Road Summary Sheet

Willamette National Forest
Timber Sale: **Blue Thin**

Prepared By: K.Gabriel
Date: **6/10/2011**
Edited by

Road No.	Road Name	TRAFFIC SERVICE LEVEL	MAINT. LEVEL	Design Class	Approx. Mi./km	C/R *	Specified Road Cost	Required Completion Date
1500	Blue River	B	5/4	DL-24-35	5.19- 8.35	R	$63,447.40	10/31/2012
1500130		D	4/2	SL-12-20	4.61- 7.42	R	$24,624.35	10/31/2012
1500134		D	2	SL-12-15	0.60 - 0.97	R	$3,164.66	10/31/2012
1500500	Ore Ridge	D	2	SL-12-20	1.33 - 2.14	R	$20,110.22	10/31/2012
1500505		D	2	SL-12-15	0.45 - 0.72	R	$1,588.28	10/31/2012

* C=Construction
R=Reconstruction

Summary of Road Construction/Reconstruction Costs

Specified Roads	$112,934.91
Share Cost Roads	$0.00
Road Engineering Reconst. Deposit Cost	$15,293.00
Total Road Costs	$128,227.91
Contributed Funds	$0.00
Total Timber Sale Road Costs	$128,227.91

Total Estimated Road Construction Cost

Public Works Cost (opted sales)	$134,378.09

Attachments

Schedule of Items	5 pages
Specification Lists	2 pages for Specified Roads, 1 page for TS haul route maintenance
FS Supplemental Specs	49 pages
Road Maintenance T-Specs	12 pages
Plans	30 sheets

* Applicable to Specified Roads only.

Road Completion Date Worksheet

Blue Thin Thin Timber Sale

Total Number of Construction Days Needed = 100
Operating Season From A - Provision June 1 through Oct. 31

Event	Calendar Days	Date
Sale Date		6/15/2011
P.W. Conversion (Engrg 10 Days)	40	
Days Due to Inaccessibility	0	
Bid Opening Date		7/25/2011
Advertisement Period	30	
Bid Closing Date		8/24/2011
Bid Review	30	
Bonding, EEO, & MISC.	20	
Contract Award Date		10/13/2011
Grace Period (INACCESSIBLE)	0	
Start Work Date		6/1/2012
Normal Construction Period	150	
End Normal Construction Period		10/31/2012
Winter Shutdown Period	0	
Start of Normal Construction Period		6/1/2012
Normal Construction Period		150
Road Completion Date		**10/31/2012** (To C5.13#)

Blue Thin T.S.
ENGINEER'S ESTIMATE

5/23/2011
Assumes 2% per annum inflation rate.
Costs projected to midpoint of construction period, 2011, 9 months from 10/28/2010

Note: This is an in-house tool,
NOT PART OF THE CONTRACT. /s/

1.02 factor

	1500								
PAY ITEM	DESCRIPTION	PAY UNIT	QTY	P.W. Unit Price	Adjusted PW Unit Cost	Public Works Total Cost	T.S.Unit Price	ADJUSTED T.S UNIT COST	Timber Sale Total Cost
15101	Mobilization	LS	1	$21,608.44	$22,364.74	$22,364.74	$18,688.15	$19,342.24	$19,342.24
20207	Removal of individual trees, disposal of tops and limbs (f), logs (j), stumps (f)	Each	7	$93.01	$94.87	$664.09	$68.80	$70.18	$491.26
20253	Removal of individual trees, miscellaneous: disposal of tops and limbs (f) & logs (f)	Each	15	$148.27	$151.24	$2,268.60	$103.47	$105.54	$1,583.10
20358A	Removal of corrugated metal pipe, dosposal method (a)	Each	1	$415.62	$423.93	$423.93	$320.02	$326.42	$326.42
20301B	Removal of rootwad	Each	1	$116.51	$118.84	$118.84	$57.47	$58.62	$58.62
20304	Removal of old asphalt	Lump sum	1	$757.90	$773.06	$773.06	$653.13	$666.19	$666.19
20419A	Drainage excavation, type culvert outlet ditch	Foot	95	$5.52	$5.63	$534.85	$4.01	$4.09	$388.55
20420	Drainage excavation, type catchbasin	Each	7	$86.71	$88.44	$619.08	$64.13	$65.41	$457.87
20479	Drainage excavation, type roadway ditch	Mile	0.44	$1,596.21	$1,628.13	$716.38	$1,188.50	$1,212.27	$533.40
25101	Placed riprap, class 4	Cubic Yard*	3	$137.24	$139.98	$419.94	$100.32	$102.33	$306.99
30359	Roadway reconditioning, compaction method B	Mile	0.43	$1,368.33	$1,395.70	$600.15	$1,071.53	$1,092.96	$469.97
32232	Haul and place stockpiled aggregate, compaction method B	Cubic Yard*	15	$29.97	$30.57	$458.55	$21.18	$21.60	$324.00
40451	ODOT 3/8- inch dense graded HMAC, level II, asphalt cement PG 64 - 22	Ton	12	$204.00	$208.08	$2,496.96	$185.00	$188.70	$2,264.40
43007	Skin patch hot asphalt concrete mixture	Ton	184	$204.00	$208.08	$38,286.72	$185.00	$188.70	$34,720.80
60276A	18-inch corrugated aluminized steel pipe, 0.064-inch thickness, method B	Foot	44	$37.46	$38.21	$1,681.24	$32.54	$33.19	$1,460.36
60710	Reconditioning drainage structures, culvert inlet or outlet	Each	1	$71.94	$73.38	$73.38	$52.19	$53.23	$53.23
			1500	PUBLIC WORKS TOTAL		$72,500.51	TIMBER SALE TOTAL		$63,447.40

	1500134								
PAY ITEM	DESCRIPTION	PAY UNIT	QTY	P.W. Unit Price	Adjusted PW Unit Cost	Public Works Total Cost	T.S Unit Price	ADJUSTED T.S. UNIT COST	Timber Sale Total Cost
20103	Clearing and grubbing, disposal of tops and limbs (f), logs (f), stumps (f)	Mile	0.6	$1,225.99	$1,250.51	$750.31	$1,040.36	$1,061.17	$636.70
20253	Removal of individual trees, miscellaneous: disposal of tops and limbs (f) & logs (f)	Each	2	$111.94	$114.18	$228.36	$76.98	$78.52	$157.04
20358	Removal of corrugated metal pipe, disposal method (a)	Each	1	$415.62	$423.93	$423.93	$320.02	$326.42	$326.42
20420	Drainage excavation, type catchbasin	Each	2	$86.71	$88.44	$176.88	$64.13	$65.41	$130.82
20464	Excavation, compaction method B	Lump sum	1	$262.77	$268.03	$268.03	$195.00	$198.90	$198.90
20479	Drainage excavation, type roadway ditch	Mile	0.44	$1,596.21	$1,628.13	$716.38	$1,188.50	$1,212.27	$533.40
30359	Roadway reconditioning, compaction method B	Mile	0.6	$1,368.33	$1,395.70	$837.42	$1,071.53	$1,092.96	$655.78
32232	Haul and place stockpiled aggregate, compaction method B	Cubic Yard*	40	$15.52	$15.83	$633.20	$12.88	$13.14	$525.60
			1500134	PUBLIC WORKS TOTAL		$4,034.51	TIMBER SALE TOTAL		$3,164.66

	1500505								
PAY ITEM	DESCRIPTION	PAY UNIT	QTY	P.W. Unit Price	Adjusted PW Unit Cost	Public Works Total Cost	T.S Unit Price	ADJUSTED T.S UNIT COST	Timber Sale Total Cost
20103	Clearing and grubbing, disposal of tops and limbs (f), logs (f), stumps (f)	Mile	0.45	$1,225.99	$1,250.51	$562.73	$1,040.36	$1,061.17	$477.53
20253	Removal of individual trees, miscellaneous: disposal of tops and limbs (f) & logs (f)	Each	1	$111.94	$114.18	$114.18	$76.98	$78.52	$78.52
20420	Drainage excavation, type catchbasin	Each	3	$86.71	$88.44	$265.32	$64.13	$65.41	$196.23
20479	Drainage excavation, type roadway ditch	Mile	0.24	$1,596.21	$1,628.13	$390.75	$1,188.50	$1,212.27	$290.94
30359	Roadway reconditioning, compaction method B	Mile	0.45	$1,368.33	$1,395.70	$1,395.70	$1,071.53	$1,092.96	$491.83
60710	Reconditioning drainage structures, culvert inlet or outlet	Each	1	$71.94	$73.38	$73.38	$52.19	$53.23	$53.23
			1500505	PUBLIC WORKS TOTAL		$2,802.06	TIMBER SALE TOTAL		$1,588.28

SALE SUMMARY:			Public Works	Timber Sale
	1500	TOTAL	$72,500.51	$63,447.40
	1500130	TOTAL	$30,445.71	$24,624.35
	1500134	TOTAL	$4,034.51	$3,164.66
	1500500	TOTAL	$24,595.30	$20,110.22
	1500505	TOTAL	$2,802.06	$1,588.28
	TOTAL FOR SALE =		$134,378.09	$112,934.91

Blue Thin Timber Sale

SCHEDULE OF ITEMS

		ROAD NUMBER	1500		
		SEGMENT			
		CONSTRUCTION			
		RECONSTRUCTION	X		SPECIFIED ROADS TOTAL
		PROJECT LENGTH (Miles)	5.19		
ITEM NO.	DESCRIPTION	Pay Unit	QTY	UNIT COST	
15101	Mobilization	Lump sum	All	$19,342.24	$19,342.24
20207	Removal of individual trees, disposal of tops and limbs (f), logs (j), stumps (f)	Each	7	$70.18	$491.26
20253	Removal of individual trees, miscellaneous: disposal of tops & limbs (f) & logs (f)	Each	15	$105.54	$1,583.10
20358A	Removal of corrugated metal pipe, disposal method (a)	Each	1	$326.42	$326.42
20301B	Removal of rootwad	Each	1	$58.62	$58.62
20304	Removal of old asphalt	Lump sum	All	$666.19	$666.19
20419A	Drainage excavation, type culvert outlet ditch	Foot*	95	$4.09	$388.55
20420	Drainage excavation, type catchbasin	Each	7	$65.41	$457.87
20479	Drainage excavation, type roadway ditch	Mile	0.44	$1,212.27	$533.40
25101	Placed riprap, class 4	Cubic Yard *	3	$102.33	$306.99
30359	Roadway reconditioning, compaction method E	Mile	0.43	$1,092.96	$469.97
32232	Haul and place stockpiled aggregate, compaction method B	Cubic Yard *	15	$21.60	$324.00
40451	ODOT 3/8- inch dense graded HMAC, level II, asphalt cement PG 64 - 22	Ton	12	$188.70	$2,264.40
43007	Skin patch hot asphalt concrete mixture	Ton	184	$188.70	$34,720.80
60276A	18-inch corrugated aluminized steel pipe, 0.064-inch thickness, method B	Foot	44	$33.19	$1,460.36
60710	Reconditioning drainage structures, culvert inlet or outlet	Each	1	$53.23	$53.23
	* Designates Contract Quantities			Total	$63,447.40

Blue Thin Timber Sale

SCHEDULE OF ITEMS

		ROAD NUMBER	1500130		
		SEGMENT			
		CONSTRUCTION			
		RECONSTRUCTION	X		SPECIFIED ROADS TOTAL
		PROJECT LENGTH (Miles)	4.61		
ITEM NO.	DESCRIPTION	Pay Unit	QTY	UNIT COST	
20103	Clearing and grubbing, disposal of tops and limbs (f), logs (f), stumps (f)	Mile	4.61	$1,061.17	$4,891.99
20207	Removal of individual trees, disposal of tops and limbs (f), logs (j), stumps (f)	Each	2	$70.18	$140.36
20253	Removal of individual trees, miscellaneous: disposal of tops & limbs (f) & logs (f)	Each	52	$78.52	$4,083.04
20358	Removal of corrugated metal pipe, disposal method (a)	Each	4	$326.42	$1,305.68
20301A	Removal of Rock Boulder	Each	2	$46.12	$92.24
20419A	Drainage excavation, type culvert outlet ditch	Foot*	80	$4.09	$327.20
20420	Drainage excavation, type catchbasin	Each	11	$65.41	$719.51
20462	Unclassified borrow, compaction method E	Cubic Yard *	5	$26.88	$134.40
20479	Drainage excavation, type roadway ditch	Mile	0.53	$1,212.27	$642.50
25101	Placed riprap, class 4	Cubic Yard *	8	$102.33	$818.64
30359	Roadway reconditioning, compaction method E	Mile	4.10	$1,092.96	$4,481.14
32232	Haul and place stockpiled aggregate, compaction method B	Cubic Yard *	65	$13.14	$854.10
60276A	18-inch corrugated aluminized steel pipe, 0.064-inch thickness, method B	Foot	138	$33.19	$4,580.22
60403	Inlet, 36" full-circle stand pipe	Each	1	$602.10	$602.10
60710	Reconditioning drainage structures, culvert inlet or outlet	Each	5	$53.23	$266.15
62509	Mulching, dry method	Lump sum	All	$685.08	$685.08
	* Designates Contract Quantities			Total	$24,624.35

Blue Thin Timber Sale

SCHEDULE OF ITEMS					
		ROAD NUMBER	1500134		
		SEGMENT			
		CONSTRUCTION			
		RECONSTRUCTION	X		SPECIFIED
		PROJECT LENGTH (Miles)	0.60		ROADS
ITEM NO.	DESCRIPTION	Pay Unit	QTY	UNIT COST	TOTAL
20103	Clearing and grubbing, disposal of tops and limbs (f), logs (f), stumps (f)	Mile	0.60	$1,061.17	$636.70
20253	Removal of individual trees, miscellaneous: disposal of tops & limbs (f) & logs (f)	Each	2	$78.52	$157.04
20358	Removal of corrugated metal pipe, disposal method (a)	Each	1	$326.42	$326.42
20420	Reconstruct culvert catch basin	Each	2	$65.41	$130.82
20464	Excavation, compaction method E	Lump sum	All	$198.90	$198.90
20479	Drainage excavation, type roadway ditch	Mile	0.44	$1,212.27	$533.40
30359	Roadway reconditioning, compaction method E	Mile	0.6	$1,092.96	$655.78
32232	Haul and place stockpiled aggregate, compaction method B	Cubic Yard *	40	$13.14	$525.60
	* Designates Contract Quantities			Total	$3,164.66

Blue Thin Timber Sale

SCHEDULE OF ITEMS					
		ROAD NUMBER	1500500		
		SEGMENT			
		CONSTRUCTION			
		RECONSTRUCTION	X		SPECIFIED ROADS TOTAL
		PROJECT LENGTH (Miles)	1.33		
ITEM NO.	DESCRIPTION	Pay Unit	QTY	UNIT COST	
15755	Erosion control & pollution prevention	Each	2	$582.78	$1,165.56
20103	Clearing and grubbing, disposal of tops and limbs (f), logs (f), stumps (f)	Mile	1.33	$1,061.17	$1,411.36
20207	Removal of individual trees, disposal of tops and limbs (f), logs (f), stumps (f)	Each	1	$70.18	$70.18
20253	Removal of individual trees, miscellaneous: disposal of tops & limbs (f) & logs (f)	Each	2	$78.52	$157.04
20358	Removal of corrugated metal pipe, disposal method (a)	Each	3	$326.42	$979.26
20302	Removal of culvert inlet / outlet	Foot	8	$9.60	$76.80
20419A	Drainage excavation, type culvert outlet ditch	Foot*	75	$4.09	$306.75
20419B	Drainage excavation, type leadoff ditch	Foot *	15	$6.54	$98.10
20420	Drainage excavation, type catchbasin	Each	1	$65.41	$65.41
20462	Unclassified borrow, compaction method E	Cubic Yard *	15	$26.88	$403.20
20479	Drainage excavation, type roadway ditch	Mile	0.75	$1,212.27	$909.20
30359	Roadway reconditioning, compaction method E	Mile	1.33	$1,092.96	$1,453.64
32232	Haul and place stockpiled aggregate, compaction method B	Cubic Yard *	720	$13.14	$9,460.80
60256	18-inch corrugated steel pipe, 0.064-inch thickness, method B	Foot	8	$33.19	$265.52
60276A	18-inch corrugated aluminized steel pipe, 0.064-inch thickness, method B	Foot	60	$33.19	$1,991.40
60276B	24-inch corrugated aluminized steel pipe, 0.064-inch thickness, method B	Foot	32	$40.50	$1,296.00
	* Designates Contract Quantities			Total	$20,110.22

Blue Thin Timber Sale

SCHEDULE OF ITEMS					
	ROAD NUMBER		1500505		
	SEGMENT				
	CONSTRUCTION				
	RECONSTRUCTION		X		SPECIFIED ROADS TOTAL
	PROJECT LENGTH (Miles)		0.45		
ITEM NO.	DESCRIPTION	Pay Unit	QTY	UNIT COST	
20103	Clearing and grubbing, disposal of tops and limbs (f), logs (f), stumps (f)	Mile	0.45	$1,061.17	$477.53
20253	Removal of individual trees, miscellaneous: disposal of tops & limbs (f) & logs (f)	Each	1	$78.52	$78.52
20420	Drainage excavation, type catchbasin	Each	3	$65.41	$196.23
20479	Drainage excavation, type roadway ditch	Mile	0.24	$1,212.27	$290.94
30359	Road reconditioning, compaction method E	Mile	0.45	$1,092.96	$491.83
60710	Reconditioning drainage structures, culvert inlet or outlet	Each	1	$53.23	$53.23
	* Designates Contract Quantities			Total	$1,588.28

