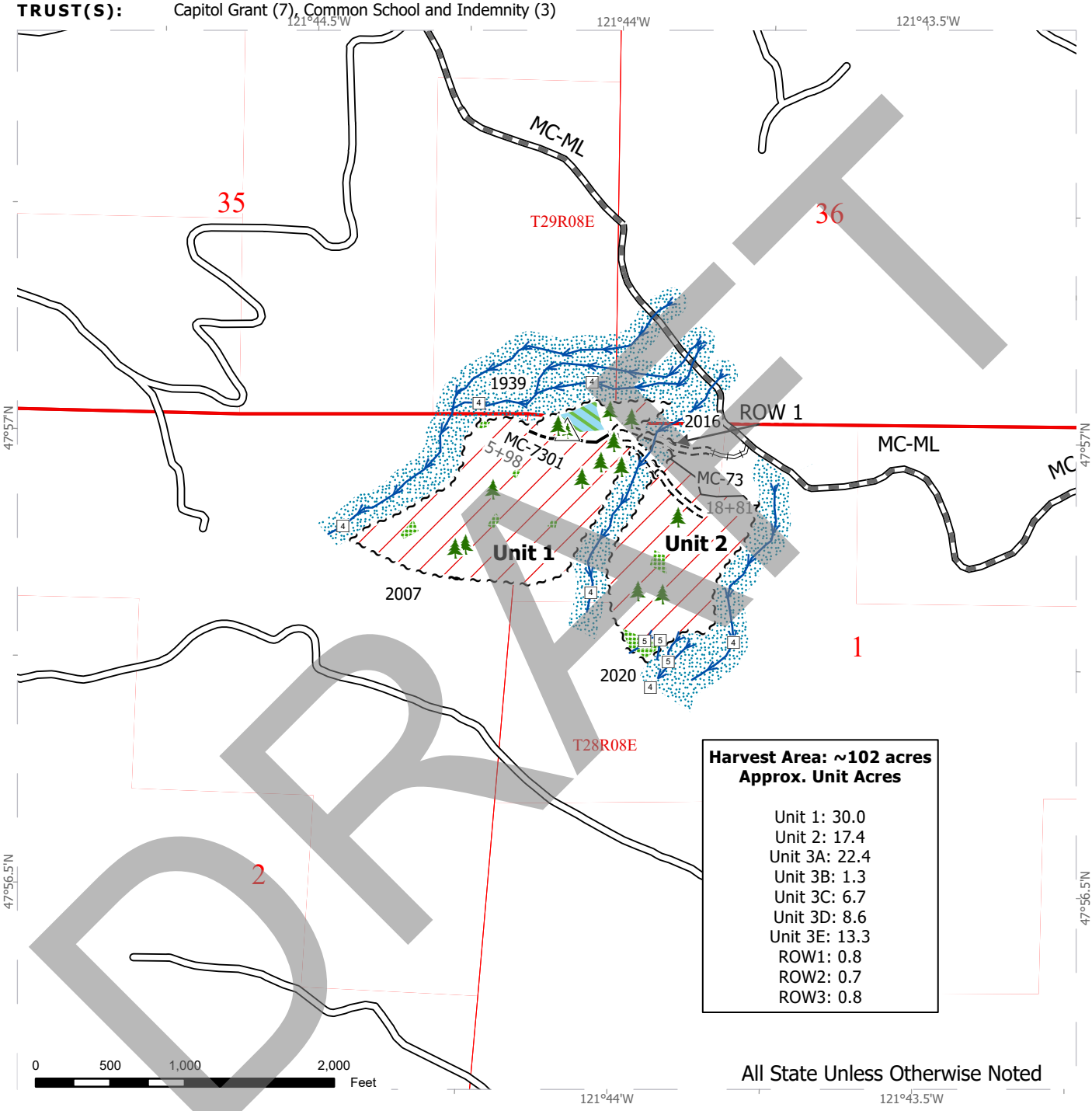
FEES: $91,171.00 is due on day of sale. $9.00 per MBF is due upon removal. These are in addition to the bid price.

SPECIAL REMARKS: 1. Intermediate supports, if necessary for yarding, shall be marked by the Purchaser and approved by the Contract Administrator prior to felling unit timber.

TIMBER SALE MAP

SALE NAME: EL DUDERINO
AGREEMENT#: 30-107584
TOWNSHIP(S): T28R8E, T29R8E, T29R9E
TRUST(S): Capitol Grant (7), Common School and Indemnity (3)

REGION: Northwest Region
COUNTY(S): Snohomish
ELEV RGE (FT): 1200-2920



Harvest Area: ~102 acres
Approx. Unit Acres

Unit 1: 30.0
Unit 2: 17.4
Unit 3A: 22.4
Unit 3B: 1.3
Unit 3C: 6.7
Unit 3D: 8.6
Unit 3E: 13.3
ROW1: 0.8
ROW2: 0.7
ROW3: 0.8

- Variable Retention Harvest
- Leave Tree Area
- Non-Tradeable Leave Area
- Riparian Mgt Zone
- Right of Way Tags
- Sale Boundary Tags
- Timber Type Change
- Existing Roads
- Required Pre-Haul Maintenance
- Required Construction
- Required Reconstruction
- Optional Construction
- Streams
- Stream Type
- Stream Break
- Non-Tradeable Leave Trees
- Scattered Leave Trees

N

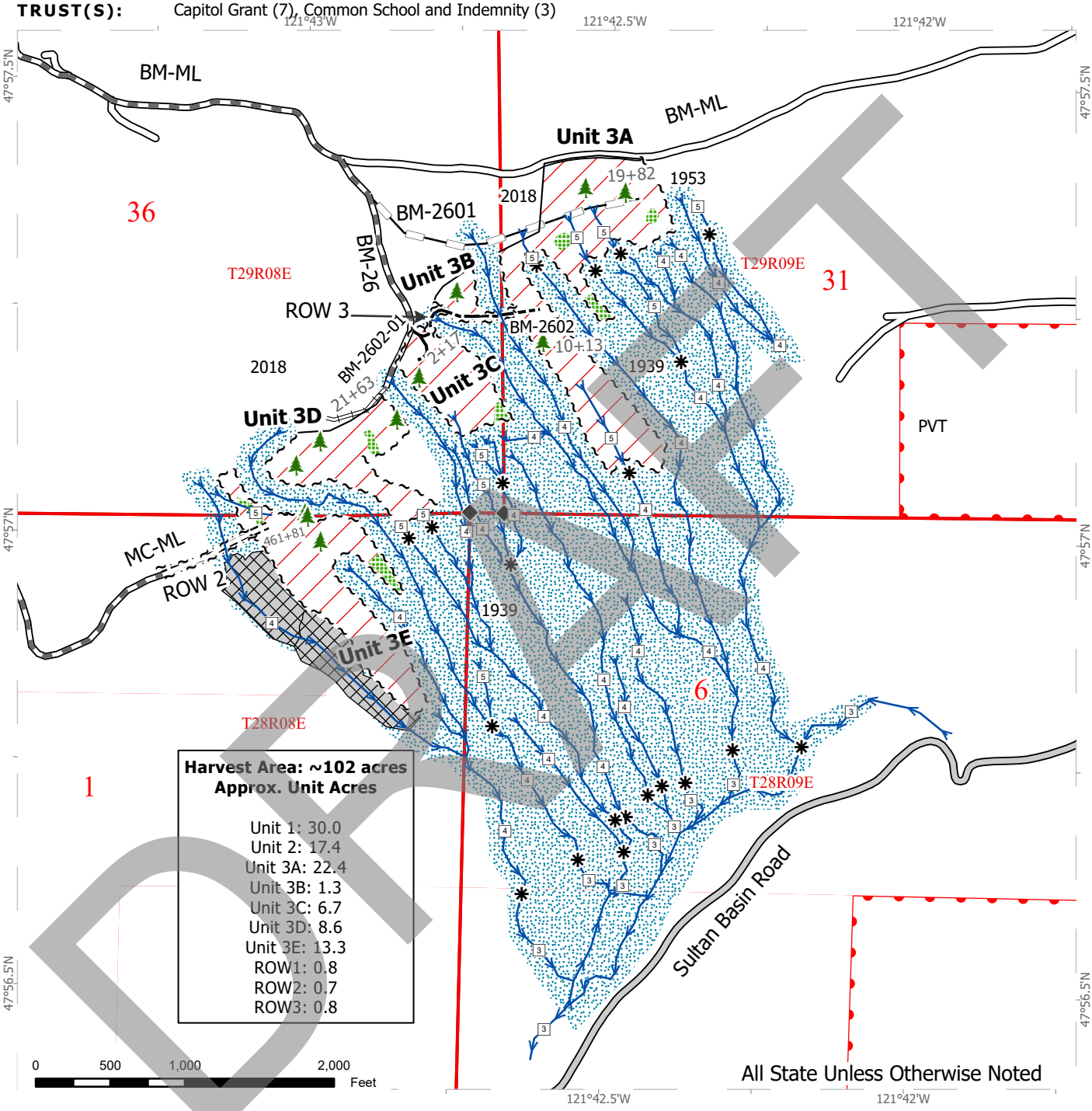
Prepared By: csce490
Accessed: 01/09/2025 13:16

Modification Date: csce490 10/8/2024

TIMBER SALE MAP

SALE NAME: EL DUDERINO
AGREEMENT#: 30-107584
TOWNSHIP(S): T28R8E, T29R8E, T29R9E
TRUST(S): Capitol Grant (7), Common School and Indemnity (3)

REGION: Northwest Region
COUNTY(S): Snohomish
ELEV RGE (FT): 1200-2920



DRAFT

- Variable Retention Harvest
- Leave Tree Area
- Riparian Mgt Zone
- No Entry Area
- Right of Way Tags
- Sale Boundary Tags
- Timber Type Change
- County Road
- Existing Roads
- Required Pre-Haul Maintenance
- Required Construction
- Required Reconstruction
- Optional Construction
- Optional Reconstruction
- Streams
- Stream Type
- Stream Break
- Scattered Leave Trees
- Survey Monument