FP-03 SPECIFICATIONS

Specification and Supplemental Specification List

Blue Thin Timber Sale

Shaded numbers denote FP-03 standard specifications

Road Number			1500	1500130	1500134	1500500	1500505
Location			---	---	---	---	---
Seg. Length (miles)			5.19	4.61	0.60	1.33	0.45
Construction			---	---	---	---	---
Reconstruction			X	X	X	X	X
Standard Spec. or FSSS Number	Title	Latest Revision Date	Specifications referenced, but not listed below, are included by reference. "X" denotes applicable standard specs or supplemental specifications.				
Preface		3/15/04	X	X	X	X	X
101	**Terms, Format, and Definitions**	2003	X	X	X	X	X
101.01	Meaning of Terms	1/22/09	X	X	X	X	X
101.01	Meaning of Terms	1/22/09	X	X	X	X	X
101.03	Abbreviations	6/16/06	X	X	X	X	X
101.04	Definitions	3/29/07	X	X	X	X	X
101.04	Definitions	11/06/07	X	X	X	X	X
102	**Bid, Award, and Execution of Contract**	2003	X	X	X	X	X
102.00	Bid, Award, and Execution of Contract	2/16/05	X	X	X	X	X
103	**Scope of Work**	2003	X	X	X	X	X
103.00	Deletions	2/16/05	X	X	X	X	X
104	**Control of Work**	2003	X	X	X	X	X
104.00	Deletions	6/16/06	X	X	X	X	X
104.03	Specifications and Drawings	1/22/09	X	X	X	X	X
104.06	Use of Roads by Contractor	2/17/05	X	X	X	X	X
105	**Control of Material**	2003	X	X	X	X	X
105.02	Government Provided Sources	2/17/05	X	X	X	X	X
105.02	Government Provided Sources	2/17/05	X	X	X	X	X
105.02	Material Sources	1/18/07	X	X	X	X	X
105.02	Government Provided Sources	2/17/05	X	X	X	X	X
105.02	Contractor Provided Sources	03/08/07	X	X	X	X	X
105.05	Use of Material Found in the Work	5/12/04	X	X	X	X	X
106	**Acceptance of Work**	2003	X	X	X	X	X
106.01	Conformity with Contract Requirements	7/31/07	X	X	X	X	X
106.07	Delete	5/11/04	X	X	X	X	X
107	**Legal Relations and Responsibility to the Public**	2003	X	X	X	X	X
107.02	Protection and Restoration of Property & Landscape	2/17/05	X	X	X	X	X
107.05	Responsibility for Damage Claims	5/11/04	X	X	X	X	X
107.06	Contractor's Responsibility for Work	6/16/06	X	X	X	X	X
107.08	Sanitation, Health, and Safety	3/29/05	X	X	X	X	X
107.09	Legal Relationship of the Parties	6/16/06	X	X	X	X	X
108	**Prosecution and Progress**	2003	X	X	X	X	X
108.00	Prosecution and Progress	2/16/05	X	X	X	X	X
109	**Measurement and Payment**	2003	X	X	X	X	X
109.00	Deletions	2/17/05	X	X	X	X	X
109.02	Measurement Terms and Definitions	6/16/06	X	X	X	X	X
151	**Mobilization**	2003	X				
156.00	Public Traffic	4/17/07	X	X	X	X	X
157	**Soil Erosion Control**	2003	X	X	X	X	X
157.03	Construction Requirements	1/29/09	X	X	X	X	X
170.00	Develop Water Supply and Watering	3/26/07	X	X	X	X	X
201	**Clearing and Grubbing**	2003	X	X	X	X	X
201.00	Material	8/05/09	X	X	X	X	X
201.01	Description	2/18/05	X	X	X	X	X
201.04	Clearing	2/18/05	X	X	X	X	X
201.04	Clearing	2/22/05	X	X	X	X	X
201.04	Construction Requirements	3/03/05	X	X	X	X	X
201.06	Disposal	11/09/05	X	X	X	X	X
201.06	Disposal	2/18/05	X	X	X	X	X

FP-03 SPECIFICATIONS

Specification and Supplemental Specification List

Blue Thin Timber Sale

Shaded numbers denote FP-03 standard specifications

Road Number			1500	1500130	1500134	1500500	1500505
Location			---	---	---	---	---
Seg. Length (miles)			5.19	4.61	0.60	1.33	0.45
Construction			---	---	---	---	---
Reconstruction			X	X	X	X	X
Standard Spec. or FSSS Number	Title	Latest Revision Date	Specifications referenced, but not listed below, are included by reference. "X" denotes applicable standard specs or supplemental specifications.				
202	Additional Clearing and Grubbing	2003	X	X	X	X	X
203	Removal of Structures and Obstructions	2003	X	X	X	X	X
203.01	Description	2/25/05	X	X	X	X	X
203.04	Removing Material	2/18/05	X	X	X	X	X
203.05	Disposing of Material	2/18/05	X	X	X	X	X
203.05	Disposing of Material	3/26/07	X	X	X	X	X
203.08	Payment	2/24/05	X	X	X	X	X
204	Excavation and Embankment	2003	X	X	X	X	X
204.00	Excavation and Embankment	2/11/08	X	X	X	X	X
209.07	Dewatering	7/12/07				X	
209.10	Backfill	5/01/07	X	X	X	X	
251	Riprap	2003	X	X			
251.03	Construction Requirements	8/05/09	X	X			
303	Road Reconditioning	2003	X	X	X	X	X
303.01	Work	3/02/05	X	X	X	X	X
303.05	Roadbed Reconditioning	3/26/07	X	X	X	X	X
303.06	Aggregate Surface Reconditioning	4/04/07	X	X	X	X	X
303.10	Measurement	3/26/07	X	X	X	X	X
303.11	Measurement	3/29/05	X	X	X	X	X
322.00	Minor Aggregate Courses	10/24/07	X	X	X	X	
404	Minor Hot Asphalt Concrete	2003	X				
404.02	Composition of Mix (Job-Mix Formula)	06/09/06	X				
404.03	Surface Preparation	06/09/07	X				
404.04	Weather Limitations	03/02/05	X				
404.06	Placing	03/02/05	X				
404.06	Placing	03/23/07	X				
404.07	Compacting (a)	03/02/05	X				
404.09	Acceptance	03/02/05	X				
430.00	Asphalt Pavement Patching	7/27/07	X				
602	Culverts and Drains	2003	X	X		X	
602.03	General	9/06/05	X	X		X	
602.03	General	10/02/08	X	X		X	
602.03	General	3/17/10	X	X		X	
607	Cleaning, Reconditioning, and Repairing Existing Drainage Structures	2003	X	X			
607.06	Reconditioning Drainage Structures	03/26/07	X				
625	Turf Establishment	2003	X	X	X	X	X
625.08	Mulching	1/29/09	X	X	X	X	X
704.02	Bedding Material	04/24/08	X	X		X	
704.03	Backfill Material	03/26/07	X	X	X	X	

Preface

Preface_wo_03_15_2004_in

Delete all but the first paragraph and add the following:

The Forest Service, US Department of Agriculture has adopted FP-03 for construction of National Forest System Roads.

101.01_nat_us_01_22_2009

101.01 Meaning of Terms

Delete all references to the TAR (Transportation Acquisition Regulations) in the specifications.

101.01_nat_us_01_22_2009

101.01 Meaning of Terms

Delete all references to the FAR (Federal Acquisition Regulations) in the specifications.

101.03_nat_us_06_16_2006

101.03 Abbreviations.

Add the following to (a) Acronyms:

AFPA	American Forest and Paper Association
MSHA	Mine Safety and Health Administration
NIST	National Institute of Standards and Technology
NESC	National Electrical Safety Code
WCLIB	West Coast Lumber Inspection Bureau

Add the following to (b) SI symbols:

mp	Milepost
ppm	Part Per Million

101.04 Definitions.

Delete the following definitions and substitute the following:

Bid Schedule--The Schedule of Items.

Bridge--No definition.

Contractor--The individual or legal entity contracting with the Government for performance of prescribed work. In a timber sale contract, the contractor is the "purchaser".

Culvert--No definition.

Right-of-Way--A general term denoting (1) the privilege to pass over land in some particular line (including easement, lease, permit, or license to occupy, use, or traverse public or private lands), or (2) Real property necessary for the project, including roadway, buffer areas, access, and drainage areas.

Add the following:

Adjustment in Contract Price--"Equitable adjustment," as used in the Federal Acquisition Regulations, or "construction cost adjustment," as used in the Timber Sale Contract; as applicable.

Change--"Change" means "change order" as used in the Federal Acquisition Regulations, or "design change" as used in the Timber Sale Contract.

Design Quantity--"Design quantity" is a Forest Service method of measurement from the FS-96 *Forest Service Specifications for the Construction of Roads and Bridges*. Under these FP specifications this term is replaced by the term "Contract Quantities".

Forest Service--The United States of America, acting through the Forest Service, U.S. Department of Agriculture.

Neat Line--A line defining the proposed or specified limits of an excavation or structure.

Pioneer Road--Temporary construction access built along the route of the project.

Purchaser--The individual, partnership, joint venture, or corporation contracting with the Government under the terms of a Timber Sale Contract and acting independently or through agents, employees, or subcontractors.

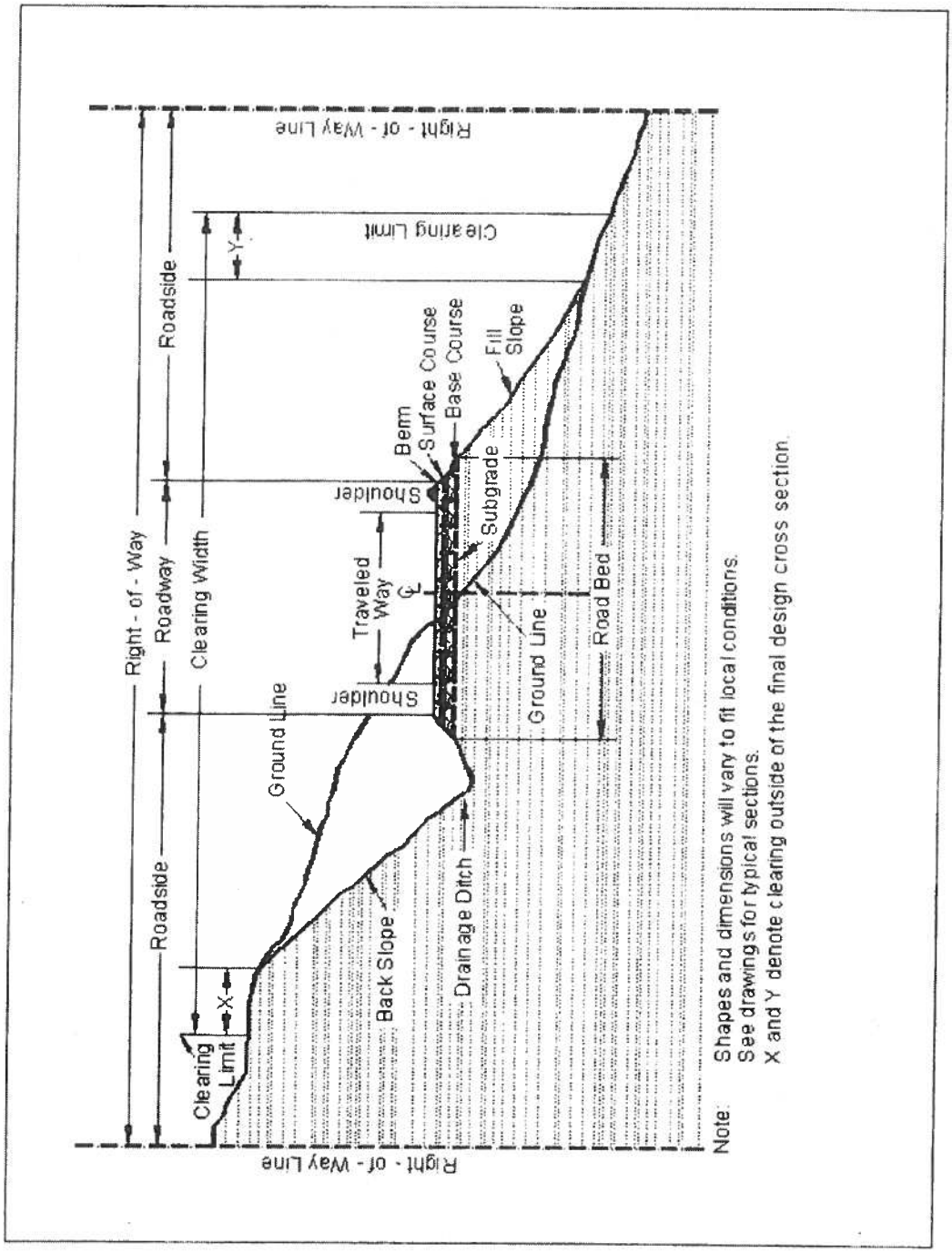
Protected Streamcourse--A drainage shown on the plans or timber sale area map that requires designated mitigation measures.

Road Order--An order affecting and controlling traffic on roads under Forest Service jurisdiction. Road Orders are issued by a designated Forest Officer under the authorities of 36 CFR, part 260.

Schedule of Items--A schedule in the contract that contains a listing and description of construction items, quantities, units of measure, unit price, and amount.

Utilization Standards--The minimum size and percent soundness of trees described in the specifications to determine merchantable timber.

Figure 101-1—Illustration of road structure terms.



101.04_nat_us_11_06_2007

101.04 Definitions.
Delete the following definitions:

Contract Modification

Day

Notice to Proceed

Solicitation

102 - Bid, Award, and Execution of Contract

102.00_nat_us_02_16_2005

102 Bid, Award, and Execution of Contract

Delete Section 102 in its entirety.

103 - Scope of Work

103.00_nat_us_02_16_2005

Deletions

Delete all but subsection 103.01 Intent of Contract.

104 - Control of Work

104.00_nat_us_06_16_2006

Deletions

Delete Sections 104.01, 104.02, and 104.04.

104.03_nat_us_01_22_2009

104.03 Specifications and Drawings.

Delete 104.03.

104.06_nat_us_02_17_2005

Add the following subsection:

104.06 Use of Roads by Contractor

The Contractor is authorized to use roads under the jurisdiction of the Forest Service for all activities necessary to complete this contract, subject to the limitations and authorizations designated in the Road Order(s) or described in the contract, when such use will not damage the roads or national forest resources, and when traffic can be accommodated safely.

105 - Control of Material

105.02_nat_us_02_17_2005

105.02(a) Government Provided Sources.

(a) Government-provided sources. Add the following:

Government-provided sources for this project are identified as follows:

(1) Government-provided mandatory sources.

Material for use under item 32232 may be obtained from Road 1500500 Material Source.

(2) Government-provided optional sources.

Material for use under item 20462 may be obtained from Road 1500500 Material Source, or as approved by CO. Reshape site to drain prior to final acceptance.

105.02_nat_us_02_17_2005

105.02(a) Government Provided Sources.

There is no charge for material taken from 1500500 Material Source

105.02_nat_us_01_18_2007

105.02 Material Sources.

105.02(a) Government-provided sources.

Add the following:

Comply with the requirements of 30 CFR 56, subparts B and H. Use all suitable material for aggregate regardless of size unless otherwise designated. When required, re-establish vegetation in disturbed areas according to section 625.

105.02_nat_us_02_17_2005

105.02(a) Government Provided Sources.

If the Contractor elects to obtain material from Road 1500500 Material Source the following applies:

(a) The Forest Service will designate material available for purchasers use.

(b) No other material may be used unless written authorization is obtained in advance.

105.02_nat_us_03_08_2007

105.02 Material Sources.

105.02(a) Contractor-provided sources.

Add the following:

All material (e.g., soil, gravel, sand, borrow, aggregate, etc.) transported onto National Forest System land or incorporated into the work will be weed-free. The Contracting Officer may request written documentation of methods used to determine the weed-free status of any and all materials furnished by the contractor. Contractor-provided expertise and methods to establish weed-free status must be appropriate for the weeds of concern in the local area. The following applies to this contract:

Weeds specific to this project:

Invasive Plant Species on the Willamette National Forest.: 2010

Potential Invaders	**New Invaders**	**Established Infestations**
Leafy spurge	Spotted knapweed	Canada thistle
Yellow starthistle	Diffuse knapweed	Bull thistle
Distaff thistle	Yellow toadflax	Scotch broom
Squarrose knapweed	Dalmatian toadflax	Tansy ragwort
Gorse	Japanese knotweed	St. Johns-wort
Orange hawkweed	Meadow knapweed	Foxglove
French broom	Climbing nightshade	Oxeye daisy
Garlic mustard	Field bindweed	
Himalayan knotweed	Evergreen blackberry*	
Milk thistle	Himalayan blackberry*	
Daphnia	False brome	
	Reed canarygrass*	
	Sweetclover	
	Houndstongue	
	English ivy	
	Butterfly bush	
	Yellow hawkweed	
	Purple loosestrife	
	Everlasting peavine	
	Vinca	
	Evening primrose	
	Bladder campion	
	Creeping buttercup	
	Creeping charlie	
	Yellowflag iris	
	Shinyleaf geranium	
	Sulphur cinquefoil	
	Herb robert	
	Depford pink	
	Burdock	
	Feverfew	
	Anise	
	Fennel	
	Dead Needle	
	Yellow Archangel	

* Species with a star may be considered either new or established weed infestations, depending on their densities. For example, blackberry at low elevations along river corridors are established, but single clumps at high elevations are newly invading. Reed canary grass around reservoir fringes is established but clumps around alpine lakes are newly invading.

105.05 Use of Material Found in the Work.

Delete 105.05 (a) and (b) and the last sentence of the second paragraph and substitute the following:

Materials produced or processed from Government lands in excess of the quantities required for performance of this contract are the property of the Government. The Government is not obligated to make reimbursement for the cost of producing these materials.

106 - Acceptance of Work

106.01 Conformity with Contract Requirements.

Delete Subsection 106.01 and substitute the following:

References to standard test methods of AASHTO, ASTM, GSA, and other recognized standard authorities refer to the methods in effect on the date of solicitation for bids.

Perform all work to the lines, grades. cross-sections, dimensions, and processes or material requirements shown on the plans or specified in the contract.

Incorporate manufactured materials into the work according to the manufacturer's recommendations or to these specifications, whichever is more strict.

Plan dimensions and contract specification values are the values to be strived for and complied with as the design values from which any deviations are allowed. Perform work and provide material that is uniform in character and reasonably close to the prescribed value or within the specified tolerance range. The purpose of a tolerance range is to accommodate occasional minor variations from the median zone that are unavoidable for practical reasons.

When standard manufactured items are specified (such as fence, wire, plates, rolled shapes, pipe conduits, etc., that are identified by gauge, unit mass, section dimensions, etc.), the identification will be considered to be nominal masses or dimensions. Unless specific contract tolerances are noted, established manufacturing tolerances will be accepted.

The Government may inspect, sample, or test all work at any time before final acceptance of the project. When the Government tests work, copies of test reports are furnished to the Contractor upon request. Government tests may or may not be performed at the work site. If Contractor testing and inspection is verified by the Government, the Contractor's results may be used by the Government to evaluate work for acceptance. Do not rely on the availability of Government test results for process control.

Acceptable work conforming to the contract will be paid for at the contract unit bid price. Four methods of determining conformity and accepting work are described in Subsections 106.02 to 106.05 inclusive. The primary method of acceptance is specified in each Section of work. However, work may be rejected at any time it is found by any of the methods not to comply with the contract.

Remove and replace work that does not conform to the contract, or to prevailing industry standards where no specific contract requirements are noted, at no cost to the Government.

(a) Disputing Government test results. **If the accuracy of Government test results is disputed, promptly inform the CO. If the dispute is unresolved after reasonable steps are taken to resolve the dispute, further evaluation may be obtained by written request. Include a narrative describing the dispute and a proposed resolution protocol that addresses the following:**

(1) Sampling method;

(2) Number of samples;
(3) Sample transport;
(4) Test procedures;
(5) Testing laboratories;
(6) Reporting;
(7) Estimated time and costs; and
(8) Validation process.