N

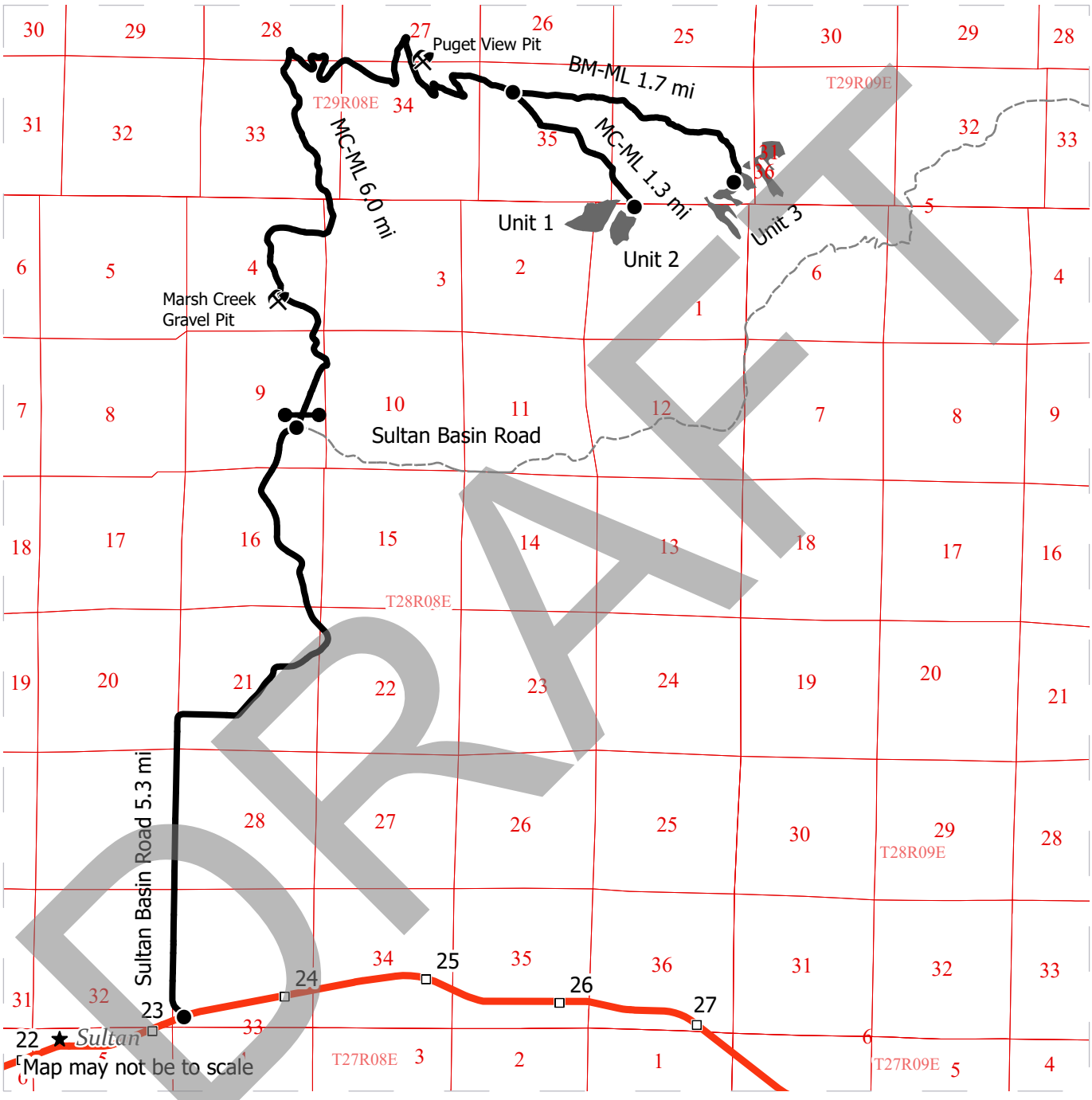
Prepared By: csce490
Accessed: 01/09/2025 13:16

Modification Date: csce490 10/8/2024

DRIVING MAP

SALE NAME: EL DUDERINO
AGREEMENT#: 30-107584
TOWNSHIP(S): T28R8E, T29R8E, T29R9E
TRUST(S): Capitol Grant (7), Common School and Indemnity (3)

REGION: Northwest Region
COUNTY(S): Snohomish
ELEV RGE (FT): 1200-2920



- Distance Indicator
- Gate (F1)
- Rock Pit
- Milepost Marker
- Highway
- Haul Route
- View Only Route
- Harvest Unit
- Public Land Survey Townships

DRIVING DIRECTIONS:

Unit 1-2
Follow US Route 2 east from Sultan for 1 mile to reach the intersection with the Sultan Basin Road. Turn left at the traffic light onto the Sultan Basin Road and follow north for 5.3 miles and arrive at the MC-ML gate. Proceed through the gate and follow the MC-ML for 7.3 miles and arrive at the beginning of road construction for Unit 1 and Unit 2 of the El Duderino Timber Sale.

Unit 3A-3E
6 miles up the MC-ML, take a left at the forked intersection for the BM-ML. Continue up the BM-ML for 1.7 miles and take a right at the forked intersection for the BM-26. Continue down the BM-26 for 300 feet and arrive at the start of road construction for Unit 3A of the El Duderino Timber Sale.

N

Prepared By: csce490
Accessed: 01/09/2025 13:16

Modification Date: csce490 10/8/2024

Timber Sale Cruise Report
El Duderino

Sale Name: EL DUDERINO

Sale Type: LUMP SUM

Region: NORTHWEST

District: CASCADE

Lead Cruiser: Bailey Vos

Other Cruisers:

Cruise Narrative:
Location: El Duderino is comprised of 7 harvest units and 3 ROW units. The sale area is located in sections 1 and 2 of township 28 range 08 east, sections 31, 35 and 36 of township 29 range 08 east, and section 31 of township 29 range 09 east. All units are accessed Via the MC-ML from the Sultan Basin Road.

Elevation:1760'- 3040'

Cruise Design: Units were either cruised with a 54.44 BAF or 62.5 BAF. ROW units along abandoned grades were sampled with 1/20th acre fixed radius plots. A plot intensity of approximately 1 plot per 1.2 acres was implemented over the entire sale with a 1:1 cruise/count sample. Bole height was measured with a Relaskop/ laser and taken to a 5" or 6" top or break point (40% of diameter at 16 feet). Trees were segmented into common west-side log lengths and defect was observed at each cruise plot.

Timber Quality: El Duderino is a higher elevation, white wood-dominated sale. During my cruise, I picked up 3,659 MBF of WH and an additional 249 MBF of SF. The Western Hemlock had the typical defects we see at this elevation: broken and forked tops, butt rot, and sinuosity. I observed the occasional frost crack in the Silver Fir. Additionally, 1,337 MBF of DF was picked up. Some stems may meet high-quality specifications. Due to steep slopes and harvesting conditions, I avoided giving the DF HQ grades. The defects I observed in the DF were knotty boles, spike knots, and forked stems. A few pockets of RA and RC throughout the sale produced 69 MBF of RA and 49 MBF of RC.

Overall timber quality on the sale is good, with only minor amounts of defect observed throughout.

Logging Conditions: The tops of the harvest units start off mellow before breaking of a very steep slope. The ground is extremely steep in some areas and has a relatively high amount of rock. Steep and rocky conditions may result in lower recovery on some stems.

Timber Sale Notice Volume (MBF)

				MBF Volume by Grade				
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw	Utility
WH	15.8			3,659	1,701	1,650	290	19
DF	22.0	9.0		1,337	1,013	278	42	5
SF	17.2			249	93	134	21	
RA	14.5			69		17	52	
RC	13.6			49		18	31	
ALL	16.8	9.0		5,363	2,807	2,097	436	24

Timber Sale Notice Weight (tons)

	Tons by Grade				
Sp	All	2 Saw	3 Saw	4 Saw	Utility
WH	30,412	12,845	14,657	2,788	123
DF	8,981	6,345	2,166	395	76
SF	1,906	614	1,118	174	
RA	557		119	437	
RC	520		178	342	
ALL	42,376	19,804	18,238	4,136	198

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 (%)
364.6	3.7	143.7	1.7	52,634	3.7

Timber Sale Unit Cruise Design

Unit	Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
EL DUDERINO U1	B1C: VR, 1 BAF (54.44) Measure/ Count Plots, Sighting Ht = 4.5 ft	30.0	31.8	25	13	0
EL DUDERINO U2	B1C: VR, 1 BAF (54.44) Measure/ Count Plots, Sighting Ht = 4.5 ft	17.4	18.4	14	8	0
EL DUDERINO U3A	B1C: VR, 1 BAF (54.44) Measure/ Count Plots, Sighting Ht = 4.5 ft	22.4	23.7	17	10	0
EL DUDERINO U3B	FX: FR plots (20 tree / acre expansion)	1.3	1.4	1	1	0
EL DUDERINO U3C	B1C: VR, 1 BAF (62.5) Measure/ Count Plots, Sighting Ht = 4.5 ft	6.7	7.0	5	3	0
EL DUDERINO U3D	B1C: VR, 1 BAF (62.5) Measure/ Count Plots, Sighting Ht = 4.5 ft	8.6	8.9	6	3	0
EL DUDERINO U3E	B1C: VR, 1 BAF (62.5) Measure/ Count Plots, Sighting Ht = 4.5 ft	13.3	14.3	10	5	0
EL DUDERINO ROW 1	B1: VR, 1 BAF (62.5) Measure All, Sighting Ht = 4.5 ft	0.8	0.8	2	2	0
EL DUDERINO ROW 2	FX: FR plots (20 tree / acre expansion)	0.7	0.9	2	2	0
EL DUDERINO ROW 3	B1: VR, 1 BAF (62.5) Measure All, Sighting Ht = 4.5 ft	0.8	0.9	2	2	0
All		101.9	107.8	84	49	0

Timber Sale Log Grade x Sort Summary

Sp	Status	Grade	Sort	Dia	Len	BF Gross	BF Net	Defect %	Tons	MBF Net
DF	LIVE	2 SAW	Domestic	16.2	38	10,064	9,942	1.2	6,344.6	1,013.1
DF	LIVE	3 SAW	Domestic	9.7	35	2,738	2,724	0.5	2,165.7	277.6
DF	LIVE	4 SAW	Domestic	6.5	24	414	412	0.5	394.9	42.0
DF	LIVE	CULL	Cull	23.3	16	63	0	100.0	0.0	0.0
DF	LIVE	UTILITY	Pulp	7.6	40	46	46	0.0	75.9	4.7
RA	LIVE	3 SAW	Domestic	12.7	24	171	171	0.0	119.4	17.4
RA	LIVE	4 SAW	Domestic	7.8	27	509	509	0.0	437.2	51.9
RC	LIVE	3 SAW	Domestic	7.6	40	173	173	0.0	178.1	17.6
RC	LIVE	4 SAW	Domestic	6.4	30	304	304	0.0	342.1	31.0
RC	LIVE	CULL	Cull	13.4	9	87	0	100.0	0.0	0.0
SF	LIVE	2 SAW	Domestic	14.9	39	916	915	0.1	614.4	93.3
SF	LIVE	3 SAW	Domestic	8.5	37	1,325	1,318	0.5	1,118.4	134.3
SF	LIVE	4 SAW	Domestic	5.8	19	211	210	0.5	173.6	21.4
SF	LIVE	CULL	Cull	14.7	6	58	0	100.0	0.0	0.0
WH	LIVE	2 SAW	Domestic	13.9	37	16,785	16,690	0.6	12,844.7	1,700.7
WH	LIVE	3 SAW	Domestic	8.7	35	16,229	16,193	0.2	14,656.8	1,650.1
WH	LIVE	4 SAW	Domestic	6.4	24	2,906	2,841	2.2	2,788.1	289.5
WH	LIVE	CULL	Cull	16.0	12	206	0	100.0	0.0	0.0
WH	LIVE	UTILITY	Pulp	14.5	14	185	185	0.0	122.6	18.9