If the evaluation requires additional sampling or testing be performed, mutually agree with the Government on witnessing procedures and on sampling and testing by a third party laboratory. Use a third party laboratory accredited by the AASHTO accreditation program. Provide proof of the laboratory's accreditation for the test procedures to be used. Do not use the same laboratory that produced the disputed Government test results or that produced the test results used as a basis for the dispute.

The CO will review the proposed resolution protocol and may modify it before final approval and execution.

The Government will use the approved resolution protocol test results to determine the validity of the disputed testing. If the Government test results are validated, the Contractor will be responsible for all costs associated with developing and performing the resolution protocol. If the Government test results are not validated, the Government will be responsible for all costs associated with developing and performing the resolution protocol. If the validity of the Government test results cannot be determined, the Contractor and Government will equally share all costs associated with developing and carrying out the resolution protocol.

(b) Alternatives to removing and replacing non-conforming work. As an alternative to removal and replacement, the Contractor may submit a written request to:

(1) Have the work accepted at a reduced price; or

(2) Be given permission to perform corrective measures to bring the work into conformity.

The request must contain supporting rationale and documentation. Include references or data justifying the proposal based on an evaluation of test results, effect on service life, value of material or work, quality, aesthetics, and other tangible engineering basis. The CO will determine disposition of the nonconforming work.

106.07_nat_us_05_11_2004

106.07 Delete

Delete subsection 106.07.

107 - Legal Relations and Responsibility to the Public

107.02_nat_us_02_17_2005

107.02 Protection and Restoration of Property and Landscape.

Add the following:

Replace culverts in live streams between July 1st and August 15th.

Construction or maintenance of roads will not be done when soils are saturated or run-off occurs, to minimize erosion and sedimentation.

A seasonal restriction for Danger Tree Felling will be in effect between April 1st through July 30th unless waived by the CO.

A seasonal operating restriction is required for the Cascade Elk Rifle season, which is typically the third week of October. All public vehicle traffic would be restricted on closed roads, beginning the Friday before this week, through the end of the following Friday.

107.05_nat_us_05_11_2004

107.05 Responsibility for Damage Claims.

Delete the entire subsection.

107.06_nat_us_06_16_2006

107.06 Contractor's Responsibility for Work.

Delete the following from the first paragraph.

"except as provided in Subsection 106.07".

107.08_nat_us_03_29_2005

107.08 Sanitation, Health, and Safety

Delete the entire subsection.

107.09_nat_us_06_16_2006

107.09 Legal Relationship of the Parties.

Delete the entire subsection.

108 - Prosecution and Progress

108.00_nat_us_02_16_2005

108 Delete.

Delete Section 108 in its entirety.

109 - Measurement and Payment

109.00_nat_us_02_17_2005

109 Deletions

Delete the following entire subsections:

109.06 Pricing of Adjustments.

109.07 Eliminated Work.

109.08 Progress Payments.

109.09 Final Payment.

109.02 Measurement Terms and Definitions.

(b) Contract quantity.

Add the following:

Contract quantities will be adjusted only when there are errors in the original design of 15% or more.

Change the following:

"(b) Cubic yard" to "(c) Cubic yard".

Add the following definition:

(p) Thousand Board Feet (Mbf). 1,000 board feet based on nominal widths, thickness, and extreme usable length of each piece of lumber or timber actually incorporated in the job. For glued laminated timber, 1,000 board feet based on actual width, thickness, and length of each piece actually incorporated in the job.

156 - Public Traffic

156.00_nat_us_04_17_2007

Delete Section 156 in its entirety and replace with the following:

Description

156.01 This work consists of controlling and protecting public traffic adjacent to and within the project.

Material

156.02 Conform to the MUTCD and the following Sections and Subsections:

Construction sign panels	633
Retro-reflective sheeting	718.01
Temporary concrete barrier	618
Temporary plastic fence .	710.11
Temporary traffic control devices	718.22

156.03 General. Unless otherwise provided for in Table 156-1, keep existing roads open to all traffic during road improvement work, and maintain them in a condition that will adequately accommodate traffic. Delays may not exceed 60 minutes at any one time followed by an open period of no less than 10 minutes.

Perform no work that interferes or conflicts with traffic or existing access to the roadway surface until a traffic control plan has been approved. Post construction signs and traffic control devices in conformance with MUTCD. All required signs will be in place and approved prior to beginning work on project.

If the Contractor agrees in writing to allow public traffic to use a new road being constructed prior to completion, it will be considered an existing road for traffic control purposes.

156.04 Temporary Traffic Control. Install and maintain temporary traffic control devices adjacent to and within the project as required by the approved traffic control plan and the MUTCD. Install and maintain traffic control devices as follows:

(a) Furnish and install traffic control devices before the start of construction operations.
(b) All detours outside of clearing limits will be approved in writing by the Contracting Officer as part of the traffic control plan.
(c) Install only those traffic control devices needed for each stage or phase.
(d) Relocate temporary traffic control devices as necessary.
(e) Remove devices that no longer apply to the existing conditions.
(f) Immediately replace any device that is lost, stolen, destroyed, or inoperative.
(g) Keep temporary traffic control devices clean.
(h) Remove all temporary traffic control devices upon contract completion or when approved.
(i) When required, use flaggers certified by the American Traffic Safety Services Association, the National Safety Council, the International Municipal Signal Association, a state agency, or other acceptable organization. Perform the work described under MUTCD Part 6. Use type III, VII, VIII, or IX retroreflective sheeting on flagger paddles. Do not use flags. Flaggers must wear high visibility safety apparel as required by MUTCD 6E.02.

156.05 Temporary Closures. Road segments may be closed as shown in Table 156-1. The maximum consecutive days of closure shall be followed by a minimum number of consecutive days open to traffic as shown. Maintain traffic control devices during closure period(s). Appropriate barricades and signs will be erected and maintained as shown in the traffic control plan or as otherwise designated.

Prior to closing roads during construction, give written notice to the Contracting Officer at least 10 days in advance.

Table 156-1

Temporary Road Closures

Road Number	From Terminus	To Terminus	Maximum Consecutive Days of Closure	Minimum Consecutive Days Open
NONE				

156.06 Acceptance. Public traffic work will be evaluated under Subsection 106.02.

Measurement and Payment

156.07 Do not measure Public Traffic for payment. Compensation is made as an indirect payment.

157 – Soil Erosion Control

157.03_nat_us_01_29_2009

157.03 General. Add the following:

21 days prior to the start of construction, submit a written plan that provides specific sediment control measures to minimize delivery of soil and turbidity into the stream during the construction period. Include the sequence of operations and information on equipment, materials and suppliers. Measures given in the Plans and Supplemental Specifications are minimum requirements, and may be revised only with written approval of the CO.

The turbidity of the water 100-200 feet downstream shall not be visually greater than the turbidity of the water upstream of the project site.

When this turbidity requirement or other erosion control measures are not met, immediately take corrective action. Cease operations that are causing turbidity and pump the stream around the construction site according to this specification and the Plans until the turbidity requirement can be met. When the interpretation of this requirement is in question, measure turbidity using a turbidity meter as approved by the CO, and provide documentation that operations are in compliance with FAR 52.236-7 Permits and Responsibilities, Section 107.10 Laws to be Observed and Section 107.10 Environmental Protection, and 107.10, including but not limited to the requirements of the National Marine Fisheries Service.

Do not begin work until the necessary controls for that particular phase of work have been implemented. Incorporate all erosion control features into the project at the earliest practicable time, as agreed by the CO.

Operate in a manner that will avoid harm to aquatic organisms whenever possible.

Notify the CO of the intention to dewater the stream, at least 72 hours in advance (not including weekends and holidays). Do not re-route the stream until approved by the CO. The CO will not approve dewatering until a fisheries biologist and other Government personnel are present and prepared to rescue aquatic organisms. Dewater the stream slowly and incrementally in order to facilitate the fish rescue. The rescue operation will generally take several hours.

Do not release water through the newly constructed simulated streambed until approved by the CO. After approval, release water slowly and incrementally over a period of at least one hour, or as approved by the CO. During this time, treat any water that does not meet the requirements of the turbidity standard stated in this specification.

170 - Develop Water Supply and Watering

170.00_0618_as_03_26_2007

Description

170.01 This work consists of developing an acceptable water supply, furnishing, hauling, and applying water.

Materials

170.02 Conform to the following subsection.

Water	725.01.

Construction Requirements

170.03 Development of Supply & Access. Develop water supplies and access to the water supplies as required. Use designated water sources or other approved water sources. Before using non-designated water sources, obtain all necessary permissions, water rights, and permits.

170.04 Equipment.

(a) Water tanks. Provide mobile watering equipment with watertight tanks of known capacity. Provide for positive control of water application from the driver's position.

(b) Juvenile fish protection. All draft hoses being used to withdraw water from any live flowing stream or pond will utilize one of the following methods of screening.

(1) Perforated plate: Screen opening shall not exceed 3/32 or 0.0938-inches.

(2) Profile bar screen: The narrowest dimension in the screen openings shall not exceed 0.0689-inches in the narrowest direction.

(3) Woven wire screen: Screen openings shall not exceed 3/32 or 0.0938-inches in the narrow direction.

All methods shall be cleaned frequently with either wire brushing, flushing or other acceptable method.

170.05 Application. Apply water uniformly without ponding or washing.

170.06 Acceptance. Developing water supplies and watering will be evaluated under Subsections 106.02 and 106.04.

Measurement and Payment

170.07 See Subsection 109.05.

Do not measure develop water supply and watering for payment.

201 - Clearing and Grubbing

201 00_nat us 08_05_2009

201.02 Material:

Delete Tree wound dressing material reference.

201.03 General.

Delete the last sentence.

201.04 Clearing.

Delete the last sentence of (d).

201.01_nat_us_02_18_2005

201.01 Description

Replace with the following

This work consists of clearing and grubbing within clearing limits and other designated areas.

201.04_nat_us_02_18_2005

201.04 Clearing.

Add the following:

When marked in advance, remove dead trees over 6 inches in diameter measured at 12 inches above the ground that lean toward the road and are tall enough to reach the roadbed.

201.04_nat_us_02_22_2005

201.04 Clearing. (c)

Delete paragraph (c) and replace with the following:

(c) In areas outside the excavation, embankment, and slope rounding limits, cut stumps to within 12 inches or one-third of the stump diameter of the ground, whichever is higher, measured on the side adjacent to the highest ground. For timber sales, stump heights will meet the requirements of the Timber Sale contract.

201.04 Clearing.

Delete subsection (d) and replace with the following:

(d) Do not cut vegetation less than 3 feet tall and less than 3 inches in diameter, that is within the clearing limits but beyond the roadway and not in a decking area, and that does not interfere with sight distance along the road.

Add the following:

(e) Trim branches of remaining trees or shrubs to give a clear height of 14 feet above the roadbed unless otherwise indicated. Trim tree limbs as near flush with the trunk as practicable.

(f) Remove brush from log decks. Deck logs so that logs are piled parallel to one another; can be removed by standard log loading equipment; will not damage standing trees; will not interfere with drainage, and will not roll. Keep logs in log decks free of brush and soil.

201.01_nat_us_03_03_2005

Construction Requirements

201.04 Clearing.

Add the following:

Utilization standards for merchantable timber are listed below. Fall and buck merchantable material into lengths not to exceed 40 feet. Pieces (logs) meet utilization standards when such pieces would have met Utilization Standards if bucking lengths were varied to include such material.

Minimum Utilization Standards

Length	Diameter (Inside Bark) at Small End	40 % Net Scale in % of Gross Scale
8 feet	5 inches	

201.06_nat_us_11_09_2005

201.06 Disposal

Delete the first sentence of this paragraph and substitute the following:

Limb and deck logs that meet utilization standards at locations approved by the CO or otherwise designated. Deck logs according to 201.04 (f).

201.06_nat_us_02_18_2005

201.06 Disposal.

Delete the first sentence of this subsection and substitute the following:

Dispose of merchantable timber designated for removal according to the provisions of the timber sale contract.

203 - Removal of Structures and Obstructions

203.01_nat_us_02_25_2005

203.01 Description.

Delete and replace with the following:

This work consists of disposing of construction slash and debris, salvaging, removing, and disposing of buildings, fences, structures, pavements, culverts, utilities, curbs, sidewalks, and other obstructions.

203.04 Removing Material.

Replace the fourth and fifth paragraphs with the following:

Where part of an existing culvert is removed, remove the entire culvert upstream from the removal. The remaining downstream culvert may be left in place if no portion of the culvert is within 12 inches of the subgrade, embankment slope, or new culvert or structure; and the culvert ends are sealed with concrete.

Remove structures and obstructions in the roadbed to 12 inches below subgrade elevation. Remove structures and obstructions outside the roadbed to 12 inches below finished ground or to the natural stream bottom.

203.05 Disposing of Material.

Add the following:

(e) Windrowing Construction Slash. Place construction slash outside the roadway in neat, compacted windrows approximately parallel to and along the toeline of embankment slopes. Do not permit the top of the windrows to extend above subgrade. Use construction equipment to matt down all material in a windrow to form a compact and uniform pile. Construct breaks of at least 15 feet at least every 200 feet in a windrow. Do not place windrows against trees. Obtain approval for pioneer roads. A pioneer road may be constructed to provide an area for placement of windrows, provided the excavated material is kept within the clearing limits and does not adversely affect the road construction.

(f) Scattering. Scatter construction slash outside the clearing limits without damaging trees. Limb all logs. Place logs and stumps away from trees, positioned so they will not roll, and are not on top of one another. Limb and scatter other construction slash to reduce slash concentrations.

(g) Chipping or Grinding. Use an approved chipping machine to grind slash and stumps greater than 3 inches in diameter and longer than 3 feet. Deposit chips or ground woody material on embankment slopes or outside the roadway to a loose depth less than 6 inches. Minor amounts of chips or ground woody material may be permitted within the roadway if they are thoroughly mixed with soil and do not form a layer.

(h) Debris Mat. Use tree limbs, tops, cull logs, split stumps, wood chunks, and other debris to form a mat upon which construction equipment is operated. Place stumps upside down and blend stumps into the mat.

(i) Decking Firewood Material. Remove brush from decks. Limb and deck logs that do not meet Utilization Standards according to Subsection 201.04 as directed by the CO. Cut logs to lengths less than 30 feet. Ensure that logs stacks are stable and free of brush and soil.

(j) Removal to designated locations. Remove construction slash to designated locations.

(k) Piling. Pile construction slash in designated areas. Place and construct piles so that if the piles are burned, the burning will not damage remaining trees. Keep piles free of dirt from stumps. Cut unmerchantable logs into lengths of less than 20 feet.

(l) Placing Slash on Embankment Slopes. Place construction slash on completed embankment slopes to reduce soil erosion. Place construction slash as flat as practicable on the completed slope. Do not place slash

closer than 2 feet below subgrade. Priority for use of available slash is for: (1) through fills; (2) insides of curves; and (3) ditch relief outlets.

(m) Hydrological Sensitive Placement. Where required use this method in combination with other designated methods to dispose of material to reduce erosion and to aid in re-vegetation:

1. Place windrow segments on contours, wrap in type I geotextile.
2. Place logs as log erosion barriers on contours. Place logs so that 80% of their length is on the ground surface.
3. Scatter slash on bare or disturbed areas within or outside the clearing limits as directed.
4. Scatter chips or ground woody material on bare or disturbed areas within or outside the clearing limits as directed.

Place stumps in swales or on sites to form planting pockets. Place windrow segments on contours, wrap in type I geotextile.

203 05_0618_us_03_26_2007

203.05 Disposing of Material

(a) Remove from project.

Delete the last two sentences

203.08_nat_us_02_24_2005

203.08 Payment

Add the following:

Disposal of construction slash will be compensated under the designated pay item in Section 201.

204 - Excavation and Embankment

204 00_0618_us_02_11_2008

Delete Section 204 in its entirety and replace with the following.

Description

204.01 This work consists of excavating material, constructing embankments and drainage excavation. This includes furnishing, hauling, stockpiling, placing, disposing, sloping, shaping, compacting, and finishing sand, earthen, and rocky material.

204.02 Definitions.

(a) Excavation. Excavation consists of the following:

(1) Roadway excavation. All material excavated from within the right-of-way or easement areas, except subexcavation covered in (2) below and structure excavation covered in Sections 208 and 209. Roadway excavation includes all material encountered regardless of its nature or characteristics.

(2) Subexcavation. Material excavated from below subgrade elevation in cut sections or from below the original groundline in embankment sections. Subexcavation does not include the work required by Subsections 204.05, 204.06(b), and 204.06(c).

(3) Borrow excavation. Material used for embankment construction that is obtained from outside the roadway prism. Borrow excavation includes unclassified borrow, select borrow, and select topping.

(b) Embankment construction. Embankment construction consists of placing and compacting roadway or borrow excavation. This work includes:

(1) Preparing foundation for embankment;
(2) Constructing roadway embankments;
(3) Benching for side-hill embankments;
(4) Constructing dikes, ramps, mounds, and berms; and
(5) Backfilling subexcavated areas, holes, pits, and other depressions.

(c) Conserved topsoil. Excavated material conserved from the roadway excavation and embankment foundation areas that is suitable for growth of grass, cover crops, or native vegetation.

(d) Waste. Excess and unsuitable roadway excavation and subexcavation that cannot be used.

Material

204.03 Conform to the following Subsections:

Backfill material	704.03
Select borrow	704.07
Select topping	704.08
Topping	704.05
Unclassified borrow	704.06
Water	725.01

Construction Requirements

204.04 Preparation for Roadway Excavation and Embankment Construction. Clear the area of vegetation and obstructions according to Sections 201 and 203.

204.05 Reserved.

204.06 Roadway Excavation. Excavate as follows:

(a) General. Do not disturb material and vegetation outside the construction limits.

Incorporate only suitable material into embankments. Replace any shortage of suitable material caused by premature disposal of roadway excavation

At the end of each day's operations, shape to drain and compact the work area to a uniform cross-section. Eliminate all ruts and low spots that could hold water.

Retrieve material deposited outside of the clearing limits as directed by the CO.

(b) Rock cuts. Blast rock according to Section 205. Excavate rock cuts to 6 inches below subgrade within the roadbed limits. Backfill to subgrade with topping or with other suitable material. Compact the material according to Subsection 204.11 When blasting rock, use blasting methods according to Subsection 205.08.

(c) Earth cuts. Scarify earth cuts to 6 inches below subgrade within the roadbed limits. Compact the scarified material according to Subsection 204.11.

(d) Pioneer Roads. Road pioneering, slash disposal, and grubbing of stumps may proceed concurrently with excavation. Conduct excavation and placement operations so material to be treated under Section 201 will not be incorporated into the roadway unless specified in the slash treatment method. Maintain drainage during pioneering operations.

Remove snow and ice in advance of the work and deposit beyond the roadway limits in a manner that will not waste material or generate sediment. Do not incorporate snow and ice into embankments. Place snow or ice in a manner to prevent resource damage.

(e) Drainage Excavation. Drainage excavation includes construction of all ditches, minor channel changes, drainage dips, catchbasins, surface water deflectors, and other minor drainage structures. Compact by Method (f) unless otherwise shown on the plans. Excavate on a uniform grade between control points.

204.07 Subexcavation. Excavate material to the limits as designated. Take cross-sections according to Section 152. Prevent unsuitable material from becoming mixed with the backfill. Dispose of unsuitable material according to Subsection 204.14. Backfill the subexcavation with topping, or other suitable material. Compact the material according to Subsection 204.11.

204.08 Borrow Excavation. Use all suitable roadway excavation in embankment construction. Do not use borrow excavation when it results in excess roadway excavation. Deduct excess borrow excavation from the appropriate borrow excavation quantity.

Obtain borrow source acceptance according to Subsection 105.02. Develop and restore borrow sources according to Subsection 105.03. Do not excavate beyond the established limits. When applicable, shape the borrow source to permit accurate measurements when excavation is complete.

204.09 Preparing Foundation for Embankment Construction. Prepare foundation for embankment construction as follows:

(a) Embankment less than 4 feet high over natural ground. Unless otherwise designated by the CO, remove topsoil. Break up the ground surface to a minimum depth of 6 inches by plowing or scarifying. Compact the ground surface according to Subsection 204.11.

(b) Embankments over an existing asphalt, concrete, or gravel road surface. Scarify gravel roads to a minimum depth of 6 inches. Scarify or pulverize asphalt and concrete roads to 6 inches below the pavement. Reduce all particles to a maximum size of 6 inches and produce a uniform material. Compact the surface according to Subsection 204.11.

(c) Embankment across ground not capable of supporting equipment. Dump successive loads of embankment material in a uniformly distributed layer to construct the lower portion of the embankment. Limit the layer thickness to the minimum depth necessary to support the equipment.

(d) Embankment on an existing slope steeper than 1V:3H. Cut horizontal benches in the existing slope to a sufficient width to accommodate placement and compaction operations and equipment. Bench the slope as the embankment is placed and compacted in layers. Begin each bench at the intersection of the original ground and the vertical cut of the previous bench.

204.10 Embankment Construction. Incorporate only suitable roadway excavation material into the embankment. When the supply of suitable roadway excavation is exhausted, furnish unclassified borrow to complete the embankment. Obtain written approval before beginning construction of embankments over 6 feet high at subgrade centerline. Construct embankments as follows:

(a) General. At the end of each day's operations, shape to drain and compact the embankment surface to a uniform cross-section. Eliminate all ruts and low spots that could hold water.

During all stages of construction, route and distribute hauling and leveling equipment over the width and length of each layer of material.

Compact embankment side slopes flatter than 1V:1.75H with a tamping type roller or by walking with a dozer. For slopes 1V:1.75H or steeper, compact the slopes as construction of the embankment progresses.

Where placing embankment on one side of abutments, wing walls, piers, or culvert headwalls, compact the material using methods that prevent excessive pressure against the structure.

Where placing embankment material on both sides of a concrete wall or box structure, conduct operations so compacted embankment material is at the same elevation on both sides of the structure.

Where structural pilings are placed in embankment locations, limit the maximum particle size to 4 inches.

(b) Embankment within the roadway prism. Place embankment material in horizontal layers not exceeding 12 inches in compacted thickness. Incorporate oversize boulders or rock fragments into the 12-inch layers by reducing them in size or placing them individually as required by (c) below. Compact each layer according to Subsection 204.11 before placing the next layer.

Material composed predominately of boulders or rock fragments too large for 12-inch layers may be placed in layers up to 24 inches thick. Incorporate oversize boulders or rock fragments into the 24-inch layer by reducing them in size or placing them individually according to (c) below. Place sufficient earth and smaller rocks to fill the voids. Compact each layer according to Subsection 204.11 before placing the next layer.

(c) Individual rock fragments and boulders. Place individual rock fragments and boulders greater than 24 inches in diameter as follows:

(1) Reduce rock to less than 48 inches in the largest dimension.

(2) Distribute rock within the embankment to prevent nesting.

(3) Place layers of embankment material around each rock to a depth not greater than that permitted by (b) above. Fill all the voids between rocks.

(4) Compact each layer according to Subsection 204.11 before placing the next layer.

(d) Embankment outside of roadway prism. Where placing embankment outside the staked roadway prism, place material in horizontal layers not exceeding 24 inches in compacted thickness. Compact each layer according to Subsection 204.11.

204.11 Compaction. Compact the embankment using one of the following methods as specified:

(a) Compaction A. Use AASHTO T 27 to determine the amount of material retained on a Number 4 sieve. If there is more than 80 percent retained on the No. 4 sieve use procedure (1). If there is 50 to 80 percent retained on the No. 4 sieve use procedure (2). If there is less than 50 percent retained on the No. 4 sieve use procedure (3).

(1) Adjust the moisture content to a level suitable for compaction. Fill the interstices around rock with earth or other fine material as practical. Use compression-type rollers at speeds less than 6 feet per second and vibratory rollers at speeds less than 3 feet per second. Compact each layer of material full width with one of the following and until there is no visible evidence of further consolidation.

(a) Four roller passes of a vibratory roller having a minimum dynamic force of 40,000 pounds impact per vibration and a minimum frequency of 1000 vibrations per minute.

(b) Eight roller passes of a 20-ton compression-type roller.

(c) Eight roller passes of a vibratory roller having a minimum dynamic force of 30,000 pounds impact per vibration and a minimum frequency of 1000 vibrations per minute.

Increase the compactive effort for layers deeper than 12 inches as follows:

- For each additional 6 inches or fraction thereof, increase the number of roller passes in (a) above by four passes.
- For each additional 6 inches or fraction thereof, increase the number of roller passes in (b) and (c) above, by eight passes.

(2) Use AASHTO T 99 to determine the optimum moisture content of the portion of the material passing a No. 4 sieve. Multiply this number by the percentage of material passing a No. 4 sieve, and add 2 percent to determine the optimum moisture content of the material. Adjust the moisture content of material classified A-1 through A-5 to a moisture content suitable for compaction. Adjust the moisture content of material classified A-6 and A-7 to within 2 percent of the optimum moisture content.

Use compression-type rollers at speeds less than 6 feet per second and vibratory rollers at speeds less than 3 feet per second. Compact each layer of material full width according to (1) above.

(3) Classify the material according to AASHTO M 145. For material classified A-1 or A-2-4, determine the maximum density according to AASHTO T 180, method D. For other material

classifications, determine the optimum moisture content and maximum density according to AASHTO T 99, method C.

Adjust the moisture content of material classified A-1 through A-5 to a moisture content suitable for compaction. Adjust the moisture content of material classified A-6 and A-7 to within 2 percent of the optimum moisture content.

Use compression-type or vibratory rollers. Compact each layer of material full width to at least 95 percent of the maximum density. Determine the in-place density and moisture content according to AASHTO T 310 or other approved test procedures. When required, use AASHTO T 224 to correct for coarse particles.

(b) Compaction B. Place material by end dumping to the minimum depth needed for operation of spreading equipment. Adjust the moisture content of the material to obtain a mass that will not visibly deflect under the load of the hauling and spreading equipment. Operate compaction equipment over the full width of each layer until there is no visible evidence of further consolidation or, if when a sheepsfoot roller is used, the roller "walks out" of the layer. Make at least three complete passes.

(c) Compaction C. Place material by end dumping to the minimum depth needed for operation of spreading equipment. Level and smooth each embankment layer before placing the next layers. Operate hauling and spreading equipment uniformly over the full width of each layer. Construct a solid embankment with adequate compaction by working smaller rock and fines in with the larger rocks to fill the voids, and by operating hauling and spreading equipment uniformly over the full width of each layer as the embankment is constructed.

(d) Compaction D. Hauling and Spreading Equipment. Adjust the moisture content to a level suitable for compaction. Compact the material by operating equipment over the full width of the roadway.

(e) Compaction E. Roller Compaction. Adjust the moisture content to a level suitable for compaction. Operate Rollers over the full width of each layer until visual displacement ceases, but not fewer than three complete passes. Use rollers that meet the following requirements:

(1) Steel wheeled rollers, other than vibratory, capable of exerting a force of not less than 250 pounds per inch of width of the compression roll or rolls.

(2) Vibratory steel wheeled rollers equipped with amplitude and frequency controls with a minimum weight of 6 tons, specifically designed to compact the material on which it is used.

(3) Pneumatic-tired rollers with smooth tread tires of equal size that will provide a uniform compacting pressure for the full width of the roller and capable of exerting a ground pressure of at least 80 psi.

(4) Sheepsfoot, tamping, or grid rollers capable of exerting a force of 250 lbs/inch of width of roller drum.

(f) Compaction F. Mechanical Tamper. Adjust the moisture content of the backfill material to a moisture content suitable for compaction. Compact each 6 inch layer with a minimum of three complete passes with a mechanical tamper.

204.12 Ditches. Slope, grade, and shape ditches. Remove all projecting roots, stumps, rock, or similar matter. Maintain all ditches in an open condition and free from leaves, sticks, and other debris.

Form furrow ditches by plowing or using other acceptable methods to produce a continuous furrow. Place all excavated material on the downhill side so the bottom of the ditch is approximately 18 inches below the

crest of the loose material. Clean the ditch using a hand shovel, ditcher, or other suitable method. Shape to provide drainage without overflow.

204.13 Sloping, Shaping, and Finishing. Complete slopes, ditches, culverts, riprap, and other underground minor structures before placing aggregate courses. Slope, shape, and finish as follows:

(a) Sloping. Leave all earth slopes with uniform roughened surfaces, except as described in (b) below, with no noticeable break as viewed from the road. Except in solid rock, round tops and bottoms of all slopes including the slopes of drainage ditches. Round material overlaying solid rock to the extent practical. Scale all rock slopes. Slope rounding is not required on tolerance class D though M roads.

If a slide or slipout occurs on a cut or embankment slope, remove or replace the material, and repair or restore all damage to the work. Bench or key the slope to stabilize the slide. Reshape the cut or embankment slope to an acceptable condition.

(b) Stepped slopes. Where required by the contract, construct steps on slopes of 1½V:1H to 1V:2H. Construct the steps approximately 18 inches high. Blend the steps into natural ground at the end of the cut. If the slope contains nonrippable rock outcrops, blend steps into the rock. Remove loose material found in transitional area. Except for removing large rocks that may fall, scaling stepped slopes is not required.

(c) Shaping. Shape the subgrade to a smooth surface and to the cross-section required. Shape slopes to gradually transition into slope adjustments without noticeable breaks. At the ends of cuts and at intersections of cuts and embankments, adjust slopes in the horizontal and vertical planes to blend into each other or into the natural ground.

(d) Finishing. Finish the roadbed to be smooth and uniform, and shaped to conform to the typical sections. Remove unsuitable material from the roadbed and replace it with suitable material. Finish roadbeds to the tolerance class shown in table 204-2.Ensure that the subgrade is visibly moist during shaping and dressing. Scarify to 6 inches below the bottom of low sections, holes, cracks, or depressions and bring back to grade with suitable material. Maintain proper ditch drainage.

For surfaced roads, remove all material larger than 6 inches from the top 6 inches of the roadbed.

For unsurfaced roads, use one of the following methods to finish the roadbed:

(1) Method A. Remove all material larger than 6 inches from the top 6 inches of the roadbed and replace with suitable material.

(2) Method B. Use a vibratory grid roller or approved equal with a minimum weight of 10 tons. Roll at least 5 full-width passes or until there is no visible evidence of further consolidation.

(3) Method C. For roads designated as Construction Tolerance Class K, L, or M, finish the roadbed by spreading the excavation. Eliminate rock berms.

204.14 Disposal of Unsuitable or Excess Material. Dispose of unsuitable or excess material at designated sites or legally off of the project.

When there is a pay item for waste, shape and compact the waste material in its final location according to Subsection 204.11 (c) Compaction C. Do not mix clearing or other material not subject to payment with the waste material. When there is not a pay item for waste, shape and compact the waste material in its final location according to Subsection 204.11 (c) Compaction C.

204.15 Acceptance. See Table 204-1 for sampling and testing requirements.

Material for embankment and conserved topsoil will be evaluated under Subsections 106.02 and 106.04.

Excavation and embankment construction will be evaluated under Subsections 106.02 and 106.04.

Clearing and removal of obstructions will be evaluated under Sections 201 and 203.

Measurement

204.16 Measure the Section 204 items listed in the bid schedule according to Subsection 109.02 and the following as applicable.

(a) Roadway excavation. Measure roadway excavation in its original position as follows:

(1) Include the following volumes in roadway excavation:

(a) Roadway prism excavation;

(b) Rock material excavated and removed from below subgrade in cut sections;

(c) Unsuitable material below subgrade and unsuitable material beneath embankment areas when a pay item for subexcavation is not shown in the bid schedule;

(d) Ditches, except furrow ditches measured under a separate bid item;

*(e)*Topsoil;

(f) Borrow material used in the work when a pay item for borrow is not shown in the bid schedule;

(g) Loose scattered rocks removed and placed as required within the roadway;

(h) Conserved material taken from stockpiles and used in Section 204 work; and

(i) Slide and slipout material not attributable to the Contractor's method of operation.

(2) Do not include the following in roadway excavation:

(a) Overburden and other spoil material from borrow sources;

(b) Overbreakage from the backslope in rock excavation;

(c) Water or other liquid material;

(d) Material used for purposes other than required;

(e) Roadbed material scarified in place and not removed;

(f) Material excavated when stepping cut slopes;

(g) Material excavated when rounding cut slopes;

(h) Preparing foundations for embankment construction;

(i) Material excavated when benching for embankments;

(j) Slide or slipout material attributable to the Contractor's method of operation;

(k) Conserved material taken from stockpiles constructed at the option of the Contractor; and

(l) Material excavated outside the established slope limits.

(3) When both roadway excavation and embankment construction pay items are shown in the bid schedule, measure the following as roadway excavation only:

(a) Unsuitable material below subgrade in cuts and unsuitable material beneath embankment areas when a pay item for subexcavation is not shown in the bid schedule;

(b) Slide and slipout material not attributable to the Contractor's method of operations; and

(c) Drainage ditches, channel changes, and diversion ditches.

(b) Unclassified borrow, select borrow, and select topping. When measuring by the cubic yard measure in its original position. If borrow excavation is measured by the cubic yard in place, take initial cross-sections of the ground surface after stripping overburden. Upon completion of excavation and after the borrow source waste material is returned to the source, retake cross-sections before replacing the overburden.

Do not measure borrow excavation used in place of excess roadway excavation.

(c) Embankment construction. Measure embankment construction in its final position. Do not make deductions from the embankment construction quantity for the volume of minor structures.

(1) Include the following volumes in embankment construction:

(a) Roadway embankments;

(b) Material used to backfill subexcavated areas, holes, pits, and other depressions;

(c) Material used to restore obliterated roadbeds to original contours; and

(d) Material used for dikes, ramps, mounds, and berms.

(2) Do not include the following in embankment construction:

(a) Preparing foundations for embankment construction;

(b) Adjustments for subsidence or settlement of the embankment or of the foundation on which the embankment is placed; and

(c) Material used to round fill slopes.

(d) Rounding cut slopes. Measure rounding cut slopes horizontally along the centerline of the roadway if a pay item for slope rounding is included in the bid schedule. If a pay item for slope rounding is not included in the bid schedule slope rounding will be considered subsidiary to excavation.

(e) Waste. Measure waste by the cubic yard in its final position. Take initial cross-sections of the ground surface after stripping over burden. Upon completion of the waste placement, retake cross-sections before replacing overburden.

(f) Slope scaling. Measure slope scaling by the cubic yard in the hauling vehicle.

Payment

204.17 The accepted quantities will be paid at the contract price per unit of measurement for the Section 204 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

Table 204-1
Sampling and Testing Requirements

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Topping (704.05) & unclassified borrow (704.06)	Measured and tested for conformance (106.04)	Classification	—	AASHTO M 145	1 per soil type	Processed material before incorporating in work	Yes, when requested	Before using in work
		Moisture-density	—	AASHTO T 180, method D[1] or T 99, method C[1]	1 per soil type but not less than 1 per	"	"	"
		Compaction	—	AASHTO T 310 or other approved procedures	1 per 6000 yd² but not less than 1 per layer	In-place	—	Before placing next layer
Select borrow (704.07 & Select topping (704.08)	Measured and tested for conformance (106.04)	Classification	—	AASHTO M 145	1 per soil type but not less than 1 for each day of production	Processed material before incorporating	Yes, when requested	Before using in work
		Gradation	—	AASHTO T 27	"	"	"	"
		Liquid limit	—	AASHTO T 89	"	"	"	"
		Moisture-density	—	AASHTO T 180, method D[1] or T 99, method C[1]	1 per soil type but not less than 1 per	"	"	"
		Compaction	—	AASHTO T 310 or other approved procedures	1 per 6000 yd² but not less than 1 per layer	In-place	—	Before placing next layer

(1) Minimum of 5 points per proctor

Table 204-1 (continued)
Sampling and Testing Requirements

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Earth embankment (204.11, Compaction A)	Measured and tested for conformance (106.04)	Classification	—	AASHTO M 145	1 per soil type	Source of Material	Yes, when requested	Before using in work
		Moisture-density	—	AASHTO T 180, method D[1] or T 99, method C[1]	1 per soil type but not less than 1 per 13,000 yd^3	"	"	"
		Compaction	—	AASHTO T 310 or other approved procedures	1 per 3500 yd^2 but not less than 1 per layer	In-place	—	Before placing next layer
Top of subgrade (204.11 Compaction A)	Measured and tested for conformance (106.04)	Compaction	—	AASHTO T 310 or other approved procedures	1 per 2500 yd^2	In-place	—	Before placing next layer

(1) Minimum of 5 points per proctor.

Table 204-2
Construction Tolerances

	Tolerance Class [a]												
	A	B	C	D	E	F	G	H	I	J	K	L	M
Roadbed width (ft)	+0.5	+0.5	+1.0	+1.0	+1.0	+1.0	+1.5	+1.0	+2.0	+2.0	+2.0	+2.0	+2.0
Subgrade elevation (ft)	±0.1	±0.2	±0.2	±0.5	±0.5	±1.0	±1.0	±1.5	±2.0	±3.0	±2.0	±3.0	(c)
Centerline alignment (ft)	±0.2	±0.2	±0.5	±0.5	±1.0	±1.0	±1.5	±1.5	±2.0	±3.0	±3.0	±5.0	(c)
Slopes, excavation, and embankment (% slope[b])	±3	±5	±5	±5	±5	±5	±10	±10	±10	±10	±20	±20	±20

(a) Maximum allowable deviation from construction stakes and drawings.
(b) Maximum allowable deviation from staked slope measured from slope stakes or hinge points.
(c) Unless otherwise shown the centerline alignment and subgrade elevation, as built, have no horizontal curves with a radius of less than 80 feet, and no vertical curves with a curve length of less than 80 feet when the algebraic difference in the grade change is less than 10 percent, or a curve length of less than 100 feet when the algebraic difference of

209 - Structure Excavation and Backfill

209.07_0618_us_07_12_2007

209.07 Dewatering.

Delete subsection 209.07 and substitute the following:

Dewatering. Where necessary to dewater, dewater according to Subsection 157.09.