Timber Sale Log Sort x Diameter Bin Summary

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	5 - 7	LIVE	Domestic	6.5	29	590	0.4	550.4	60.2
DF	5 - 7	LIVE	Pulp	7.6	40	46	0.0	75.9	4.7
DF	8 - 11	LIVE	Domestic	10.2	34	2,546	0.5	2,010.1	259.4
DF	12 - 15	LIVE	Domestic	13.9	38	3,504	1.2	2,498.0	357.0
DF	16 - 19	LIVE	Domestic	18.0	39	4,013	1.0	2,485.4	408.9
DF	20+	LIVE	Domestic	22.0	40	2,426	1.6	1,361.1	247.2
DF	20+	LIVE	Cull	23.3	16	0	100.0	0.0	0.0
RA	5+	LIVE	Domestic	8.5	26	680	0.0	556.6	69.3
RC	5+	LIVE	Domestic	6.4	35	477	0.0	520.1	48.6
RC	5+	LIVE	Cull	13.4	9	0	100.0	0.0	0.0
SF	5 - 7	LIVE	Domestic	6.4	29	347	0.3	297.1	35.4
SF	8 - 11	LIVE	Domestic	9.8	37	1,158	0.4	974.3	118.0
SF	12 - 15	LIVE	Domestic	13.3	38	511	0.5	373.0	52.0
SF	12 - 15	LIVE	Cull	14.7	6	0	100.0	0.0	0.0

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
SF	16 - 19	LIVE	Domestic	18.3	38	392	0.0	244.0	40.0
SF	20+	LIVE	Domestic	24.4	32	35	0.0	18.1	3.6
WH	5 - 7	LIVE	Domestic	6.5	29	7,340	0.1	7,431.3	748.0
WH	8 - 11	LIVE	Domestic	9.8	35	11,600	0.7	9,924.8	1,182.0
WH	8 - 11	LIVE	Pulp	11.1	12	89	0.0	64.5	9.1
WH	12 - 15	LIVE	Domestic	13.2	37	12,244	0.6	9,773.8	1,247.7
WH	12 - 15	LIVE	Cull	15.0	14	0	100.0	0.0	0.0
WH	16 - 19	LIVE	Domestic	16.8	37	4,226	0.8	2,967.0	430.7
WH	16 - 19	LIVE	Pulp	17.5	16	96	0.0	58.1	9.8
WH	16 - 19	LIVE	Cull	19.1	6	0	100.0	0.0	0.0
WH	20+	LIVE	Domestic	21.6	26	313	0.0	192.7	31.9
WH	20+	LIVE	Cull	21.7	6	0	100.0	0.0	0.0

Cruise Unit Report
EL DUDERINO U1

Unit Sale Notice Volume (MBF): EL DUDERINO U1

				MBF Volume by Grade				
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw	Utility
WH	16.8			1,451	775	604	62	10
DF	18.8	9.0		352	297	40	16	
SF	19.5			122	80	42		
ALL	17.3	9.0		1,925	1,151	685	78	10

Unit Cruise Design: EL DUDERINO U1

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (54.44) Measure/Count Plots, Sighting Ht = 4.5 ft	30.0	31.8	25	13	0

Unit Cruise Summary: EL DUDERINO U1

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
WH	69	141	5.6	0
DF	17	29	1.2	1
SF	8	11	0.4	0
ALL	94	181	7.2	1

Unit Cruise Statistics: EL DUDERINO U1

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
WH	307.0	29.8	6.0	157.6	21.9	2.6	48,404	36.9	6.5
DF	63.2	113.2	22.6	186.0	32.2	7.8	11,744	117.7	23.9
SF	24.0	254.8	51.0	169.8	11.2	3.9	4,067	255.0	51.1
ALL	394.1	24.3	4.9	162.9	24.8	2.6	64,214	34.7	5.5

Unit Summary: EL DUDERINO U1

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	17	ALL	20.1	69	93	11,796	11,744	0.4	28.7	63.2	14.1	352.0
SF	LIVE	CUT	8	ALL	19.5	84	111	4,078	4,067	0.3	11.6	24.0	5.4	121.9

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
WH	LIVE	CUT	69	ALL	16.1	74	95	48,754	48,404	0.7	217.2	307.0	76.5	1,450.7
ALL	LIVE	CUT	94	ALL	16.8	74	96	64,628	64,214	0.6	257.5	394.1	96.0	1,924.5
ALL	ALL	CUT	94	ALL	16.8	74	96	64,628	64,214	0.6	257.5	394.1	96.0	1,924.5

Cruise Unit Report
EL DUDERINO U2

Unit Sale Notice Volume (MBF): EL DUDERINO U2

				MBF Volume by Grade			
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw
WH	15.6			802	350	374	78
DF	26.5			305	275	22	8
ALL	16.9			1,107	624	397	86

Unit Cruise Design: EL DUDERINO U2

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (54.44) Measure/Count Plots, Sighting Ht = 4.5 ft	17.4	18.4	14	8	0

Unit Cruise Summary: EL DUDERINO U2

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
WH	34	73	5.2	0
DF	10	20	1.4	0
ALL	44	93	6.6	0

Unit Cruise Statistics: EL DUDERINO U2

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
WH	283.9	39.9	10.7	162.1	19.1	3.3	46,025	44.3	11.2
DF	77.8	118.8	31.7	225.4	17.7	5.6	17,529	120.1	32.2
ALL	361.6	16.3	4.4	175.7	24.1	3.6	63,554	29.1	5.7

Unit Summary: EL DUDERINO U2

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	10	ALL	23.7	105	134	17,671	17,529	0.8	25.4	77.8	16.0	305.4
WH	LIVE	CUT	34	ALL	15.6	74	98	46,432	46,025	0.9	213.9	283.9	71.9	801.8
ALL	LIVE	CUT	44	ALL	16.6	77	102	64,103	63,554	0.9	239.3	361.6	87.8	1,107.1
ALL	ALL	CUT	44	ALL	16.6	77	102	64,103	63,554	0.9	239.3	361.6	87.8	1,107.1

Cruise Unit Report
EL DUDERINO U3A

Unit Sale Notice Volume (MBF): EL DUDERINO U3A

				MBF Volume by Grade				
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw	Utility
WH	14.9			438	205	165	68	
DF	20.0			138	72	54	8	5
SF	13.0			83		65	18	
RA	14.6			61		17	44	
RC	12.0			9			9	
ALL	15.3			729	277	300	147	5

Unit Cruise Design: EL DUDERINO U3A

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (54.44) Measure/Count Plots, Sighting Ht = 4.5 ft	22.4	23.7	17	10	0

Unit Cruise Summary: EL DUDERINO U3A

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
WH	32	55	3.2	0
DF	10	16	0.9	0
SF	1	12	0.7	0
RA	6	9	0.5	0
RC	2	3	0.2	0
ALL	51	95	5.6	0

Unit Cruise Statistics: EL DUDERINO U3A

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
WH	176.1	82.2	19.9	110.9	30.3	5.4	19,538	87.6	20.6
DF	51.2	109.3	26.5	120.4	34.3	10.9	6,169	114.6	28.7
SF	38.4	239.0	58.0	96.6	0.0	0.0	3,710	239.0	58.0
RA	28.8	212.4	51.5	93.9	21.0	8.6	2,707	213.5	52.2
RC	9.6	222.7	54.0	43.9	18.4	13.0	422	223.4	55.6
ALL	304.2	43.4	10.5	107.0	33.4	4.7	32,547	54.8	11.5

Unit Summary: EL DUDERINO U3A

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	10	ALL	19.0	63	79	6,311	6,169	2.2	26.0	51.2	11.8	138.2
RA	LIVE	CUT	6	ALL	14.8	50	65	2,707	2,707	0.0	24.1	28.8	7.5	60.6
RC	LIVE	CUT	2	ALL	13.3	31	41	422	422	0.0	10.0	9.6	2.6	9.5
SF	LIVE	CUT	1	ALL	13.1	54	71	3,710	3,710	0.0	41.1	38.4	10.6	83.1
WH	LIVE	CUT	32	ALL	14.2	51	70	20,531	19,538	4.8	160.2	176.1	46.7	437.6
ALL	LIVE	CUT	51	ALL	14.6	52	69	33,681	32,547	3.4	261.4	304.2	79.2	729.0
ALL	ALL	CUT	51	ALL	14.6	52	69	33,681	32,547	3.4	261.4	304.2	79.2	729.0

Cruise Unit Report
EL DUDERINO U3B

Unit Sale Notice Volume (MBF): EL DUDERINO U3B

				MBF Volume by Grade		
Sp	DBH	Rings/In	Age	All	3 Saw	4 Saw
WH	11.0			21	14	7
ALL	11.0			21	14	7

Unit Cruise Design: EL DUDERINO U3B

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
FX: FR plots (20 tree / acre expansion)	1.3	1.4	1	1	0

Unit Cruise Summary: EL DUDERINO U3B

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
WH	13	13	13.0	0
ALL	13	13	13.0	0

Unit Cruise Statistics: EL DUDERINO U3B

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
WH	170.2	0.0	0.0	96.5	14.7	4.1	16,420	14.7	4.1
ALL	170.2	0.0	0.0	96.5	14.7	4.1	16,420	14.7	4.1

Unit Summary: EL DUDERINO U3B

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
WH	LIVE	CUT	13	ALL	11.0	47	67	16,420	16,420	0.0	258.0	170.2	51.3	21.3
ALL	LIVE	CUT	13	ALL	11.0	47	67	16,420	16,420	0.0	258.0	170.2	51.3	21.3
ALL	ALL	CUT	13	ALL	11.0	47	67	16,420	16,420	0.0	258.0	170.2	51.3	21.3

Cruise Unit Report
EL DUDERINO U3C

Unit Sale Notice Volume (MBF): EL DUDERINO U3C

				MBF Volume by Grade			
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw
WH	13.8			286	79	165	42
DF	26.0			16	10	6	
ALL	14.2			303	89	171	42

Unit Cruise Design: EL DUDERINO U3C

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (62.5) Measure/Count Plots, Sighting Ht = 4.5 ft	6.7	7.0	5	3	0

Unit Cruise Summary: EL DUDERINO U3C

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
WH	23	34	6.8	0
DF	2	2	0.4	0
ALL	25	36	7.2	0

Unit Cruise Statistics: EL DUDERINO U3C

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
WH	425.0	28.3	12.7	100.3	33.5	7.0	42,623	43.9	14.5
DF	25.0	223.6	100.0	96.0	92.8	65.6	2,401	242.1	119.6
ALL	450.0	26.7	11.9	100.1	37.0	7.4	45,024	45.6	14.1

Unit Summary: EL DUDERINO U3C

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	2	ALL	26.0	81	103	3,404	2,401	29.5	6.8	25.0	4.9	16.1
WH	LIVE	CUT	23	ALL	14.2	51	69	42,623	42,623	0.0	386.5	425.0	112.8	286.4
ALL	LIVE	CUT	25	ALL	14.5	52	70	46,027	45,024	2.2	393.3	450.0	117.7	302.6
ALL	ALL	CUT	25	ALL	14.5	52	70	46,027	45,024	2.2	393.3	450.0	117.7	302.6