209.10_0618_us_05_01_2007

209.10 Backfill.

(a) General.

Add the following:

Replace any pipe that is distorted by more than 5 percent of nominal dimensions, or that is ruptured or broken.

Do not place or backfill pipe that meets any of the following conditions until the excavation and foundation have been approved in writing by the CO:

- Embankment height greater than 6 feet at subgrade centerline.
- Installation in a protected streamcourse.
- Round pipe with a diameter of 48 inches or greater.
- Pipe arches with a span of 50 inches or greater.
- Any box culvert of structure other than pipe culverts.

(b) Pipe culverts.

(1) Pipe culverts with compacted backfill.

Add the following:

On each side of the pipe, excavate an area at least as wide AS SHOWN ON THE PLANS. Backfill without damaging or displacing the pipe. Complete backfilling of the trench with suitable material.

209.11 Compacting.

Delete the subsection and add the following:

Compact backfill using designated compaction method A, B, or C:

Method A. Ensure that backfill density exceeds the density of the surrounding embankment.

Method B. Adjust the moisture content of the backfill material to a moisture content suitable for compaction. Compact each layer using appropriate compaction equipment until visual displacement ceases. For compaction under sections 252, 254, 255, 257, 258 and 262 compact with a vibratory steel wheeled roller with a mass of at least 8 tons.

Method C. Determine optimum moisture content and maximum density according to AASHTO T 99 method C. Adjust the moisture content of the backfill material to a moisture content suitable for compaction. Compact material placed in all layers to at least 95 percent of the maximum density. Determine the in place density and moisture content according to AASHTO T 310 or other approved test procedures.

Table 209-1 Sampling and Testing Requirements

Add the following:

(2) Compaction methods (A) and (B) do not require AASHTO T-99 or T-310 test methods for foundation fill.

251 - Riprap

251.03_nat_us_08_05_2009

Construction Requirements

251.03 General.

Add the following:

Place riprap under or adjacent to structures before placing prefabricated superstructure units or constructing superstructure falsework unless otherwise approved by the CO.

251.08 Measurement.

Add the following:

Payment for excavation and embankment required for placement of riprap is indirectly included in the pay item for riprap.

303 - Road Reconditioning

303.01 nat us 03_02_2005

303.01 Work.

Delete and add the following:

This work consists of reconditioning ditches, shoulders, roadbeds, cattleguards, asphalt surfaces, and aggregate surfaces.

303.05_0618_us 03_26_2007

303.05 Roadbed Reconditioning.

Delete fourth sentence and replace with the following:

Scarify to the depth and width shown on the drawings, remove surface irregularities, and shape to provide a uniform surface.

303.06_0618_us 04_04_2007

303.06 Aggregate Surface Reconditioning.

Delete and replace with the following:

Repair soft and unstable areas to the full depth of the aggregate surface and according to Subsection 204.07. Scarify to the depth and width shown in the drawings, and remove surface irregularities. Reshape, finish, and compact the entire aggregate surface according to Section 301, Section 321, or Section 322 as applicable.

Delete Table 303-1 and replace with the following:

Table 303-1
Sampling and Testing Requirements

Material or Product	*Type of Acceptance (Subsection)*	*Characteristic*	*Category*	*Test Methods Specifications*	*Sampling Frequency*	*Point of Sampling*	*Split Sample*	*Reporting Time*
Existing Roadway	*Measured and tested for conformance (106.04)*	*Moisture-density Method D*	—	*AASHTO T 99* (1)	*1 per each mixture or change in material*	*Processed material before incorporation in work*	*Yes, when requested*	*Before using in work*
		Moisture-density Method E	—	*R-1 Marshall*	"	"	"	"
		Moisture-density Method F	—	*AASHTO T 180* (1)	"	"	"	"
		Moisture-density Method G	—	*R-1 Marshall*	"	"	"	"
		In-place density & moisture content	—	*AASHTO T 310 or other approved procedures*	*1 per 3000 yd²*	*In-place*	—	*Before placing next layer*

(1) Minimum of 5 points per proctor.

303.10_0618_us_03_26_2007

303.10 Measurement

Remove and replace the first sentence in the third paragraph with the following:

Measure roadbed reconditioning, aggregate surface reconditioning, roadway reconditioning, and pulverizing by the mile, by the foot, by the station or by the square yard.

303.11_nat_us_03_29_2005

303.11 Measurement

Modify the second paragraph as follows:

Measure ditch reconditioning and shoulder reconditioning by the mile, station, or foot horizontally along the centerline of the roadway for each side of the roadway.

322 - Minor Aggregate Courses

322.00_nat_us_10_24_2007

Description

322.01 This work consists of constructing one or more courses of aggregate on a prepared surface. Work includes producing aggregate by grid rolling, screening, or crushing methods, or placing pit-run or Government-furnished aggregate.

Surface aggregate grading is designated as shown in Table 703-3.

Subbase and base aggregate grading is designated as shown in Table 703-2.

Screened aggregate grading is designated as shown in Table 703-16.

Material

322.02 Conform to the following Subsections:

Aggregate	703.05
Water	725.01

Construction Requirements

322.03 General. Prepare the surface on which the aggregate course is placed according to Section 204 or 303 as applicable.

Request approval of the roadbed in writing before placing aggregate.

Develop, haul, and apply water in accordance to Section 170.

Submit target values within the gradation ranges shown in Table 703-2 or 703-3 for the required grading. After reviewing the proposed target values the CO will determine the final values for the gradation and notify the Contractor in writing.

No quality requirements or gradation other than maximum size will be required for pit run and grid-rolled material. For grid rolling, use all suitable material that can be reduced to maximum size.

After processing on the road, remove all oversize material from the road and dispose of it as directed by the CO.

If the aggregate is produced and stockpiled before placement, handle and stockpiled according to Section 320. Establish stockpile sites at approved locations.

322.04 Mixing and Spreading. Mix the aggregate and adjust the moisture content to obtain a uniform mixture with a moisture content suitable for the specified compaction method. Spread and shape the mixture on the prepared surface in a uniform layer with no segregation of size, and to a loose depth that will provide the required compacted thickness.

Do not place in layers exceeding 6 inches in compacted thickness for aggregate base and surface courses or twice the maximum particle size for screened aggregate. When more than one layer is necessary, compact each layer according to Subsection 322.05 before placing the next layer. Route hauling and leveling equipment uniformly over the full width.

When placing aggregate over geotextile, place aggregate in a single lift to the full depth specified.

322.05 Compacting. Compact each layer full width. Roll from the sides to the center, parallel to the centerline of the road. Along curbs, headers, walls, and all places not accessible to the roller, compact the material with approved tampers or compactors.

Compact the aggregate using one of the following methods as specified:

Compaction A. Operating spreading and hauling equipment over the full width of the travelway.

Compaction B. Operate rollers and compact as specified in Subsection 204.11(a)(1).

Compaction C. Moisten or dry the aggregate to a uniform moisture content between 5 and 7 percent based on total dry weight of the mixture. Operate rollers and compact as specified in Subsection 204.11(a)(1).

Compaction D. Compact to a density of at least 95 percent of the maximum density, as determined by AASHTO T 99, method C or D.

Compaction E. Compact to a density of at least 96 percent of the maximum density, as determined by the Modified Marshall Hammer Compaction Method (available upon request from USDA Forest Service, Regional Materials Engineering Center, P.O. Box 7669, Missoula, MT 59807).

Compaction F. Compact to a density of at least 95 per-cent of the maximum density, as determined by AASHTO T 180, method C or D.

Compaction G. Compact to a density of at least 100 percent of the maximum density as determined by the Modified Marshall Hammer Compaction Method (available upon request from USDA Forest Service, Regional Materials Engineering Center, P.O. Box 7669, Missoula, MT 59807).

For all compaction methods, blade the surface of each layer during the compaction operations to remove irregularities and produce a smooth, even surface. When a density requirement is specified, determine the in place density and moisture content according to AASHTO T 310 or other approved test procedures.

322.06 Construction Tolerance. If grade finishing stakes are required, finish the surface to within ±0.10 feet from staked line and grade elevation.

If grade finishing stakes are not required, shape the surface to the required template and check the surface with a 10-foot straightedge. Defective areas are surface deviations in excess of 1/2 inch in 10 feet between any two contacts of the straightedge with the surface.

Correct all defective areas by loosening the material, adding or removing material, reshaping, and compacting.

Ensure that the compacted thickness is not consistently above or below the specified thickness. The maximum variation from the compacted specified thickness is ½ inch.

Ensure that the compacted width is not consistently above the specified width. The maximum variation from the specified width will not exceed +12 inches at any point.

322.07 Maintenance. Maintain the aggregate course to the correct line, grade, and cross-section by blading, watering, rolling, or any combination thereof until placement of the next course. Correct all defects according to Subsection 322.06.

322.08 Acceptance. See Table 322-1 or Table 322-2 as applicable, for sampling and testing requirements.

Aggregate gradation and surface course plasticity index will be evaluated under Subsection 106.04. If the aggregate is obtained from a Government stockpile then the above characteristics will be evaluated under Subsection 106.02. Other aggregate quality properties will be evaluated under Subsections 106.02 and 106.04. Placement of aggregate courses will be evaluated under Subsections 106.02 and 106.04.

The allowable upper and lower aggregate gradation limits are the Target Value plus or minus the allowable deviations shown in Tables 703-2 and 703-3.

The allowable upper and lower Plasticity index limits for surface courses are stated in 703.05(b).

Preparation of the surface on which the aggregate course is placed will be evaluated under Section 204 or 303 as applicable.

Measurement

322.09 Measure the Section 322 items listed in the bid schedule according to Subsection 109.02 and the following as applicable.

Measure square yard width horizontally to include the top of aggregate width including designed widening. Measure the square yard length horizontally along the centerline of the roadway.

If the measurement for aggregate is by cubic yard using contract quantities then measure aggregate by the cubic yard in-place once compacted, otherwise measurement for aggregate by the cubic yard is measured by the cubic yard in the hauling vehicle.

Measure thickness perpendicular to the grade of the travelway.

Measure width perpendicular to the centerline.

Payment

322.10 The accepted quantities will be paid at the contract price per unit of measurement for the Section 322 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

322-1
Sampling and Testing Requirements

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Aggregate source quality 703.05	Measured and tested for conformance (106.04 & 105)	LA abrasion (coarse)	—	AASHTO T 96	1 per type & source of material	Source of material	Yes, when requested	Before using in work
		Sodium sulfate soundness loss (coarse & fine)	—	AASHTO T 104	"	"	"	"
		Durability index (coarse & fine)	—	AASHTO T 210	"	"	"	"
		Fractured faces	—	ASTM D 5821	"	"	"	"
Subbase, Base, and Surface courses	Measured and tested for conformance (106.04)	Sample	—	AASHTO T 2	2 per day	From windrow or roadbed after processing or from approved crusher sampling device	Yes	48 hours

Table 322-1 (continued)
Sampling and Testing Requirements

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Subbase, Base, and Surface	Measured and tested for conformance (106.04)	Moisture-density Method D	—	AASHTO T 99 [1]	1 per type and source of material	Source of material	Yes, when requested	Before using in work
		Moisture-density Method E	—	R-1 Marshall	"	"	"	"
		Moisture-density Method F	—	AASHTO T 180 [1]	"	"	"	"
		Moisture-density Method G	—	R-1 Marshall	"	"	"	"
		In-place density & moisture content	—	AASHTO T 310 or other approved procedures	3 per day	In-place	—	Before placing next layer

Table 322-2
Sampling and Testing Requirements

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Screened Aggregate	Measured and tested for conformance (106 04)	Sample	—	AASHTO T 2	2 per day	From windrow or roadbed after processing or from approved crusher sampling device	Yes	48 hours

404.02_nat_us_06_09_2006

404.02 Composition of Mix (Job-Mix Formula).

Delete the second paragraph and replace with the following:

Submit a job-mix formula and supporting documentation, test results, and calculations for the material to be incorporated into the work. Include copies of laboratory test results and mix design data that demonstrate that the properties of the aggregate, additives, and mixture meet the current requirements and criteria of Federal or state agencies. Ensure that the job-mix formula was performed no more than one year prior to placing the hot asphalt concrete. After reviewing the Contractor's proposed job-mix formula, the CO will determine the final values for the job-mix formula to be used and notify the Contractor in writing.

404.03_0618_us_06_09_2007

404.03 Surface Preparation.

Change the following:

"Subsection 410.05" to "Subsection 401.06"

Add the following:

Apply an asphalt prime coat to contact surfaces of aggregate base according to Section 411.

404.04_nat_us_03_02_2005

404.04 Weather Limitations.

Change 35° F to 45° F:

404.06_nat_us_03_02_2005

404.06 Placing.

Add the following:

Do not place asphalt until the CO has approved in writing the area where it will be placed.

Delete the last sentence and replace with the following:

Offset the longitudinal joint of one layer at least 6 inches from the joint in the layer immediately below. Make the longitudinal joint in the top layer along the centerline of two-lane roadways or at the lane lines of roadways with more than two lanes. Offset transverse joints in succeeding layers and in adjacent lanes at least 10 feet, where possible.

404.06_0618_us_03_23_2007

404.06 Placing. Delete the first sentence and replace with the following:

Place the mix with a paver conforming to Subsection 401.05.

404.07_nat_us_03_02_2005

404.07 Compacting (a).

Delete and replace with the following:

(a) Roadway paving. Thoroughly and uniformly compact the surface a minimum of three passes with rollers that meet one of the following requirements:

(1) Steel-wheeled rollers, other than vibratory type, capable of exerting a force of not less than 1.5 ton/feet of width of the compression roll or rolls.

(2) Vibratory steel-wheel rollers with a minimum mass of 5 ton, equipped with amplitude and frequency controls, and designed to compact asphalt concrete.

(3) Pneumatic-tire rollers with smooth tread tires of equal size that provide a uniform compacting pressure for the full width of the roller and capable of exerting a ground pressure of at least 80 lbf/in^2.

Perform initial compaction while the mixture is above 250 °F. Perform finish rolling with steel-wheel rollers and continue until no roller tracks remain.

404.09 Acceptance.

Add the following to the second paragraph:

See Table 404-1 for sampling and testing requirements.

Table 404-1. Delete and replace with the following:

Table 404-1. Sampling and Testing Requirements.

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Sampling Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Asphalt Mixture (404.09)	-	-	-	AASHTO T 168	Three minimum per project and at least one per 500 Tons	Roadway prior to compaction	yes	As soon as sampled

430 - Asphalt Pavement Patching

430.00_nat_us_07_27_2007

Description

430.01 This work consists of performing full depth patching, patching with geotextiles, skin patching, spray-injection patching, and removal and replacement of asphalt berms.

Material

430.02 Conform to the following Subsections:

Minor Hot Asphalt Pavement	404.02
Asphalt Binder	702.01
Cutback Asphalt	702.02
Emulsified Asphalt	703.03
Application Temperatures	702.04
Cold Asphalt Mix	702.10
Aggregate	703.07 (a) and (b)
Choker Aggregate	703.12
Geotextile Type VI	714.01
Sand	703.15

Construction

430.03 Composition of Mix (Job-Mix Formula). Furnish either Minor Hot Asphalt Pavement or Minor Cold Asphalt Mix as approved by the CO.

430.04 Full Depth Patch.

Remove material to a minimum depth of 4 inches, or as necessary to reach firm support. If firm support for a patch is unavailable, notify the CO prior to placing any material.

Trim or mill the edges of the prepared hole to form a vertical face in un-fractured asphalt surfacing. Make the prepared hole rectangular, and clean it of all loose material. When the hole is dry, apply emulsified asphalt to the bottom and faces of the hole. Barricade prepared sites. Patch the sites immediately after the emulsified asphalt breaks. Place the asphalt concrete mixture in layers not exceeding 4 inches. Thoroughly compact each layer with hand or mechanical tampers or rollers. For hot asphalt concrete mixtures, compact the mix while it is above 230 °F.

Compact the finished surface with a steel-wheel roller or vibratory plate compactor. Ensure that the compacted patch is approximately 1/8 to 1/4 inches above the level of the adjacent pavement. Seal the edges of the completed patch with emulsified asphalt, and blot with fine sand.

430.05 Patching with Geotextile. Prepare the surface by digging out and patching according to Subsection 430.04 or by cleaning the surface, removing vegetation, and filling all cracks more than 1/4 inch wide with an approved crack-filling material. Remove excess crack-filling material. Spray the prepared surface with asphalt cement or emulsified asphalt according to the geotextile manufacturer's direction. Immediately place the geotextile over the repaired area. Allow emulsified asphalt to break before placing geotextile. Extend the fabric a minimum of 6 inches beyond the repaired or patched area onto sound adjoining pavement. Use a minimum of 2 inches overlap where adjacent fabric panels are needed to cover the repaired area.

Do not place the asphalt concrete mixture until authorized by the CO. Uniformly distribute asphalt concrete mixture in layers not to exceed 2 inches compacted depth. Feather the edges of skin patches. When placing more than one layers, offset all joints at least 6 inches between layers. Compact each layer with an 8 to 10 ton steel roller. For hot asphalt concrete mixtures, compact the mix while it is above 230°F. Ensure that the completed patch does not have abrupt transitions that could adversely affect the steering of a passenger car traveling across the area. Provide transition tapers for skin patches that are 12 inches long per 1/8 inch thickness of patch in the direction on travel.

430.06 Skin Patches. Prepare the surface on which the skin patch is placed by cleaning the surface, removing vegetation, and filling all cracks more than 1/4 inch wide with an approved crack-filling material. Remove excess crack-filling material. Spray the surface with emulsified asphalt at the rate approved by the CO.

Apply the asphalt concrete mixture according to Subsection 430.05.

430.07 Spray-Injection Patching. Use an approved continuous process that cleans and dries the area to be patched, sprays a tack coat of binder on the sides and bottom of the pothole, place aggregate coated with emulsified asphalt, and covers the area with a choker aggregate.

430.08 Asphalt Berm. Remove damaged segments of berm and bevel exposed ends at approximately 45 degrees from vertical. Clean and patch the berm foundation as necessary. Coat the foundation and joining surfaces with emulsified asphalt. Place and compact asphalt mix to conform to the shape of the undamaged segment.

430.09 Waste Material. Dispose of all materials removed from potholes, patches, and berms in accordance with Subsection 203.05(a).

430.10 Acceptance. Asphalt concrete mixtures will be evaluated under Subsections 106.02 and 106.03. Geotextiles will be evaluated under Subsection 106.03. Spray-injection patching will be evaluated under Subsections 106.02 and 106.03.