Cruise Unit Report
EL DUDERINO U3D

Unit Sale Notice Volume (MBF): EL DUDERINO U3D

				MBF Volume by Grade				
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw	Utility
WH	14.3			277	113	133	23	9
DF	21.8			45	35	10		
RC	13.8			33		12	22	
SF	16.2			16		15	1	
RA	13.3			8			8	
ALL	14.4			379	148	168	53	9

Unit Cruise Design: EL DUDERINO U3D

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (62.5) Measure/Count Plots, Sighting Ht = 4.5 ft	8.6	8.9	6	3	0

Unit Cruise Summary: EL DUDERINO U3D

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
WH	12	25	4.2	0
DF	1	4	0.7	0
RC	6	8	1.3	0
SF	2	2	0.3	0
RA	2	2	0.3	0
ALL	23	41	6.8	0

Unit Cruise Statistics: EL DUDERINO U3D

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
WH	260.4	73.5	30.0	124.4	28.0	8.1	32,399	78.6	31.1
DF	41.7	122.5	50.0	126.1	0.0	0.0	5,256	122.5	50.0
RC	83.3	175.4	71.6	46.5	19.3	7.9	3,877	176.4	72.0
SF	20.8	244.9	100.0	88.3	32.4	22.9	1,839	247.1	102.6
RA	20.8	244.9	100.0	42.8	36.9	26.1	891	247.7	103.4
ALL	427.1	56.6	23.1	103.6	44.0	9.2	44,261	71.7	24.9

Unit Summary: EL DUDERINO U3D

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	1	ALL	14.1	79	100	5,722	5,256	8.1	38.4	41.7	11.1	45.0
RA	LIVE	CUT	2	ALL	13.3	23	48	891	891	0.0	21.6	20.8	5.7	7.6
RC	LIVE	CUT	6	ALL	14.7	46	61	4,907	3,877	21.0	70.7	83.3	21.7	33.2
SF	LIVE	CUT	2	ALL	16.2	64	83	2,527	1,839	27.2	14.6	20.8	5.2	15.7
WH	LIVE	CUT	12	ALL	14.9	52	73	32,412	32,399	0.0	215.1	260.4	67.5	277.3
ALL	LIVE	CUT	23	ALL	14.7	52	72	46,458	44,261	4.7	360.4	427.1	111.2	378.9
ALL	ALL	CUT	23	ALL	14.7	52	72	46,458	44,261	4.7	360.4	427.1	111.2	378.9

Cruise Unit Report
EL DUDERINO U3E

Unit Sale Notice Volume (MBF): EL DUDERINO U3E

				MBF Volume by Grade			
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw
DF	21.9			480	325	146	9
WH	16.8			311	146	160	5
RC	15.0			6		6	
ALL	19.5			797	471	312	14

Unit Cruise Design: EL DUDERINO U3E

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (62.5) Measure/Count Plots, Sighting Ht = 4.5 ft	13.3	14.3	10	5	0

Unit Cruise Summary: EL DUDERINO U3E

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	19	29	2.9	0
WH	9	25	2.5	0
RC	1	1	0.1	0
ALL	29	55	5.5	0

Unit Cruise Statistics: EL DUDERINO U3E

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	181.3	61.8	19.5	199.4	21.5	4.9	36,141	65.4	20.2
WH	156.3	80.6	25.5	150.0	16.4	5.5	23,434	82.2	26.1
RC	6.3	316.2	100.0	71.7	0.0	0.0	448	316.2	100.0
ALL	343.8	27.4	8.7	174.6	27.6	5.1	60,023	38.9	10.1

Unit Summary: EL DUDERINO U3E

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	19	ALL	19.9	100	130	36,332	36,141	0.5	83.9	181.3	40.6	479.6
RC	LIVE	CUT	1	ALL	15.0	57	73	448	448	0.0	5.1	6.3	1.6	5.9

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
WH	LIVE	CUT	9	ALL	14.3	71	94	23,434	23,434	0.0	140.1	156.3	41.3	311.0
ALL	LIVE	CUT	29	ALL	16.6	81	107	60,214	60,023	0.3	229.1	343.8	83.6	796.5
ALL	ALL	CUT	29	ALL	16.6	81	107	60,214	60,023	0.3	229.1	343.8	83.6	796.5

Cruise Unit Report
EL DUDERINO ROW 1

Unit Sale Notice Volume (MBF): EL DUDERINO ROW 1

				MBF Volume by Grade			
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw
WH	16.0			43	23	19	2
SF	32.0			6	6		
ALL	16.5			50	29	19	2

Unit Cruise Design: EL DUDERINO ROW 1

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1: VR, 1 BAF (62.5) Measure All, Sighting Ht = 4.5 ft	0.8	0.8	2	2	0

Unit Cruise Summary: EL DUDERINO ROW 1

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
WH	11	11	5.5	0
SF	1	1	0.5	0
ALL	12	12	6.0	0

Unit Cruise Statistics: EL DUDERINO 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 (%)
WH	343.8	12.9	9.1	159.9	15.0	4.5	54,974	19.8	10.2
SF	31.3	141.4	100.0	258.5	0.0	0.0	8,079	141.4	100.0
ALL	375.0	0.0	0.0	168.1	21.7	6.3	63,053	21.7	6.3

Unit Summary: EL DUDERINO ROW 1

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
SF	LIVE	CUT	1	ALL	32.0	106	136	8,079	8,079	0.0	5.6	31.3	5.5	6.4
WH	LIVE	CUT	11	ALL	16.0	78	96	54,974	54,974	0.0	246.2	343.8	85.9	43.4
ALL	LIVE	CUT	12	ALL	16.5	78	97	63,053	63,053	0.0	251.8	375.0	91.5	49.8
ALL	ALL	CUT	12	ALL	16.5	78	97	63,053	63,053	0.0	251.8	375.0	91.5	49.8

Cruise Unit Report
EL DUDERINO ROW 2

Unit Sale Notice Volume (MBF): EL DUDERINO ROW 2

				MBF Volume by Grade			
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw
SF	17.1			12	7	4	1
WH	12.2			6	1	3	2
DF	12.2			1		1	1
RA	15.0			1		1	0
ALL	14.6			20	8	8	4

Unit Cruise Design: EL DUDERINO ROW 2

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
FX: FR plots (20 tree / acre expansion)	0.7	0.9	2	2	0

Unit Cruise Summary: EL DUDERINO ROW 2

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
SF	9	9	4.5	0
WH	9	9	4.5	0
DF	2	2	1.0	0
RA	1	1	0.5	0
ALL	21	21	10.5	0

Unit Cruise Statistics: EL DUDERINO 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 (%)
SF	142.8	32.0	22.6	126.3	19.3	6.4	18,040	37.4	23.5
WH	73.0	8.5	6.0	119.0	27.0	9.0	8,680	28.3	10.8
DF	16.1	141.4	100.0	105.3	26.8	19.0	1,700	143.9	101.8
RA	12.3	141.4	100.0	132.0	0.0	0.0	1,620	141.4	100.0
ALL	244.2	19.0	13.4	123.0	22.8	5.0	30,040	29.7	14.3

Unit Summary: EL DUDERINO ROW 2

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	2	ALL	12.2	55	76	1,700	1,700	0.0	19.9	16.1	4.6	1.1
RA	LIVE	CUT	1	ALL	15.0	70	87	1,620	1,620	0.0	10.0	12.3	3.2	1.1
SF	LIVE	CUT	9	ALL	17.1	70	86	18,450	18,040	2.2	89.6	142.8	34.5	11.9
WH	LIVE	CUT	9	ALL	12.2	55	75	8,680	8,680	0.0	89.9	73.0	20.9	5.7
ALL	LIVE	CUT	21	ALL	14.6	62	81	30,450	30,040	1.3	209.4	244.2	63.2	19.8
ALL	ALL	CUT	21	ALL	14.6	62	81	30,450	30,040	1.3	209.4	244.2	63.2	19.8

Cruise Unit Report
EL DUDERINO ROW 3

Unit Sale Notice Volume (MBF): EL DUDERINO ROW 3

				MBF Volume by Grade			
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw
WH	16.6			24	9	13	2
SF	16.3			10		9	1
ALL	16.5			34	9	22	3

Unit Cruise Design: EL DUDERINO ROW 3

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1: VR, 1 BAF (62.5) Measure All, Sighting Ht = 4.5 ft	0.8	0.9	2	2	0

Unit Cruise Summary: EL DUDERINO ROW 3

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
WH	9	9	4.5	0
SF	3	3	1.5	0
ALL	12	12	6.0	0

Unit Cruise Statistics: EL DUDERINO ROW 3

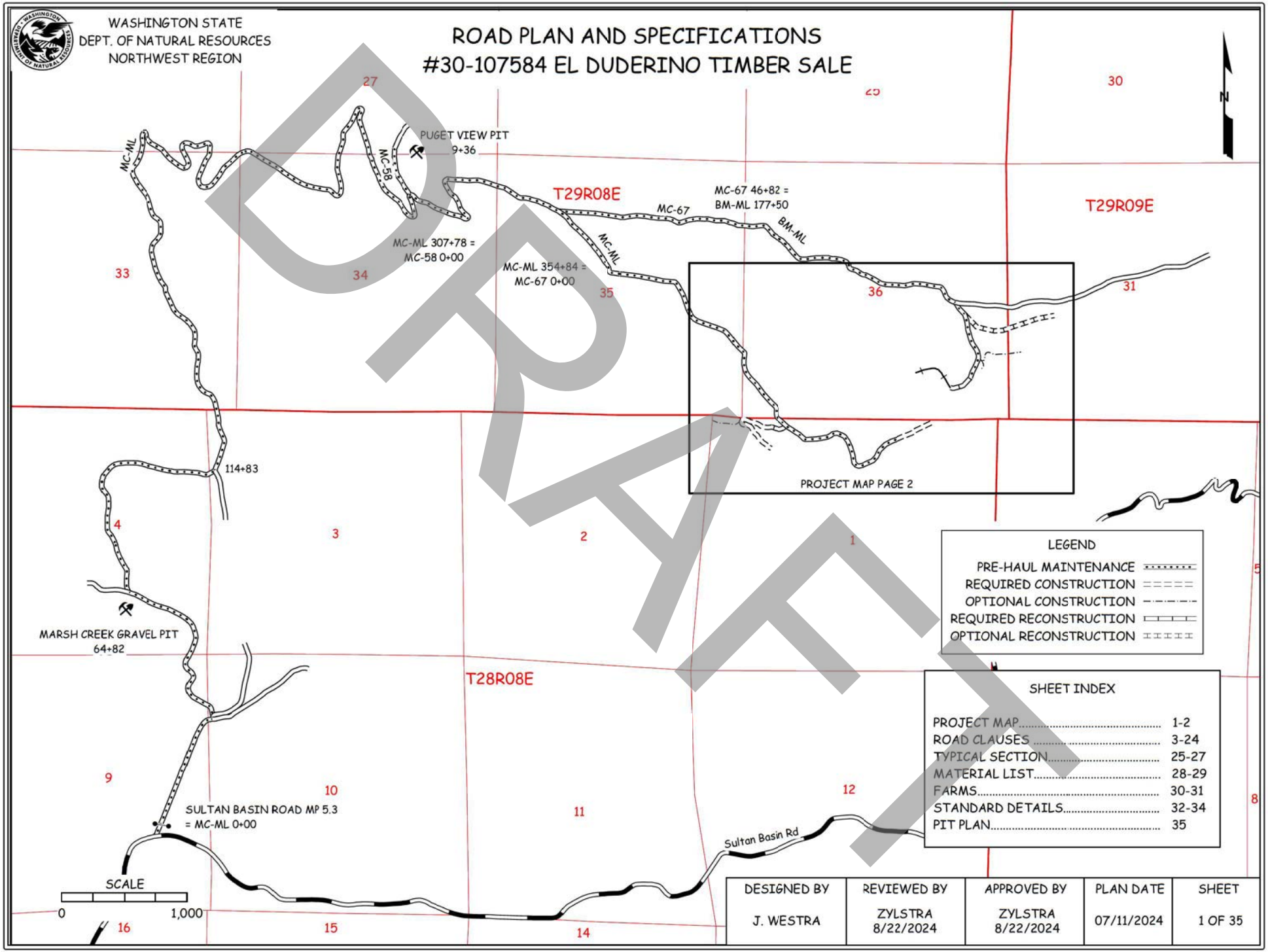
Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
WH	281.3	15.7	11.1	105.0	45.8	15.3	29,519	48.4	18.9
SF	93.8	47.1	33.3	130.8	19.2	11.1	12,267	50.9	35.1
ALL	375.0	0.0	0.0	111.4	39.5	11.4	41,786	39.5	11.4

Unit Summary: EL DUDERINO ROW 3

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
SF	LIVE	CUT	3	ALL	16.3	73	98	12,664	12,267	3.1	64.7	93.8	23.2	9.9
WH	LIVE	CUT	9	ALL	16.6	58	72	30,720	29,519	3.9	187.1	281.3	69.0	23.9
ALL	LIVE	CUT	12	ALL	16.5	62	79	43,384	41,786	3.7	251.8	375.0	92.3	33.8
ALL	ALL	CUT	12	ALL	16.5	62	79	43,384	41,786	3.7	251.8	375.0	92.3	33.8

WASHINGTON STATE
DEPT. OF NATURAL RESOURCES
NORTHWEST REGION

ROAD PLAN AND SPECIFICATIONS
#30-107584 EL DUDERINO TIMBER SALE



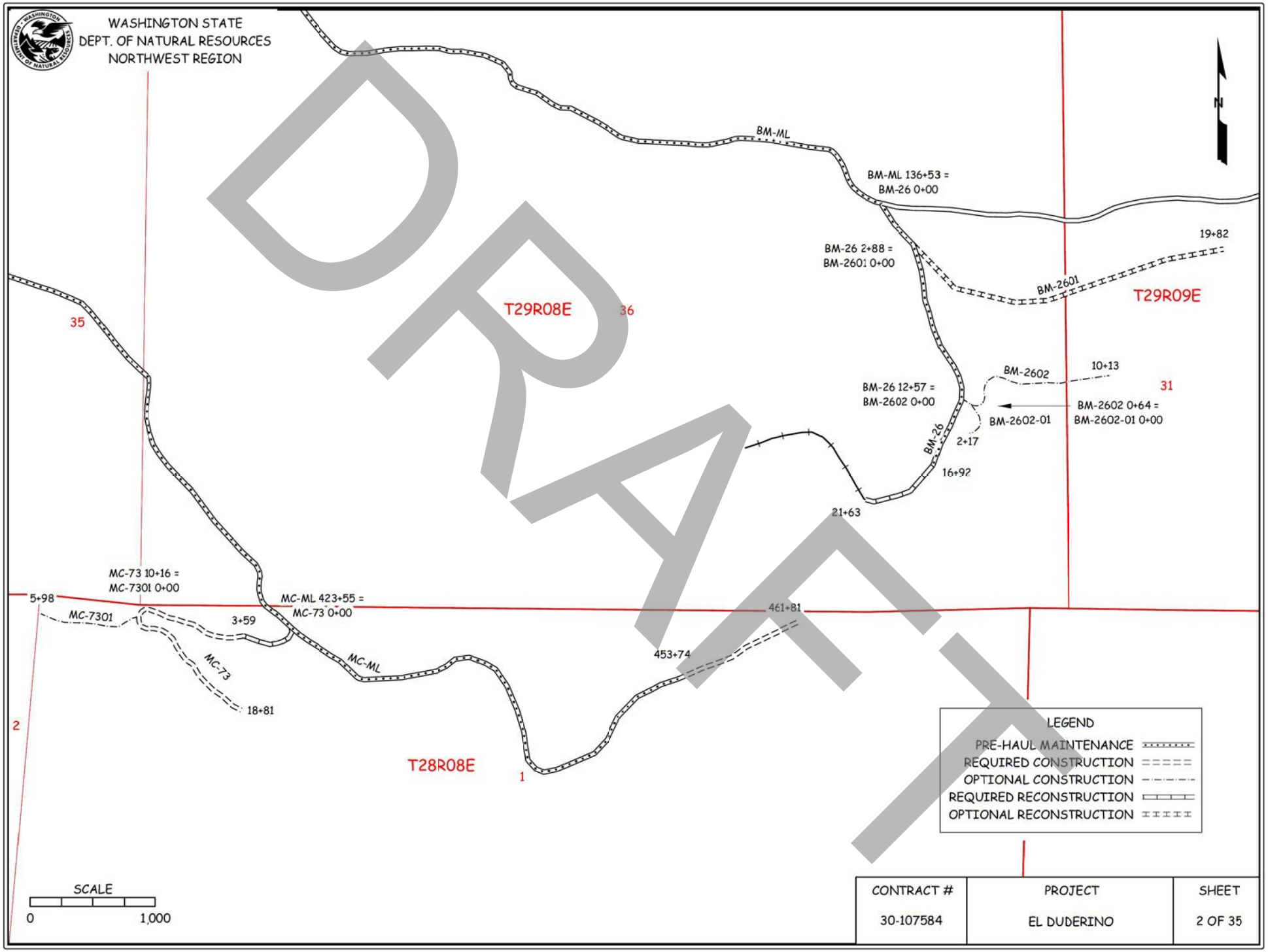
LEGEND

PRE-HAUL MAINTENANCE	
REQUIRED CONSTRUCTION	
OPTIONAL CONSTRUCTION	
REQUIRED RECONSTRUCTION	
OPTIONAL RECONSTRUCTION	

SHEET INDEX

PROJECT MAP	1-2
ROAD CLAUSES	3-24
TYPICAL SECTION	25-27
MATERIAL LIST	28-29
FARMS	30-31
STANDARD DETAILS	32-34
PIT PLAN	35

DESIGNED BY	REVIEWED BY	APPROVED BY	PLAN DATE	SHEET
J. WESTRA	ZYLSTRA 8/22/2024	ZYLSTRA 8/22/2024	07/11/2024	1 OF 35



STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

EL DUDERINO TIMBER SALE ROAD PLAN
SNOHOMISH COUNTY
CASCADE DISTRICT
NORTHWEST REGION

AGREEMENT NO.: 30-107584 STAFF ENGINEER: J. WESTRA

DATE: JULY 11, 2024

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
BM-ML	136+53 to 177+50	PREHAUL MAINTENANCE
BM-26	0+00 to 16+92	PREHAUL MAINTENANCE
BM-26	16+92 to 21+63	RECONSTRUCTION*
MC-ML	0+00 to 453+74	PREHAUL MAINTENANCE
MC-ML	453+74 to 461+81	CONSTRUCTION
MC-58	0+00 to 9+36	PREHAUL MAINTENANCE
MC-67	0+00 to 46+82	PREHAUL MAINTENANCE
MC-73	0+00 to 3+59	RECONSTRUCTION*
MC-73	3+59 to 18+81	CONSTRUCTION

*Reconstruction is on abandoned road grades.

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
BM-2601	0+00 to 19+82	RECONSTRUCTION*
BM-2602	0+00 to 10+13	CONSTRUCTION
BM-2602-01	0+00 to 2+17	CONSTRUCTION
MC-7301	0+00 to 5+98	CONSTRUCTION

*Reconstruction is on abandoned road grades.

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, 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
BM-ML	136+53 to 177+50	Brushing, Grading
BM-26	0+00 to 16+92	Brushing, Grading, Culvert Re-installation
MC-ML	0+00 to 64+82	Brushing, Grading
MC-ML	64+82 to 114+83	Brushing, Grading, Application of 3-Inch Minus Pitrun
MC-ML	114+83 to 453+74	Brushing, Grading
MC-58	0+00 to 9+36	Brushing, Grading
MC-67	0+00 to 46+82	Brushing, Grading

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

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.

1-4 ROAD TOLERANCES

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

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

1-6 ORDER OF PRECEDENCE

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

1. Addenda.
2. Road Plan Clauses.
3. Typical Section Sheet.
4. Standard Lists.
5. 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
- Rock pit conditions upon completion of construction

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

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.

2-4 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

3-1 BRUSHING

On Prehaul Maintenance roads, Purchaser shall cut vegetative material up to 6 inches in diameter, including limbs, as shown on the BRUSHING DETAIL. Brushing must be achieved by mechanical cutting of brush, trees, and branches. Root systems and stumps of cut vegetation may not be disturbed unless directed by the Contract Administrator. Purchaser shall remove brushing debris from the road surface, ditchlines, and culvert inlets and outlets.

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.

5-7 USED CULVERT MATERIAL

On temporary roads, Purchaser may install used culverts. All other roads must have new culverts installed. Purchaser shall obtain approval from the Contract Administrator for the quality of the used culverts before installation. Culverts must meet the specifications in Clauses 10-15 through 10-24.

5-12 UNUSED MATERIALS STATE PROPERTY

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

5-15 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.

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
MARSH CREEK GRAVEL PIT	64+82 of the MC-ML	3-Inch Minus Pitrun
PUGET VIEW PIT	9+36 of the MC-58	3-Inch Minus Ballast

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.

6-10 ROCK SOURCE DEVELOPMENT PLAN BY STATE

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

Source	Rock Type
PUGET VIEW PIT	3-Inch Minus Ballast

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
MARSH CREEK GRAVEL PIT	3-Inch Minus Pitrun

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.

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.

6-41 3-INCH MINUS PIT RUN ROCK

No rock may be larger than 3 inches in any dimension. Pit Run rock may not contain more than 5 percent by weight of organic debris, dirt, and trash. Rock may require processing to meet this specification.

Processing may include using a jaw crusher to break rock over 3 Inches or a grizzly screen separator. If a screen is used, Purchaser shall stockpile oversize rock in the pit out of the way of vehicle travel.