Measurement

430.11 Measure the Section 430 items listed in the bid schedule according to Subsection 109.02.

Payment

430.12 The accepted quantities will be paid at the contract unit price per unit of measurement for Section 430 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05

602 - Culverts and Drains

602.03_nat_us_09_06_2005

602.03 General.

Add the following:

Ensure that the final installed alignment of all pipe allows no reverse grades, and does not permit horizontal and vertical alignments to vary from a straight line drawn from center of inlet to center of outlet by more than 2 percent of pipe center length or 1.0 feet, whichever is less.

602.03_nat_us_10_02_2008

602.03 General.

Delete second paragraph and add the following:

The lengths and locations of individual pipe "as shown on the plans" are approximate. Do not order pipe until culvert locations are designated on the ground and a written list of the correct lengths is approved by the CO.

602.03_06_us_03_17_2010

602.03 General

Add the following:

Clean and paint damaged coating caused by welding, field cutting, or handling in accordance with AASHTO M 36M and ASTM A 849.

607 - Cleaning, Reconditioning, and Repairing Existing Drainage Structures

607.06_0618_us_03_26_2007

607.06 Reconditioning Drainage Structures.
Add the following:

After field cutting, repair damaged coatings in accordance with AASHTO M 36M and ASTM A 849.

625 - Turf Establishment

625.08_0618_us_01_29_2009

625.08 Mulching. (a) Dry method.
Delete the paragraph and replace with the following:

Apply certified weed free straw mulch as shown on the plans.

704 - Soil

704.02_0618_us_04_24_2008

704.02 Bedding Material.

Delete the Soil classification, AASHTO M 145 requirement in (b).

704.03_0618_us_03_26_2007

704.03 Backfill Material.

Delete the Soil classification, AASHTO M 145 requirement in (a) (2) and (b) (2).

UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE --- REGION SIX

WILLAMETTE NATIONAL FOREST

McKENZIE RIVER RANGER DISTRICT

LANE COUNTY, OREGON

PLANS FOR PROPOSED

Blue Thin Timber Sale
ROADS

ROAD NO.	LENGTH	CONST./RECONST.
1500	5.19	RECONST.
1500130	4.61	RECONST.
1500134	0.60	RECONST.
1500500	1.33	RECONST.
1500505	0.45	RECONST.

Total Miles 12.18

INDEX TO SHEETS	
SHEET	DESCRIPTION
1	TITLE SHEET
2	VICINITY MAP
3	GENERAL NOTES
4-8	ESTIMATE OF QUANTITIES
9-23	RECONSTRUCTION SUMMARIES
24	TYPICAL SECTIONS
25-26	DRAINAGE LISTING
27	DRAINAGE DETAIL
28	DEWATERING PLAN
29	CLEARING TYPICAL
30	STAND PIPE DETAIL

Designed Team:
K. Gabriel, S. Sattler, P. Hutchins 5/9/2011
Name Date

Reviewed by:
John Tanzer 5/17/2011
Name Date

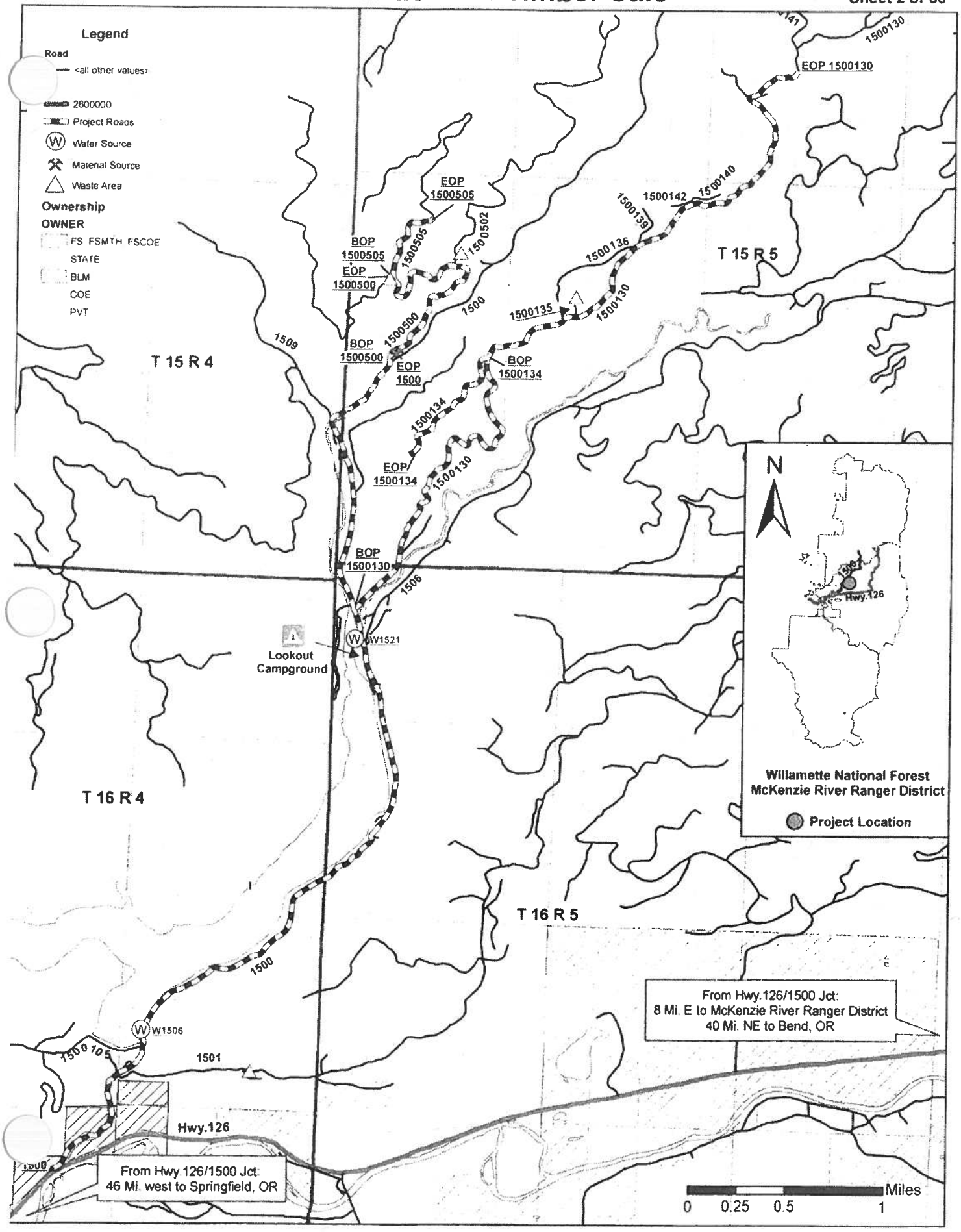
Reviewed by:
Ken Roberton 6/9/2011
Name Assistant Dev. Engineer Date

Recommended by:
[signature] 5/25/2011
Name Assistant Zone Engineer Date

Approved by:
[signature] for CHARLIE MCKENNA 6/9/2011
Name Forest Engineer Date

Mary Ellen 5-25-11
Name District Ranger Date

Blue Thin Timber Sale



GENERAL NOTES

1) Remove all berms created from roadbed reconditioning or ditch reconstruction to allow for drainage of water. All safety berms are designated to remain.

2) Do not undercut existing backslopes when reconstructing or reconditioning roadway ditch under pay items 20479 or 30359.

3) Salvage existing aggregate during culvert replacement; use as backfill material.

4) Recondition or reconstruct turnouts and curve widening the same as the basic roadbed. Quantities listed in the estimate of quantities include turnouts and curve widening.

5) See FSSS 107.02 **Protection and Restoration of Property and Landscape** and Timber Sale provisions for restrictions/mitigations related to this project.

6) Designated disposal sites are identified on reconstruction summary sheets. Layer place, smooth and shape to drain excess or unsuitable excavation materials. Additional disposal sites may be identified during construction if the need arises. No other disposal sites will be used, unless designated in advance by the Contracting Officer. Cost for disposal site shaping is indirect to the listed pay items under Sections 204 and 303.

7) The Contractor is responsible for locating all underground utilities prior to excavation.

8) Maintain all construction staking on the project, until final inspection and acceptance.

9) Replace culverts when stream channels are dry or during instream work period. Dewatering will be deleted if there is no water in the stream when the work is done.

10) Spread Government furnished straw over disturbed soil at all culvert installations, disposal areas and other exposed soil, excluding ditches. Cover areas completely. Straw is stored at the Horse Creek Work Center, located off Horse Creek road. Contact the CO to arrange for pick up.

11) Road 15 - match the road surface elevation of all fill and/or culvert repair sites before leaving project site. Maintain road surface elevation at repair sites until placement of asphalt is completed. Excess aggregate used to temporarily match surrounding asphalt surface elevation, excavated prior to asphalt placement, may be used as shoulder rock as designated by CO.

12) Submit a written Erosion Control / Dewatering Plan for approval 21 days prior to beginning culvert replacement. Refer to FSSS 157.02 for additional requirements. Dewatering is included under Pay item 15755.

13) Provide class A construction tolerance for Road 15 and class D for all other roads.

ESTIMATE OF QUANTITIES

		ROAD NUMBER	1500	
		SEGMENT		
		PROJECT LENGTH (Miles)	5.19	
ITEM NO.	DESCRIPTION	Pay Unit	QTY	REMARKS
15101	Mobilization	Lump sum	All	Includes equipment washing, temporary traffic control, flaggers and fire protection measures.
20207	Removal of individual trees, disposal of tops and limbs (f), logs (j), stumps (f)	Each	7	
20253	Removal of individual trees, miscellaneous: disposal of tops & limbs (f) & logs (f)	Each	15	Fall and leave.
20358A	Removal of corrugated metal pipe, disposal method (a)	Each	1	
20301B	Removal of rootwad	Each	1	
20304	Removal of old asphalt	Lump sum	All	
20419A	Drainage excavation, type culvert outlet ditch	Foot*	95	
20420	Drainage excavation, type catchbasin	Each	7	
20479	Drainage excavation, type roadway ditch	Mile	0.44	
25101	Placed riprap, class 4	Cubic Yard *	3	Commercial Source.
30359	Roadway reconditioning, compaction method E	Mile	0.43	
32232	Haul and place stockpiled aggregate, compaction method B	Cubic Yard *	15	Stockpile location, Road 1500500 M.P. 0.1. Government furnished.Includes rock for temporary surface leveling and pipe bedding.
40451	ODOT 3/8- inch dense graded HMAC, level II, asphalt cement PG 64 - 22	Ton	12.00	Sand seal all joints. Commercial Source.
43007	Skin patch hot asphalt concrete mixture	Ton	184.00	ODOT 3/8- inch dense graded HMAC, level II, asphalt cement PG 64 - 22
60276A	18-inch corrugated aluminized steel pipe, 0.064-inch thickness, method B	Foot	44	
60710	Reconditioning drainage structures, culvert inlet or outlet	Each	1	
	* Designates Contract Quantities			

ESTIMATE OF QUANTITIES

		ROAD NUMBER	1500130	
		SEGMENT		
		PROJECT LENGTH (Miles)	4.61	
ITEM NO.	DESCRIPTION	Pay Unit	QTY	REMARKS
20103	Clearing and grubbing, disposal of tops and limbs (f), logs (f), stumps (f)	Mile	4.61	Scatter existing woody debris or blowdown (located within the roadway) outside the clearing limits or as directed by CO.
20207	Removal of individual trees, disposal of tops and limbs (f), logs (j), stumps (f)	Each	2	
20253	Removal of individual trees, miscellaneous: disposal of tops & limbs (f) & logs (f)	Each	52	Fall and leave.
20358	Removal of corrugated metal pipe, disposal method (a)	Each	4	Includes corrugated spillways when identified for removal.
20301A	Removal of Rock Boulder	Each	2	
20419A	Drainage excavation, type culvert outlet ditch	Foot*	80	
20420	Drainage excavation, type catchbasin	Each	11	
20462	Unclassified borrow, compaction method E	Cubic Yard *	5	Borrow source location, Road 1500500 M.P. 0.1 or as approved by CO.
20479	Drainage excavation, type roadway ditch	Mile	0.53	
25101	Placed riprap, class 4	Cubic Yard *	8	Commercial Source
30359	Roadway reconditioning, compaction method E	Mile	4.10	Removal of ravel through identified inslope areas is an indirect cost to this payitem.
32232	Haul and place stockpiled aggregate, compaction method B	Cubic Yard *	65	Stockpile location, Road 1500500 M.P. 0.1. Government furnished.
60276A	18-inch corrugated aluminized steel pipe, 0.064-inch thickness, method B	Foot	138	
60403	Inlet, 36" full-circle stand pipe	Each	1	Aluminized steel pipe
60710	Reconditioning drainage structures, culvert inlet or outlet	Each	5	
62509	Mulching, dry method	Lump sum	All	Treat all exposed soil, at culvert installation sites and disposal sites,Includes mulching of entire project included in these plans
	* Designates Contract Quantities			

ESTIMATE OF QUANTITIES

		ROAD NUMBER	1500134	
		SEGMENT		
		PROJECT LENGTH (Miles)	0.60	
ITEM NO.	DESCRIPTION	Pay Unit	QTY	REMARKS
20103	Clearing and grubbing, disposal of tops and limbs (f), logs (f), stumps (f)	Mile	0.60	Scatter existing woody debris or blowdown (located within the roadway) outside the clearing limits or as directed by CO.
20253	Removal of individual trees, miscellaneous disposal of tops & limbs (f) & logs (f)	Each	2	Fall and leave.
20358	Removal of corrugated metal pipe, disposal method (a)	Each	1	Includes corrugated spillways when identified for removal.
20420	Reconstruct culvert catch basin	Each	2	
20464	Excavation, compaction method E	Lump sum	All	Borrow source location, Road 1500500 M.P. 0.1 or as approved by CO.
20479	Drainage excavation, type roadway ditch	Mile	0.44	
30359	Roadway reconditioning, compaction method E	Mile	0.60	
32232	Haul and place stockpiled aggregate, compaction method B	Cubic Yard *	40	Stockpile location, Road 1500500 M.P. 0.1. Government furnished.

* Designates Contract Quantities

ESTIMATE OF QUANTITIES

		ROAD NUMBER	1500500	
		SEGMENT		
		PROJECT LENGTH (Miles)	1.33	
ITEM NO.	DESCRIPTION	Pay Unit	QTY	REMARKS
15755	Erosion control & pollution prevention	Each	2	Includes dewatering for culvert replacements
20103	Clearing and grubbing, disposal of tops and limbs (f), logs (f), stumps (f)	Mile	1.33	Scatter existing woody debris or blowdown (located within the roadway) outside the clearing limits or as directed by CO.
20207	Removal of individual trees, disposal of tops and limbs (f), logs (f), stumps (f)	Each	1	
20253	Removal of individual trees, miscellaneous: disposal of tops & limbs (f) & logs (f)	Each	2	Fall and leave.
20358	Removal of corrugated metal pipe, disposal method (a)	Each	3	The Backfilling of existing catchbasin and trench at m.p. 0.03 is an indirect cost to this pay item.
20302	Removal of culvert inlet / outlet	Foot	8	disposal method (a)
20419A	Drainage excavation, type culvert outlet ditch	Foot*	75	
20419B	Drainage excavation, type leadoff ditch	Foot *	15	
20420	Drainage excavation, type catchbasin	Each	1	
20462	Unclassified borrow, compaction method E	Cubic Yard *	15	Borrow source location, Road 1500500 M.P. 0.1 or as approved by CO.
20479	Drainage excavation, type roadway ditch	Mile	0.75	
30359	Roadway reconditioning, compaction method E	Mile	1.33	
32232	Haul and place stockpiled aggregate, compaction method B	Cubic Yard *	720	Stockpile location, Road 1500500 M.P. 0.1. Government furnished.
60256	18-inch corrugated steel pipe, 0.064-inch thickness, method B	Foot	8	Includes band and hardware.
60276A	18-inch corrugated aluminized steel pipe, 0.064-inch thickness, method B	Foot	60	
60276B	24-inch corrugated aluminized steel pipe, 0.064-inch thickness, method B	Foot	32	
	* Designates Contract Quantities			

ESTIMATE OF QUANTITIES

		ROAD NUMBER	1500505	
		SEGMENT		
		PROJECT LENGTH (Miles)	0.45	
ITEM NO.	DESCRIPTION	Pay Unit	QTY	REMARKS
20103	Clearing and grubbing, disposal of tops and limbs (f), logs (f), stumps (f)	Mile	0.45	Scatter existing woody debris or blowdown (located within the roadway) outside the clearing limits or as directed by CO.
20253	Removal of individual trees, miscellaneous: disposal of tops & limbs (f) & logs (f)	Each	1	Fall and leave.
20420	Drainage excavation, type catchbasin	Each	3	
20479	Drainage excavation, type roadway ditch	Mile	0.24	
30359	Road reconditioning, compaction method E	Mile	0.45	
60710	Reconditioning drainage structures, culvert inlet or outlet	Each	1	

* Designates Contract Quantities

RECONSTRUCTION SUMMARY
ROAD 1500

Milepost	Reference Point or Work Required	Pay Item
0.00	Reference: Intersection with Highway 126. Begin Project Buried utility lines exist along both sides of road. Contractor is responsible for locating and marking prior to all excavation or digging.	
0.02	Begin reconstructing roadway ditch, left.	20479
0.06	Existing culvert. Reconstruct culvert catchbasin.	 20420
0.10	Reference: Private driveway, left and right. End reconstructing roadway ditch, left.	
0.11	Reference: Entering Forest Service land	
0.19	Reference: Private dead end, left.	
0.20	Existing culvert. Reconstruct culvert catchbasin. Remove 2 green trees from culvert inlet.	 20420 20207
0.29	Begin reconstructing roadway ditch, left.	20479
0.31	Existing culvert. Reconstruct culvert catchbasin. Remove 1 green tree from culvert outlet. Place 1 CY class 4 riprap at outlet as energy dissipator.	 20420 20207 25101
0.39	Remove root wad, left.	20301B
0.42	Existing culvert. Place 1 CY class 4 riprap at outlet as energy dissipator.	 25101
0.48	Reference: Private driveway, left.	
0.50	Reference: Private driveway, right. Entering Forest Service land left and right.	
0.53	Reference: Private driveway, left.	
0.56	End reconstructing roadway ditch, left.	
0.61	Begin reconstructing roadway ditch, left.	20479
0.65	End reconstructing roadway ditch, left.	