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 8 – EROSION CONTROL

8-2 PROTECTION FOR EXPOSED SOIL

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

8-15 REVEGETATION

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

8-16 REVEGETATION SUPPLY

The Purchaser shall provide the seed and fertilizer.

8-17 REVEGETATION TIMING

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

8-18 PROTECTION FOR SEED

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

8-19 ASSURANCE FOR SEEDED AREA

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

8-25 GRASS SEED

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

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

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.

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	Comments
MC-ML	453+74 to 461+81	Remnant log cribbing to remain in stream upon culvert removal. See comment in MATERIALS LIST.

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.

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.

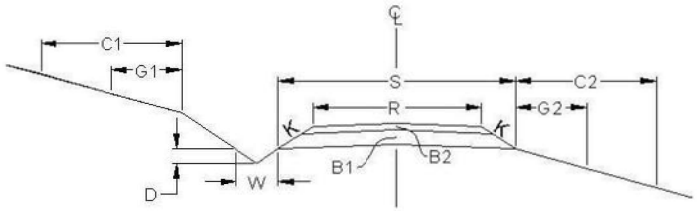
10-24 GAUGE AND CORRUGATION

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

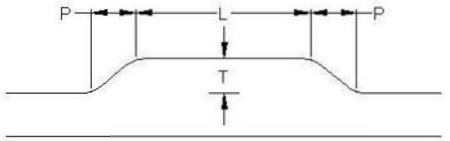
Diameter	Gage	Corrugation
18"	16 (0.064")	$2\ ^{2}/_{3}$" X $^{1}/_{2}$"
24" to 48"	14 (0.079")	$2\ ^{2}/_{3}$" X $^{1}/_{2}$"
54" to 96"	14 (0.079")	3" X 1"

ROAD #		BM-ML	BM-26	BM-26	BM-2601
REQUIRED / OPTIONAL		REQUIRED	REQUIRED	REQUIRED	OPTIONAL
CONSTRUCT / RECONSTRUCT		PREHAUL	PREHAUL	RECONSTRUCT	RECONSTRUCT
TOLERANCE CLASS (A/B/C)		C	C	C	C
STATION / MP TO		136+53	0+00	16+92	0+00
STATION / MP		177+50	16+92	21+63	19+82
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	--	--	--	50
TURNOUT WIDTH	T	--	--	--	10
TURNOUT TAPER	P	--	--	--	25
GRUBBING	G1	--	--	5	5
	G2	--	--	5	5
CLEARING	C1	--	--	10	10
	C2	--	--	10	10
ROCK FILLSLOPE	K:1	--	--	--	1 ½ : 1
❖ BALLAST DEPTH	B1	--	--	--	18
CUBIC YARDS / STATION		--	--	--	114
➢ TOTAL CY BALLAST		--	--	--	2,260
❖ SURFACING DEPTH	B2	--	--	--	--
CUBIC YARDS / STATION		--	--	--	--
➢ TOTAL CY SURFACING		--	--	--	--
➢ TOTAL CUBIC YARDS		--	--	--	2,260
SUBGRADE WIDTH	S	12	12	12	16.5
BRUSHCUT (Y/N)		Y	Y	N	N
BLADE, SHAPE, & DITCH (Y/N)		Y	Y	N	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)
3-Inch Minus Pitrun	850
3-Inch Minus Ballast	6,995
Rip Rap	205

ROAD #		BM-2602	BM-2602-01	MC-ML	MC-ML	MC-ML	MC-ML	MC-58
REQUIRED / OPTIONAL		OPTIONAL	OPTIONAL	REQUIRED	REQUIRED	REQUIRED	REQUIRED	REQUIRED
CONSTRUCT / RECONSTRUCT		CONSTRUCT	CONSTRUCT	PREHAUL	PREHAUL	PREHAUL	CONSTRUCT	PREHAUL
TOLERANCE CLASS (A/B/C)		C	C	C	C	C	C	C
STATION / MP TO		0+00	0+00	0+00	64+82	114+83	453+74	0+00
STATION / MP		10+13	2+17	64+82	114+83	453+74	461+81	9+36
ROAD WIDTH	R	12	12	12	12	12	12	12
CROWN (INCHES @ C/L)		3	3	3	3	3	3	3
DITCH WIDTH	W	3	3	3	3	3	3	3
DITCH DEPTH	D	1	1	1	1	1	1	1
TURNOUT LENGTH	L	50	--	--	--	--	50	--
TURNOUT WIDTH	T	10	--	--	--	--	10	--
TURNOUT TAPER	P	25	--	--	--	--	25	--
GRUBBING	G1	5	5	--	--	--	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		1,155	245	--	--	--	920	--
❖ SURFACING DEPTH	B2	--	--	--	3	--	--	--
CUBIC YARDS / STATION		--	--	--	17	--	--	--
➢ TOTAL CY SURFACING		--	--	--	850	--	--	--
➢ TOTAL CUBIC YARDS		1,155	245	--	850	--	920	--
SUBGRADE WIDTH	S	16.5	16.5	12	12	12	16.5	12
BRUSHCUT (Y/N)		N	N	Y	Y	Y	N	Y
BLADE, SHAPE, & DITCH (Y/N)		N	N	Y	Y	Y	N	Y

ROAD #		MC-67	MC-73	MC-73	MC-7301			
REQUIRED / OPTIONAL		REQUIRED	REQUIRED	REQUIRED	OPTIONAL			
CONSTRUCT / RECONSTRUCT		PREHAUL	RECONSTRUCT	CONSTRUCT	CONSTRUCT			
TOLERANCE CLASS (A/B/C)		C	C	C	C			
STATION / MP TO		0+00	0+00	3+59	0+00			
STATION / MP		46+82	3+59	18+81	5+98			
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	--	--	50	--			
TURNOUT WIDTH	T	--	--	10	--			
TURNOUT TAPER	P	--	--	50	--			
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			
❖ BALLAST DEPTH	B1	--	--	18	18			
CUBIC YARDS / STATION		--	--	114	114			
➢ TOTAL CY BALLAST		--	--	1,735	680			
❖ SURFACING DEPTH	B2	--	--	--	--			
CUBIC YARDS / STATION		--	--	--	--			
➢ TOTAL CY SURFACING		--	--	--	--			
➢ TOTAL CUBIC YARDS		--	--	1,735	680			
SUBGRADE WIDTH	S	12	12	16.5	16.5			
BRUSHCUT (Y/N)		Y	N	N	N			
BLADE, SHAPE, & DITCH (Y/N)		Y	N	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"
BM-26	3+06	18	30	XX	--	--	2	3	L	NT	C	Purchaser may move and re-install the culvert at the intersection of the BM-26 and BM-2601
BM-26	19+34	18	30	XX	--	--	2	3	L	NT	C	
BM-2601	3+03	18	30	XX	--	--	2	3	L	NT	C	
BM-2601	4+12	18	30	XX	--	--	2	3	L	NT	C	
BM-2601	6+24	18	30	XX	--	--	2	3	L	NT	C	
BM-2601	7+87	18	30	XX	--	--	2	3	L	NT	C	
BM-2601	8+54	24	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
BM-2601	10+71	18	30	XX	--	--	2	3	L	NT	C	
BM-2601	11+55	24	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
BM-2601	13+03	18	30	XX	--	--	2	3	L	NT	C	
BM-2601	14+81	24	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
BM-2601	16+06	18	40	XX	--	--	2	3	L	NT	C	
BM-2601	16+79	24	30	XX	--	--	2	3	L	NT	C	TYPE 5 STREAM
BM-2601	18+19	18	30	XX	--	--	2	3	L	NT	C	
BM-2602	2+14	18	30	XX	--	--	2	3	L	NT	C	
BM-2602	2+60	30	30	XX	--	--	3	7	L/H	NT	C	TYPE 4 STREAM
BM-2602	5+07	18	30	XX	--	--	2	3	L	NT	C	
BM-2602	7+00	18	30	XX	--	--	2	3	L	NT	C	
BM-2602	7+49	36	46	XX	--	--	5	10	L/H	NT	C	TYPE 4 STREAM
BM-2602	9+40	18	30	XX	--	--	2	3	L	NT	C	

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

MATERIALS LIST

LOCATION		CULVERT			DWNSPT		RIPRAP			FILL TYPE	TOLERANCE	REMARKS
ROAD #	STATION	DIAMETER	LENGTH	TYPE	LENGTH	TYPE	INLET	OUTLET	TYPE			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"
MB-2602-01	0+86	18	30	XX	--	--	2	3	L	NT	C	
MC-ML	455+53	18	30	XX	--	--	2	3	L	NT	C	
MC-ML	458+19	18	30	XX	--	--	2	3	L	NT	C	
MC-ML	458+69	48	30	XX	--	--	3	7	L/H	NT	C	TYPE 4 STREAM. REMNANT LOG PUNCHEON IN CHANNEL. PURCHASER TO LEAVE THE BOTTOM LAYER OF LOG PUNCHEON IN PLACE AND INSTALL CULVERT ON TOP OF LOGS. BOTTOM LAYER OF LOG PUNCHEON TO REMAIN IN STREAM UPON CULVERT REMOVAL.
MC-ML	459+37	18	30	XX	--	--	2	3	L	NT	C	
MC-73	3+97	18	30	XX	--	--	2	3	L	NT	C	
MC-73	6+50	18	30	XX	--	--	2	3	L	NT	C	
MC-73	7+13	36	45	XX	--	--	3	7	L	NT	C	TYPE 4 STREAM
MC-73	12+60	18	30	XX	--	--	2	3	L	NT	C	
MC-73	13+18	36	45	XX	--	--	3	7	L	NT	C	TYPE 4 STREAM
MC-73	15+19	18	30	XX	--	--	2	3	L	NT	C	
MC-73	17+30	18	30	XX	--	--	2	3	L	NT	C	
MC-7301	0+40	18	30	XX	--	--	2	3	L	NT	C	
MC-7301	1+92	18	30	XX	--	--	2	3	L	NT	C	
MC-7301	4+54	18	30	XX	--	--	2	3	L	NT	C	

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

FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS

Cuts and Fills

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

Surface

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

Drainage

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

FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS

Preventative Maintenance

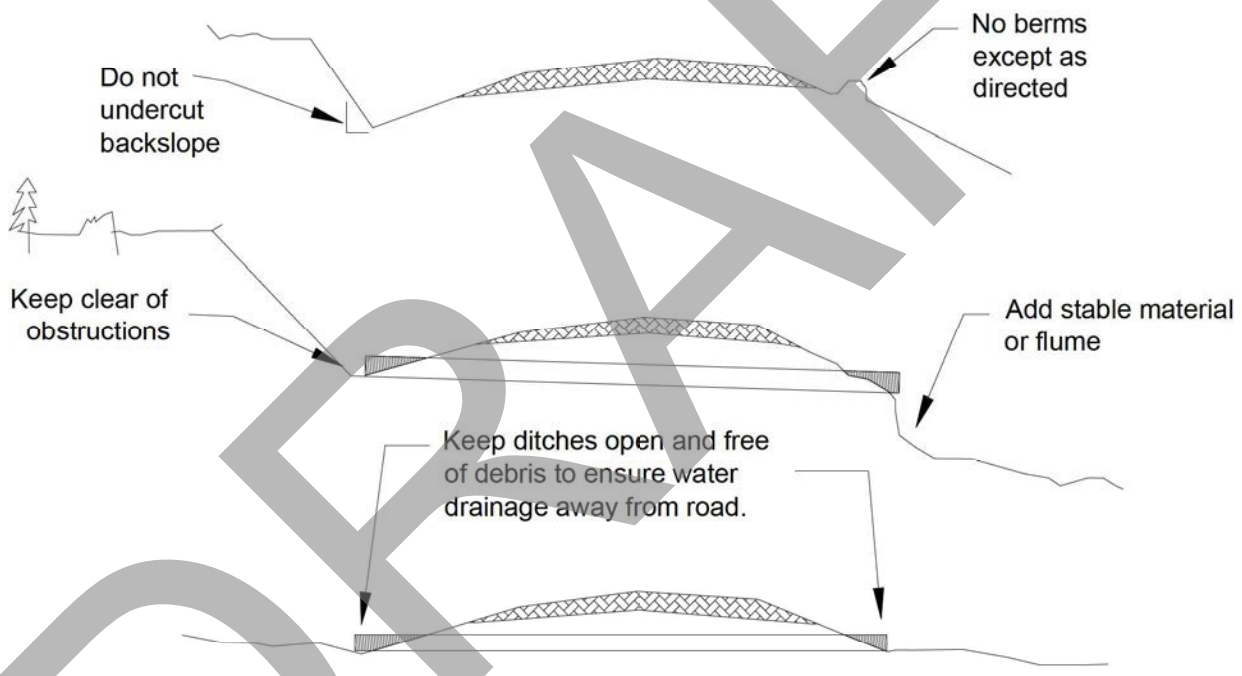
- Perform preventative maintenance work to safeguard against storm damage, such as blading to ensure correct runoff, ditch and culvert cleaning, and waterbar maintenance.

Termination of Use or End of Season

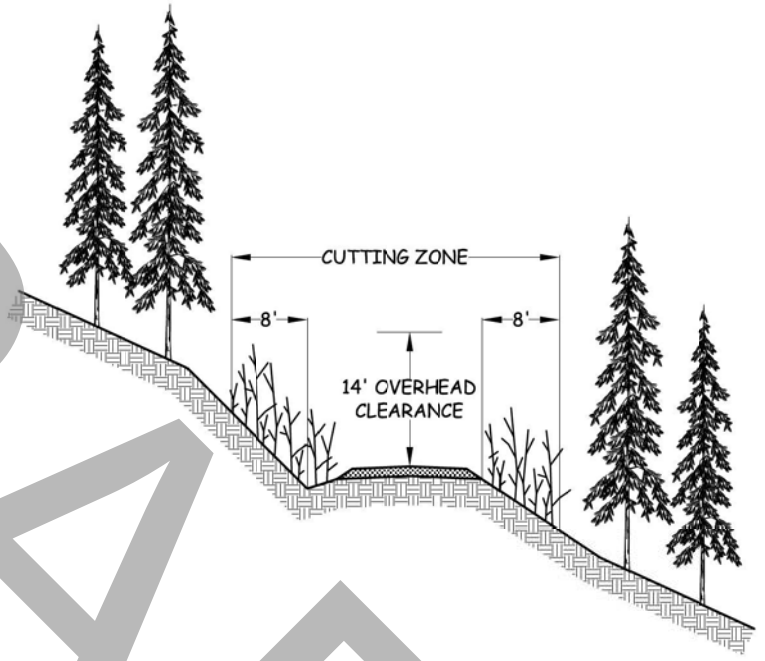
- At the conclusion of logging operations, ensure all conditions of these specifications have been met.

Debris

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



ROAD BRUSHING DETAILS



SPECIFICATIONS

BRUSH SHALL BE CUT ON THE ROAD SURFACE AND 8 ft. BACK FROM ROAD DITCH AND OUTSIDE EDGE OF RUNNING SURFACE.

ON THE INSIDE OF SWITCHBACKS AND TIGHT CURVES, BRUSH SHALL BE CUT BACK 16 ft. FOR VISIBILITY.

ON TRUCK TURNOUTS, BRUSH SHALL BE CUT 8 ft. BACK FROM OUTSIDE EDGE.

BRUSH SHALL BE CUT TO PROVIDE AN OVERHEAD CLEARANCE OF 14 ft. ABOVE THE ROAD RUNNING SURFACE.

BRUSH SHALL BE CUT TO WITHIN 6 in. OF THE GROUND.

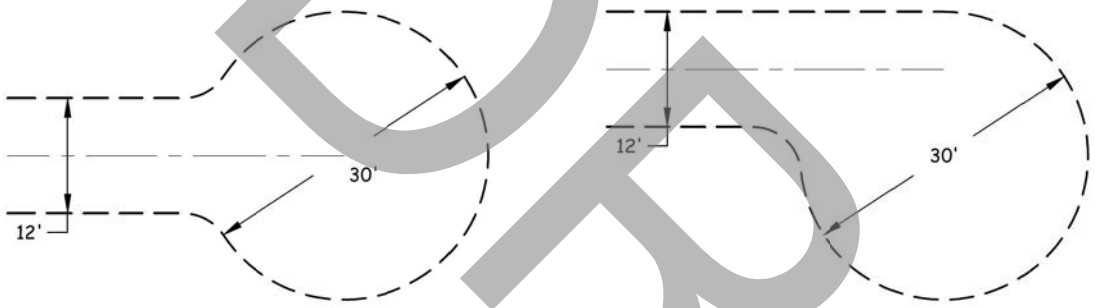
SLASH SHALL BE REMOVED FROM CUT SLOPES ABOVE THE ROAD AND SCATTERED ON EMBANKMENT SLOPES.

DITCHES SHALL BE CLEARED OF WOODY DEBRIS.

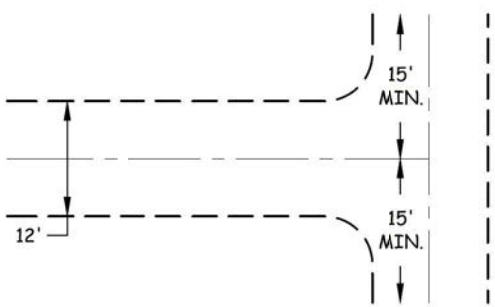
CULVERT INLETS AND OUTLETS SHALL BE CLEANED A MINIMUM DISTANCE OF TWO PIPE DIAMETERS AWAY.

CONTRACT #	PROJECT	SHEET
30-107584	EL DUDERINO	32 OF 35

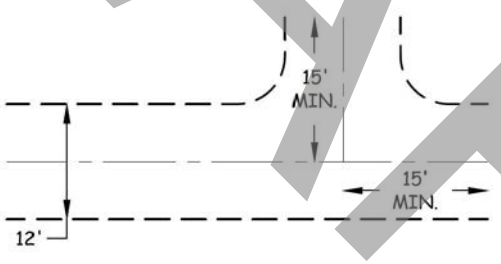
TURNAROUND DETAILS



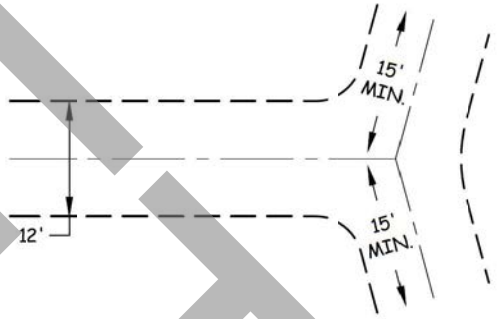
CUL-DE-SAC



HAMMERHEAD



3-POINT SIDE



3-POINT WYE

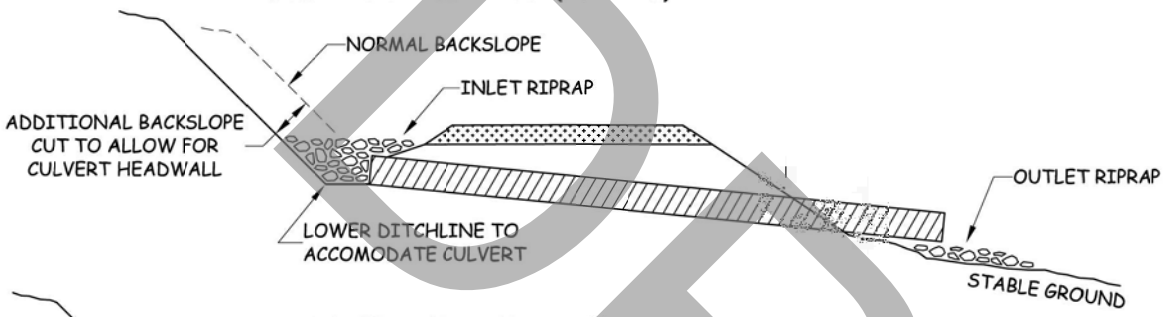
TURNAROUND TYPE AND TURNAROUND LOCATION ARE SUBJECT TO THE APPROVAL OF THE CONTRACT ADMINISTRATOR.

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

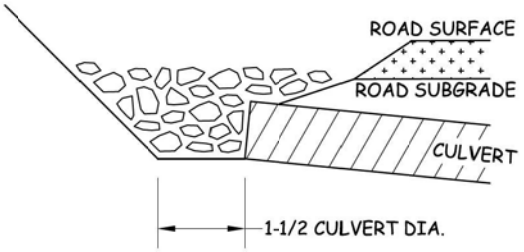
CONTRACT #	PROJECT	SHEET
30-107584	EL DUDERINO	33 OF 35

CULVERT AND DRAINAGE SPECIFICATIONS

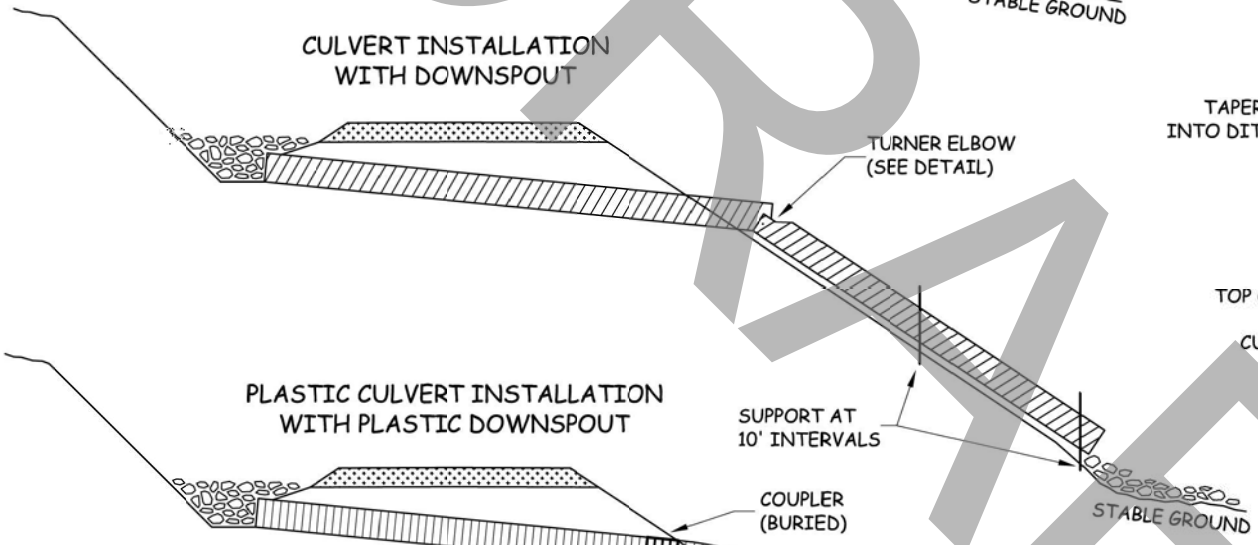
CULVERT INSTALLATION (TYPICAL)