RECONSTRUCTION SUMMARY
ROAD 1500

Milepost	Reference Point or Work Required	Pay Item
0.68	Reference: Access road, left (gated). Road, left to a large landing.	
0.90	Reference: Access road (gated), left. Intersection with Rd.1500105, left. Intersection with Rd.1500122, left (boat launch).	
0.99	Existing culvert.	
	Place 1 CY class 4 riprap at outlet as energy dissipator.	25101
1.30	Place 24' wide x 95' long x 2" depth asphalt skin patch. Feather asphalt to surrounding surfaces.	43007
1.61	Reference: Beginning of guardrail, left. Utility box, left.	
	Existing culvert.	
	Reconstruct culvert catchbasin.	20420
	Remove 3 green trees from culvert inlet.	20207
1.62	Place 12' wide x 25' long x 2" depth asphalt skin patch. Feather asphalt to surrounding surfaces.	43007
1.70	Place 24' wide x 105' long x 2" depth asphalt skin patch. Feather asphalt to surrounding surfaces.	43007
2.13	Existing culvert.	
	Reconstruct culvert catchbasin.	20420
2.22	Place 24' wide x 145' long x 2" depth asphalt skin patch. Feather asphalt to surrounding surfaces.	43007
2.25	Roadbed settlement, in south bound lane	
	Saw cut and remove asphalt and subgrade material 4' wide x 14' long to a depth of 12".	20304
	Place 10 inch deep crushed aggregate base.(2cy)	32232
	Place 2 inch asphalt full depth patch.	40451
	Place 14' wide x 155' long x 2" depth asphalt skin patch. Feather asphalt to surrounding surfaces	43007
2.49	Place hot asphalt pothole patch, 8' wide x 12' long. Feather asphalt to surrounding surfaces	43007
2.66	Reference: Access Rd.1500124, left.	
2.87	Existing culvert.	
	Reconstruct culvert catchbasin.	20420
	Begin reconstructing roadway ditch, right.	20479

RECONSTRUCTION SUMMARY
ROAD 1500

Milepost	Reference Point or Work Required	Pay Item
2.91	Place hot asphalt pothole patch, 8' wide x 12' long. Feather asphalt to surrounding surfaces	43007
2.92	End reconstructing roadway ditch, right.	
2.93	Place hot asphalt pothole patch, 8' wide x 12' long. Feather asphalt to surrounding surfaces	43007
3.14	Sawcut existing asphalt surfacing and remove	20304
	Remove existing culvert.	20358A
	Install new 18" x 44' culvert.	60276A
	Place crushed aggragate over culvert replacement, 6" deep. (5cy)	32232
	Place asphalt patch over culvet replacement, 4" deep.	40451
3.28	Existing culvert.	
	Reconstruct culvert outlet ditch, 15 feet.	20419A
3.33	Reference: HJ Andrews stream monitoring station, right.	
	Existing culvert.	
	Reconstruct culvert catchbasin.	20420
	Reconstruct culvert outlet ditch, 10 feet.	20419A
3.34	Reference: Utility boxes, right. Access Rd.1500126, right to HJ Andrews stream monitoring station.	
3.54	Reference: Intersection with Rd.1506, right.	
3.57	Reference: Intersection with access road, left to Lookout Campground.	
3.63	Reference: Lookout Creek Bridge	
3.68	Alligator cracking, in south bound lane	
	Saw cut and remove asphalt material 18' wide x 13' long to a depth of 6", compact subgrade.	20304
	Place 6 inch asphalt full depth patch.	40451
3.75	Reference: Intersection with Rd.1500130, right.	
3.76	Existing culvert.	
	Reconstruct culvert outlet ditch, 15 feet.	20419A
3.78	Reference: Intersection with Rd.1500120, left to Mona Campground.	

RECONSTRUCTION SUMMARY
ROAD 1500

Milepost	Reference Point or Work Required	Pay Item
3.95	Existing culvert. Reconstruct culvert outlet ditch, 10 feet.	20419A
3.99	Reference: Dispersed campsite, left.	
4.00	Existing culvert. Reconstruct culvert outlet ditch, 10 feet.	20419A
4.10	Existing culvert. Reconstruct culvert outlet ditch, 10 feet.	20419A
4.20	Existing culvert. Reconstruct culvert outlet ditch, 15 feet. Remove 1 green tree from inlet.	20419A 20207
4.23	Existing culvert. Reconstruct culvert outlet ditch, 10 feet. Repair (jack open) culvert inlet; straighten and reform circular opening.	20419A 60710
4.35	Reference: Intersection with Rd.1500143, right.	
4.49	Reference: Intersection with Rd.1500175, left.	
4.59	Reference: Intersection with Rd.1500180, left.	
4.68	Reference: Dispersed campsite, right.	
4.70	Reference: Blue River Bridge	
4.75	Reference: End of bridge structure. Intersection with Rd.1509, left.	
4.76	Reference: End of asphalt. Begin reconditioning existing roadbed. Scarify a minimum of 1 " below the depth of all existing potholes, corrugations or surface irregularities. Sod and fine organic materials growing on road surface may be incorporated into surfacing.	30359
5.19	Reference: Intersection with Rd.1500500, left. End of project.	

RECONSTRUCTION SUMMARY
ROAD 1500

Milepost	Reference Point or Work Required	Pay Item
	DANGER TREE REMOVAL LIST	20253
0.36	2 danger trees, left.	
4.12	1 danger tree, right.	
4.20	2 danger trees, right.	
4.23	2 danger trees, right.	
4.49	1 danger tree, right.	
4.56	1 danger tree, right.	
5.14	1 danger tree, left.	
5.19	1 danger tree, left.	
Note:	Remove 4 danger trees (to be field identified)	

RECONSTRUCTION SUMMARY
ROAD1500130

Milepost	Reference Point or Work Required	Pay Item
0.00	Reference: Intersection with Road 1500. Begin project.	
	Begin clearing. Grub roots and stumps from, ditches where designated for reconstruction under items 20479.	20103
0.04	Existing culvert.	
	Repair (jack open) culvert inlet, straighten and reform circular opening.	60710
0.21	Existing culvert	
	Reconstruct culvert outlet ditch, 10 feet.	20419A
0.38	Reference: Intersection with Road 1500132, right.	
0.47	Existing culvert	
	Reconstruct culvert outlet ditch, 10 feet.	20419A
	Reconstruct culvert catchbasin.	20420
0.49	Begin reconstructing roadway ditch, left.	20479
0.51	Reference: Road closure gate, end of asphalt surface.	
	Begin reconditioning existing roadbed. Scarify a minimum of 1 " below the depth of all existing potholes, corrugations or surface irregularities. Sod and fine organic materials growing on road surface may be incorporated into surfacing.	30359
	End reconstructing roadway ditch, left.	
0.53	Existing culvert.	
	Reconstruct culvert outlet ditch, 10 feet.	20419A
0.67	Existing culvert.	
	Reconstruct culvert outlet ditch, 10 feet.	20419A
0.69	Begin reconstructing roadway ditch, left.	20479
0.71	Reference: Debris flow test site, right.	
0.76	End reconstructing roadway ditch, left.	
0.90	Existing culvert.	
	Place 2 CY class 4 riprap at outlet as energy dissipator.	25101
0.92	Reference: Existing berm, right. Do not disturb.	
1.11	Remove existing culvert.	20358
	Install new 18" x 36' culvert.	60276A
	Reconstruct culvert outlet ditch, 10 feet.	20419A
	Place 10 CY crushed aggregate over installation; blend to adjacent road surfaces to provide a smooth transition.	32232

RECONSTRUCTION SUMMARY
ROAD1500130

Milepost	Reference Point or Work Required	Pay Item
1.19	Begin reconstructing roadway ditch, left.	20479
1.25	End reconstructing roadway ditch, left.	
1.27	Existing culvert.	
	Place 1 CY class 4 riprap at outlet as energy dissipator.	25101
1.29	Existing culvert.	
	Reconstruct culvert catch basin.	20420
	Place 1 CY class 4 riprap at outlet as energy dissipator.	25101
1.40	Reference: Communitcation tower, left.	
1.45	Remove existing culvert and corrugated spillway	20358
	Install new 18" x 40' culvert. Raise culvert inlet 1 foot.	60276A
	Place 1 CY class 4 riprap at outlet as energy dissipator.	25101
	Place 10 CY crushed aggregate over installation; blend to adjacent road surfaces to provide a smooth transition.	32232
1.51	Begin reconstruction roadway ditch, left.	20479
1.55	Remove 2 large rocks from roadway shoulder, right. Dispose at designated disposal site.	20301A
	End reconstructing roadway ditch, left.	
1.55-1.59	Roadbed inslopes 3%, recondition to hillslope hinge, no existing ditch.	30359
	Incorporate existing bermed aggregate material, right into adjacent road surface.	
	Begin placement of crushed aggregate, spot surfacing, 3" deep. 25 CY extend to hillslope hinge.	32232
1.57	Reference: Abandoned culvert, no cleaning necessary.	
1.65	Remove existing culvert and corrugated spillway	20358
	Install new 18" x 34' culvert.	60276A
	Place 1 CY class 4 riprap at outlet as energy dissipator.	25101
	Place 10 CY crushed aggregate over installation; blend to adjacent road surfaces to provide a smooth transition.	32232
1.71	Begin reconstructing roadway ditch, left.	20479
1.76	End reconstructing roadway ditch, left.	
1.81	Existing culvert.	
	Reconstruct damaged foreslope, place 5 CY borrow material and shape to match existing slope.	20462
	Begin reconstructing roadway ditch, left.	20479

RECONSTRUCTION SUMMARY
ROAD1500130

Milepost	Reference Point or Work Required	Pay Item
1.84	End reconstructing roadway ditch, left.	
1.86-1.90	Roadbed inslopes 3%, recondition to hillslope hinge, no existing ditch. Incorporate existing bermed aggregate material, right into adjacent road surface.	30359
1.90	Existing culvert. Reconstruct culvert catchbasin. Install new 36" full-circle standpipe as shown on sheet 30 of 30. End reconstructing roadway ditch, left.	20420 60403
1.92	Begin reconstructing roadway ditch, left.	20479
1.93	End reconstructing roadway ditch, left.	
1.97	Reference: Intersection with Rd.1500134, left.	
2.26	Existing culvert. Reconstruct culvert catch basin. Repair (jack open) culvert inlet; straighten and reform circular opening. Begin reconstructing roadway ditch, left.	 20420 60710 20479
2.30	End reconstructing roadway ditch, left.	
2.39	Existing culvert. Reconstruct culvert catchbasin. Reconstruct culvert outlet ditch,10 feet.	 20420 20419A
2.50	Begin reconstructing roadway ditch, left.	20479
2.61	End reconstructing roadway ditch, left.	
2.63	Reference: Intersection with Road 1500135 / road to disposal site, left.	
2.90	Existing culvert. Reconstruct culvert outlet ditch,10 feet.	 20419A
3.05	Reference: Intersection with Road 1500136, right.	
3.25	Existing culvert. Repair (jack open) culvert inlet; straighten and reform circular opening. Reconstruct culvert catchbasin.	 60710 20420
3.33	Reference: Old spur road, left.	
3.44	Reference: Intersection with Road 1500140, left.	

RECONSTRUCTION SUMMARY
ROAD1500130

Milepost	Reference Point or Work Required	Pay Item
3.57	Existing culvert.	
	Reconstruct culvert catchbasin.	20420
	Repair (jack open) culvert inlet; straighten and reform circular opening.	60710
3.66	Existing culvert.	
	Repair culvert inlet; cut off ripped culvert edge.	60710
	Reconstruct culvert catchbasin.	20420
3.70	Begin reconstructing roadway ditch, right.	20479
3.74	End reconstructing roadway ditch, right.	
3.82	Reference: Intersection with Road 1500128, left.	
3.84	Existing culvert.	
	Reconstruct outlet ditch,10 feet.	20419A
3.95	Remove existing culvert.	20358
	Remove 2 trees at outlet, to facilitate installation.	20207
	Install new 18" x 28' culvert. Shift inlet 6" towards cutslope.	60276A
	Place 1 CY class 4 riprap at outlet as energy dissipator.	25101
	Place 10 CY crushed aggregate over installation; blend to adjacent road surfaces to provide a smooth transition.	32232
3.99	Existing culvert.	
	Reconstruct culvert catchbasin.	20420
4.15	Begin reconstructing roadway ditch, right.	20479
4.19	Existing culvert.	
	Reconstruct culvert catchbasin.	20420
	Place 1 CY class 4 riprap at outlet as energy dissipator.	25101
4.21	End reconstructing roadway ditch, right.	
4.30	Reference: Intersection with Road 1500129, right.	
4.33	Reference: Intersection with Road 1500137, left.	
4.44	Reference: Old landing, left.	
4.50	Existing culvert.	
	Reconstruct culvert catchbasin.	20420
4.61	Reference: Corner of Unit 300.	
	End of project.	

Milepost	Reference Point or Work Required	Pay Item
	DANGER TREE REMOVAL LIST	20253
0.45	1 danger tree, left.	
0.49	1 danger tree, left.	
0.52	4 danger trees, left.	
1.07	1 danger tree, left. 1 danger tree, right.	
1.18	1 danger tree, right.	
1.21	2 danger trees, left.	
1.25	1 danger tree, left.	
1.28	1 danger tree, left.	
1.46	2 danger trees, left.	
1.47	3 danger trees, right.	
1.66	1 danger tree, right.	
1.72	1 danger tree, left.	
1.74	2 danger trees, right.	
2.14	2 danger trees, left.	
2.17	2 danger trees, left.	
2.18	2 danger trees, left.	
2.22	1 danger tree, left.	
2.27	1 danger tree, left.	
2.28	2 danger trees, left.	
2.32	3 danger trees, left.	
2.33	1 danger tree, right.	
2.45	1 danger tree, left.	
2.47	2 danger trees, left.	
2.75	1 danger tree, left.	
2.92	1 danger tree, left.	
3.14	1 danger tree, left.	
3.73	1 danger tree, right.	
3.96	1 danger tree, left.	
4.15	1 danger tree, right.	
4.17	2 danger trees, right.	
4.24	1 danger tree, right.	
Note:	Remove 4 danger trees (to be field identified)	

RECONSTRUCTION SUMMARY
ROAD 1500134

Milepost	Reference Point or Work Required	Pay Item
0.00	Reference: Intersection with Road 1500130. Begin project.	
	Begin clearing.	20103
	Begin reconditioning existing roadbed. Scarify a minimum of 1 " below the depth of all existing potholes, corrugations or surface irregularities. Sod and fine organic materials growing on road surface may be incorporated into surfacing.	30359
	Begin reconstructing roadway ditch, Left.	20479
0.10	Existing culvert.	
	Reconstruct culvert catch basin.	20420
0.17	Begin placement of crushed aggregate, spot surfacing, 3" deep. 30 CY	32232
0.22	End placment of crushed aggregate.	
0.27	Remove existing culvert and corrugated spillway.	20358
	Backfill pipebed with suitable borrow matrial approved by CO.	20464
	Place 10 CY crushed aggregate spot surfacing over removal site; blend to adjacent road surfaces to provide a smooth transition.	32232
0.35	End reconstructing roadway ditch, left.	
0.51	Begin reconstructing roadway ditch, Left.	20479
0.59	Existing culvert.	
	Reconstruct culvert catchbasin.	20420
0.60	Reference: Landing, right.	
	End of project.	
	DANGER TREE REMOVAL LIST	20253
0.21	1 danger tree, right.	
Note:	Remove 1 danger tree (to be field identified)	

RECONSTRUCTION SUMMARY
ROAD 1500500

Milepost	Reference Point or Work Required	Pay Item
0.00	Reference: Intersection with Road 15. Begin Project	
	Begin clearing. Grub roots and stumps from ditches where designated for reconstruction under items 20479.	20103
	Begin reconditioning existing roadbed. Scarify a minimum of 1 " below the depth of all existing potholes, corrugations or surface irregularities. Sod and fine organic materials growing on road surface may be incorporated into surfacing.	30359
	Begin placement of crushed aggregate, 3" depth.	32232
0.03	Remove existing culvert.	20358
	Install new 18" x 26' culvert,shift inlet to right 10' to a new skew of 120°.	60276A
	Backfill existing catchbasin and trench with suitable borrow matrial.	20358
	Reconstruct culvert outlet ditch, 55 feet to Intersection with Road 15 roadway ditch.	20419A
	Begin reconstructing ditch, right.	20479
0.06	End ditch reconstruction, right.	
0.10	Reference: Road 1500500 aggregate material source and borrow source, right.	
0.14	Reference: Turnout, right.	
0.23	Reference: Turnout, right.	
0.33	Begin reconstructing ditch, left.	20479
0.37	Reference: Turnout, right.	
0.48	Reference: Turnout, right.	
0.55	Reference: Disposal site, left.	
0.66	Existing culvert.	
	Reconstruct culvert catchbasin.	20420
0.63	Reference: Turnout, right.	
0.69	Reference: Turnout, right.	
0.76	Reference: Intersection with Road 1500502, right.	
	Disposal site located off Road 1500502 at mp 0.10, right.	
0.82	Reference: Truck turn around, right.	
	End ditch reconstruction, left.	
	End placment of crushed aggregate.	

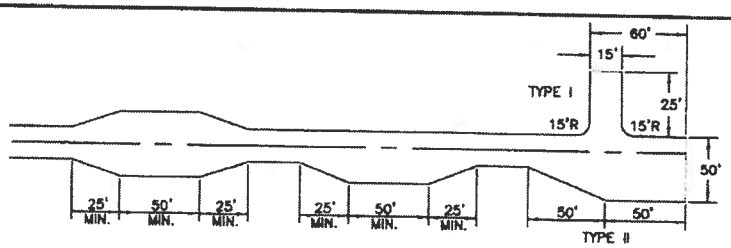
RECONSTRUCTION SUMMARY
ROAD 1500500

Milepost	Reference Point or Work Required	Pay Item
0.86	Remove existing culvert.	20358
	Install new 18" x 34' culvert. Shift inlet 1' up stream.	60276A
	Lower outlet 1' to ground.	
	Reconstruct damaged fillslope, place 5 CY borrow material and shape to match existing slope.	20462
	Place 20 CY crushed aggregate over installation; blend to adjacent road surfaces to provide a smooth transition.	32232
0.92	Begin reconstructing roadway ditch, right.	20479
	Begin placement of crushed aggregate, spot surfacing, 3" deep. 60 CY	32232
0.97	Existing culvert.	
	Reconstruct outlet ditch, 10 feet.	20419A
	Reconstruct leadoff ditch, left 15 feet.	20419B
	End reconstructing roadway ditch, right.	
0.99	Reference: Un-numbered spur road, right.	
1.01	Reference: Gate, un-numbered spur road, right.	
	End placment of crushed aggregate.	
1.05	Remove existing culvert.	20358
	Dewater culvert installation site, and/or prevent erosion and pollution.	15755
	Install new 24" x 32' culvert. Shift inlet 2' up stream.	60276B
	Reconstruct damaged foreslope, place 10 CY borrow material and shape to match existing slope.	20462
	Begin placement of crushed aggregate, spot surfacing, 3" deep. 40 CY	32232
1.07	Remove 8' of existing culvert inlet.	20302
	Dewater culvert installation site, and/or prevent erosion and pollution.	15755
	Install new 18" X 8' steel culvert to inlet end.	60256
	Begin reconstructing roadway ditch, right.	20479
1.11	End placment of crushed aggregate.	
1.18	Reference: Un-numbered spur road, left.	
1.20	End reconstructing roadway ditch, right.	
1.23	Begin reconstructing roadway ditch, left and right.	20479
1.28	End reconstructing roadway ditch, left and right.	
1.32	Existing culvert.	
	Remove 1 tree from outlet.	20207
	Reconstruct outlet ditch, 10 feet.	20419A
1.33	Reference: Intersection with Rd.1500505.	
	End of project.	