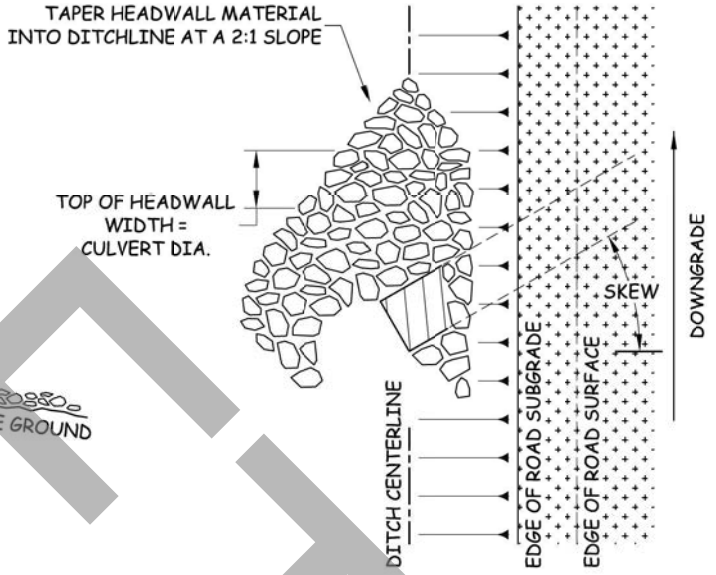
CULVERT HEADWALL - SECTION VIEW



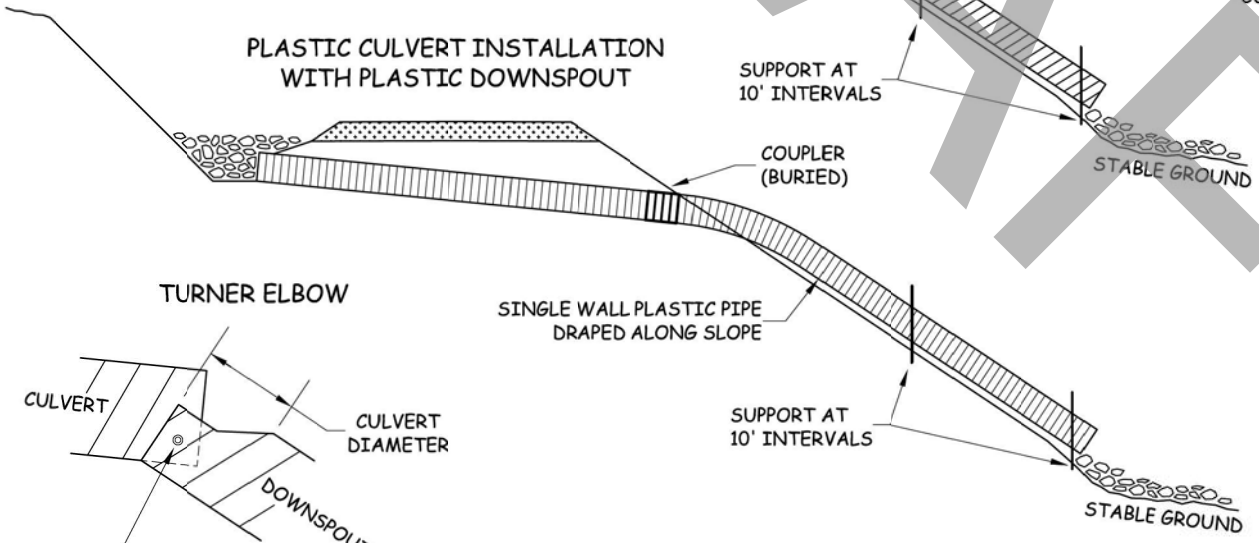
CULVERT INSTALLATION WITH DOWNSPOUT



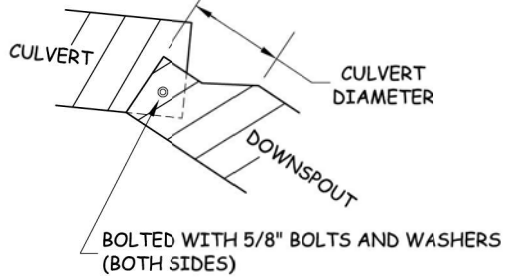
CULVERT HEADWALL - PLAN VIEW



PLASTIC CULVERT INSTALLATION WITH PLASTIC DOWNSPOUT



TURNER ELBOW



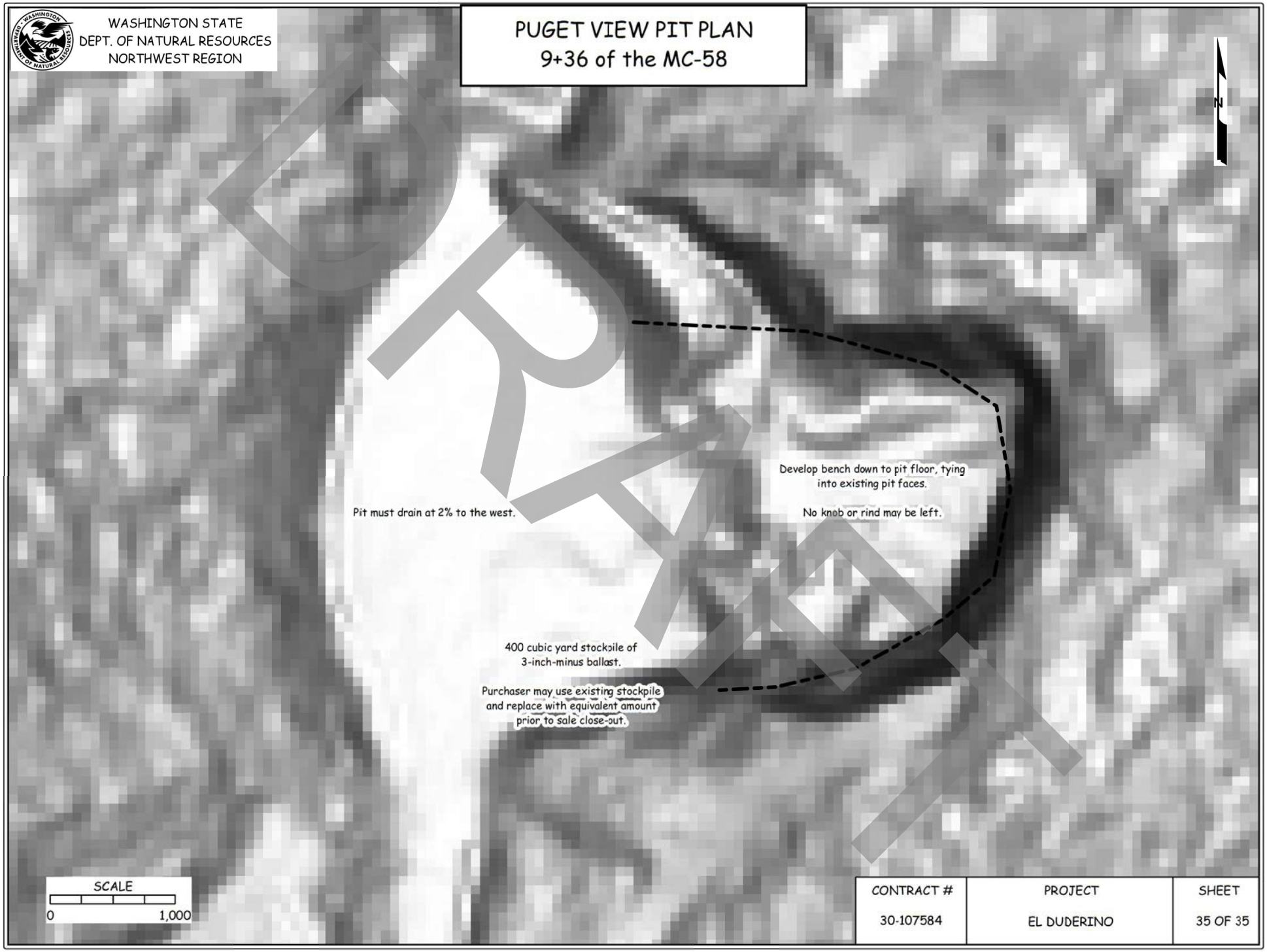
HEADWALL NOTE:

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

CONTRACT #	PROJECT	SHEET
30-107584	EL DUDERINO	34 OF 35

WASHINGTON STATE
DEPT. OF NATURAL RESOURCES
NORTHWEST REGION

PUGET VIEW PIT PLAN
9+36 of the MC-58



CONTRACT #	PROJECT	SHEET
30-107584	EL DUDERINO	35 OF 35

SUMMARY - Road Development Costs

REGION: NW
DISTRICT: Cascade

SALE/PROJECT NAME: El Duderino CONTRACT #: 30-107584

ROAD NUMBERS:	BM-2602, BM-2602-01, MC-ML, MC-73, MC-7301	BM-26, BM-2601, MC-73	BM-ML, BM-26, MC-ML, MC-58, MC-67
ROAD STANDARD:	Construction	Reconstruction	Pre-Haul Maintenance
NUMBER OF STATIONS:	41.57	28.12	567.81
CLEARING & GRUBBING:	$23,705	$7,123	$0
EXCAVATION & FILL:	$36,885	$10,787	$0
MISC. MAINTENANCE:	$0	$0	$26,498
ROAD ROCK:	$92,936	$45,443	$6,803
ROCK STOCKPILE PROD:	$0	$0	$0
CULVERTS & FABRIC:	$22,408	$9,481	$200
STRUCTURES:	$0	$0	$0
TOTAL COSTS:	$175,934	$72,834	$33,500
COST PER STATION:	$4,232	$2,590	$59
ROAD DEACTIVATION & ABANDONMENT COSTS:		$928	
MOBILIZATION:		$5,437	

TOTAL (All Roads) = $283,196
SALE VOLUME MBF = 2870
TOTAL $/MBF = $98.67

Compiled by: J. Westra Date: 7/11/2024