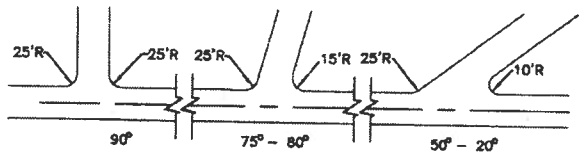
Milepost	Reference Point or Work Required	Pay Item
	DANGER TREE REMOVAL LIST Remove 2 danger trees (to be field identified)	20253

RECONSTRUCTION SUMMARY
ROAD 1500505

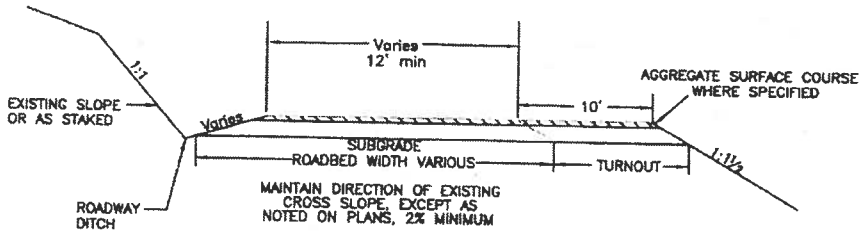
Milepost	Reference Point or Work Required	Pay Item
0.00	Reference: Intersection with Rd.1500500. Begin Project.	
	Begin clearing. Grub roots and stumps from, ditches where designated for reconstruction under items 20479.	20103
	Begin reconditioning existing roadbed. Scarify a minimum of 1 " below the depth of all existing potholes, corrugations or surface irregularities. Sod and fine organic materials growing on road surface may be incorporated into surfacing.	30359
0.09	Begin reconstructing roadway ditch, left.	20479
0.10	Existing culvert.	
	Reconstruct culvert catchbasin.	20420
	Repair culvert inlet; cut off ripped culvert edge.	60710
0.14	End ditch reconstruction, left.	
0.20	Begin reconstructing roadway ditch, left.	20479
0.24	Existing culvert.	
	Reconstruct culvert catchbasin.	20420
0.26	End ditch reconstruction, left.	
0.28	Existing culvert.	
	Reconstruct culvert catchbasin.	20420
0.32	Begin reconstructing roadway ditch, left.	20479
0.45	End of project.	
	DANGER TREE REMOVAL LIST	
	Remove danger 1 tree (to be field identified)	20253



DOUBLE LANE OR SPLIT TURNOUT | TURNOUT | TURNAROUND

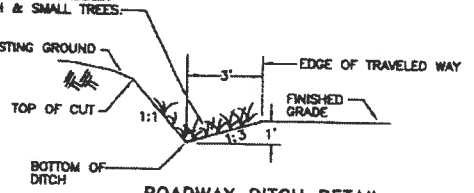


TYPICAL INTERSECTION

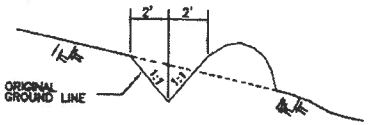


TYPICAL SINGLE, DOUBLE LANE, TURNOUT AND TURNAROUND

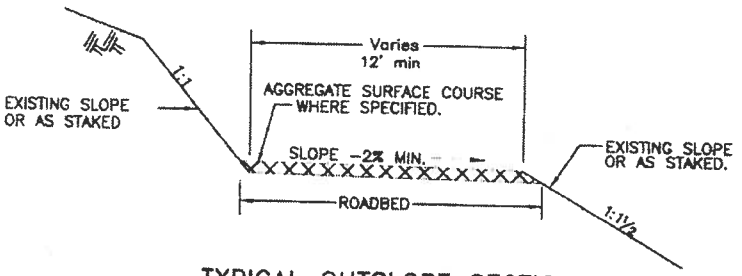
RETAIN LOW GROWING VEGETATION, SUCH AS GRASS AND FORBS, UNLESS IT OBSTRUCTS THE STRUCTURE & INTERFERES WITH PROPER FUNCTION OR ENCROACHES INTO ROADBED.
GRUB BRUSH & SMALL TREES.



ROADWAY DITCH DETAIL
ROAD 2633



TYPICAL LEADOFF DITCH AND FURROW DITCH



TYPICAL OUTSLOPE SECTION

C = CROWNED
I = INSLOPED
O = OUTSLOPED

AGGREGATE SURFACE COURSE

ROAD NO.	GRADING	TYPICAL SECTION	M.P. LOCATION	DEPTH	TRAVELED WAY WIDTH	ROCK SLOPE
1500130	Stockpile	I	1.55 - 1.59	3"	12'	1:2
1500134	Stockpile	C	0.17 - 0.22	3"	12'	1:2
1500500	Stockpile	C	0.00 - 0.82	3"	12'	1:2
1500500	Stockpile	C	0.92 - 1.01	3"	12'	1:2
1500500	Stockpile	C	1.05 - 1.11	3"	12'	1:2

See Reconstruction Summaries for culvert installation spot surfacing locations

ILLUSTRATED SLOPE RATIO = RISE:RUN (WHERE RISE =1)
NOT TO SCALE

TYPICAL SECTIONS

STATE	FOREST	PROJECT	SHEET NUMBER	TOTAL SHEETS
OREGON	WILLAMETTE	Blue Thin T.S.	24	30

DRAINAGE LISTING

ROAD NO. Sta.	Install FEET +	Remove EACH -	As Built Sta.	As Built FEET	Date	DIMENSION SIZE in.	DIMENSION THICK in. FE	Installation Details Inlet Basin or Catch Basin	Outlet Ditch Feet	SKEW Deg	GRADE %	C.Y. Riprap	REMARKS
1500													
0.06								Rec.					
0.20								Rec.					
0.31								Rec.				1	Class 4 riprap, as energy dissipator.
0.42												1	Class 4 riprap, as energy dissipator.
0.99												1	Class 4 riprap, as energy dissipator.
1.61								Rec.					
2.13								Rec.					
2.87								Rec.					
3.14	44	1				18	0.064			#	#		
3.28									15				
3.33								Rec.	10				
3.76									15				
3.95									10				
4.00									10				
4.10									10				
4.20									15				
4.23									10				Repair culvert inlet; reform circular opening.
1500130													
0.04													Repair culvert inlet; reform circular opening.
0.21									10				
0.47								Rec.	10				
0.53									10				
0.67									10				
0.90												2	Class 4 riprap, as energy dissipator.
1.11	36	1				18	0.064		10	#	#		
1.27												1	Class 4 riprap, as energy dissipator.
1.29								Rec.				1	Class 4 riprap, as energy dissipator.
1.45	40	1				18	0.064			#	#	1	Raise inlet 1 foot. Class 4 riprap, as energy dissipator.
1.65	34	1				18	0.064			#	#	1	Class 4 riprap, as energy dissipator.
1.90								Rec.					Install 36" standpipe.
2.26								Rec.					Repair culvert inlet; reform circular opening.
2.39								Rec.	10				
2.90									10				
3.25								Rec.					Repair culvert inlet; reform circular opening.
3.57								Rec.					Repair culvert inlet; reform circular opening.
3.66								Rec.					Repair culvert inlet.
# Match Existing													

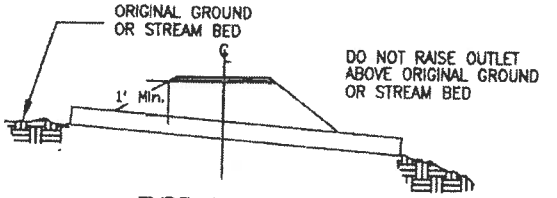
THE ABOVE INSTALLATIONS TO INCLUDE CONNECTING BANDS. ALL MATERIAL SHALL BE ALUMINIZED STEEL.

NOTE: Standard pipe corrugation will be 2-2/3" x 1/2" unless otherwise noted. Bevel pipe ends 1v :1 1/2h, where indicated.
Some culvert installations listed above may require additional excavation below grade line.

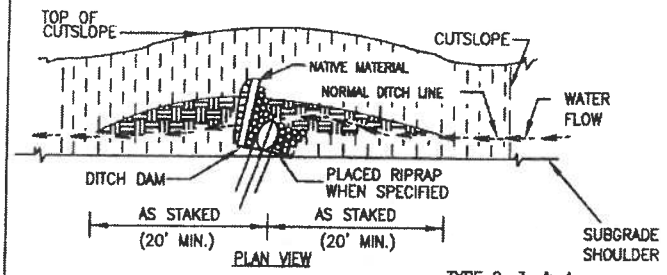
	Install	Remove	As Built		Date	DIMENSION		Installation Details					
ROAD NO. Sta.	FEET +	EACH -	Sta.	FEET		SIZE in.	THICK in. FE	Inlet Basin or Catch Basin	Outlet Ditch Feet	SKEW Deg	GRADE %	C.Y. Riprap	REMARKS
1500130 cont.													
3.84									10				
3.95	28	1				18	0.064			#	#	1	Shift inlet 6 inches toward cutslope. Class 4 riprap, as energy dissipator.
3.99								Rec.					
4.19								Rec.				1	
4.50								Rec.					
1500134													
0.10								Rec.					
0.27		1											Remove culvert and corrigated spillway, backfill pipebed with borrow material.
0.59								Rec.					
1500500													
0.03	26	1				18	0.064		55	120			Shift inlet right 10' to a new skew of 120°
0.66								Rec.					
0.86	34	1				18	0.064			#	#		Shift inlet 1 foot up stream. Lower outlet to ground.
0.97									10				Reconstruct leadoff ditch, left.
1.05	32					24	0.064			#	#		Shift inlet 2 feet up stream.
1.07	8	1				18	0.064			#	#		Remove and replace 8 feet of inlet end.
1.32									10				
1500505													
0.10								Rec.					Repair culvert inlet.
0.24								Rec.					
0.28								Rec.					
# Match Existing													

THE ABOVE INSTALLATIONS TO INCLUDE CONNECTING BANDS. ALL MATERIAL SHALL BE ALUMINIZED STEEL.

NOTE: Standard pipe corrugation will be 2-2/3" x 1/2" unless otherwise noted. Bevel pipe ends 1v :1 1/2h, where indicated.
Some culvert installations listed above may require additional excavation below grade line.

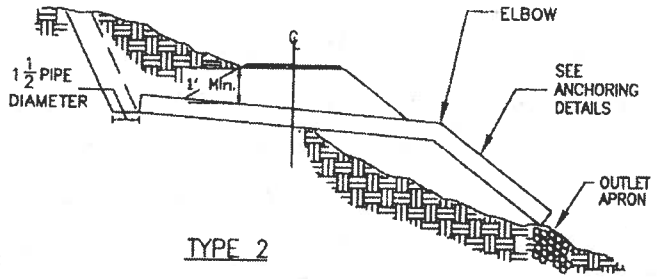


TYPE 1

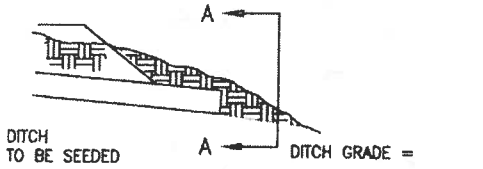


TYPE 2, 3, & 4
CULVERT INSTALLATION

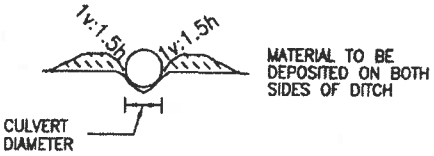
CATCHBASIN DETAIL



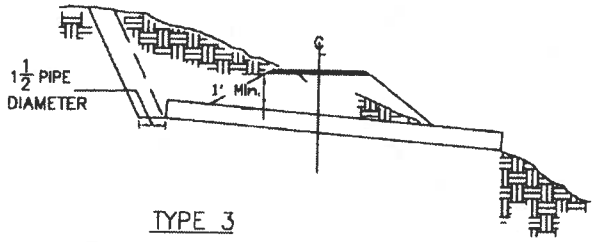
TYPE 2



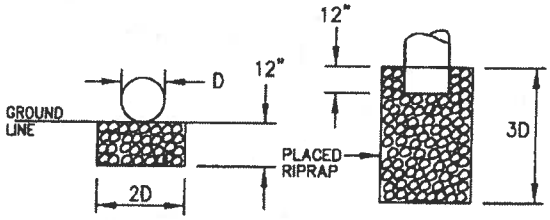
OUTLET DITCH



SECTION A–A

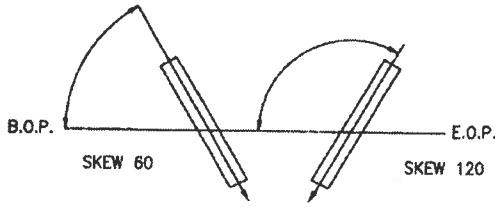


TYPE 3

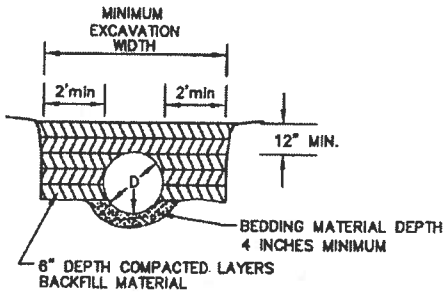


CONSTRUCT APRON SURFACE WITH
PROTRUDING RIPRAP FOR VELOCITY
BREAK.

ENERGY DISSIPATOR



SKEW DIAGRAM



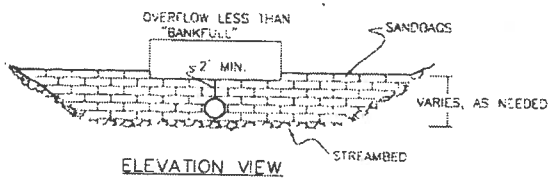
TYPICAL BEDDING AND BACKFILL DETAIL

B.O.P.= BEGINNING OF PROJECT
E.O.P.= END OF PROJECT

NOT TO SCALE

DRAINAGE DETAIL

STATE	FOREST	PROJECT	SHEET NUMBER	TOTAL SHEETS
OREGON	WILLAMETTE	Blue Thin T.S.	27	30

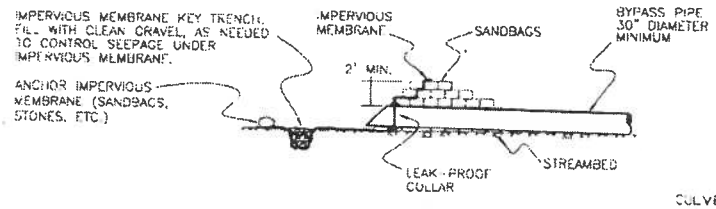


ELEVATION VIEW

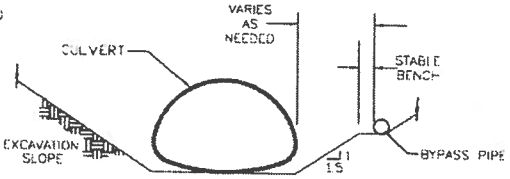
NOTES:

THE DEWATERING & SEDIMENT CONTROL PLAN SHOWS THE MINIMUM ACCEPTABLE CRITERIAL. MAINTAINING CLEAN WATER DOWNSTREAM OF THE PROJECT IS THE RESPONSIBILITY OF THE CONTRACTUR FOR THE DURATION OF THE PROJECT.

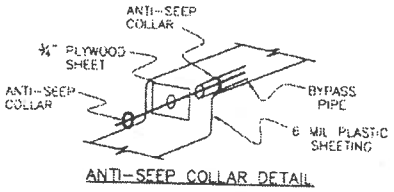
MAINTAIN PUMPING CAPACITY EQUAL TO STREAM FLOW, UNTIL THE STREAM IS FLOWING ON THE APPROVED, FINISHED STREAMBED.



PROFILE VIEW

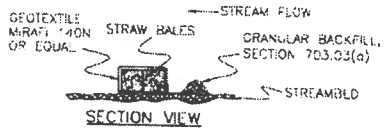


TYPICAL SECTION A-A

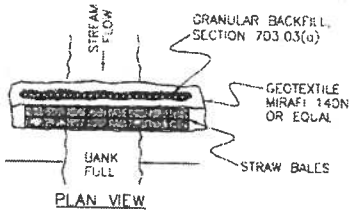


ANTI-SEEP COLLAR DETAIL

SANDBAG BYPASS DAM DETAILS

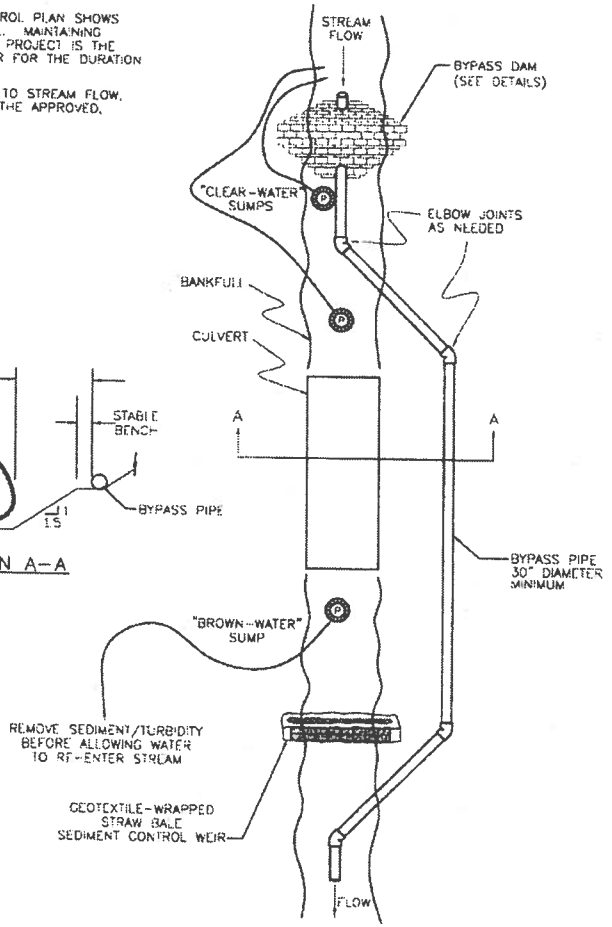


SECTION VIEW



PLAN VIEW

GEOTEXTILE-WRAPPED STRAW BALE SEDIMENT CONTROL WEIR

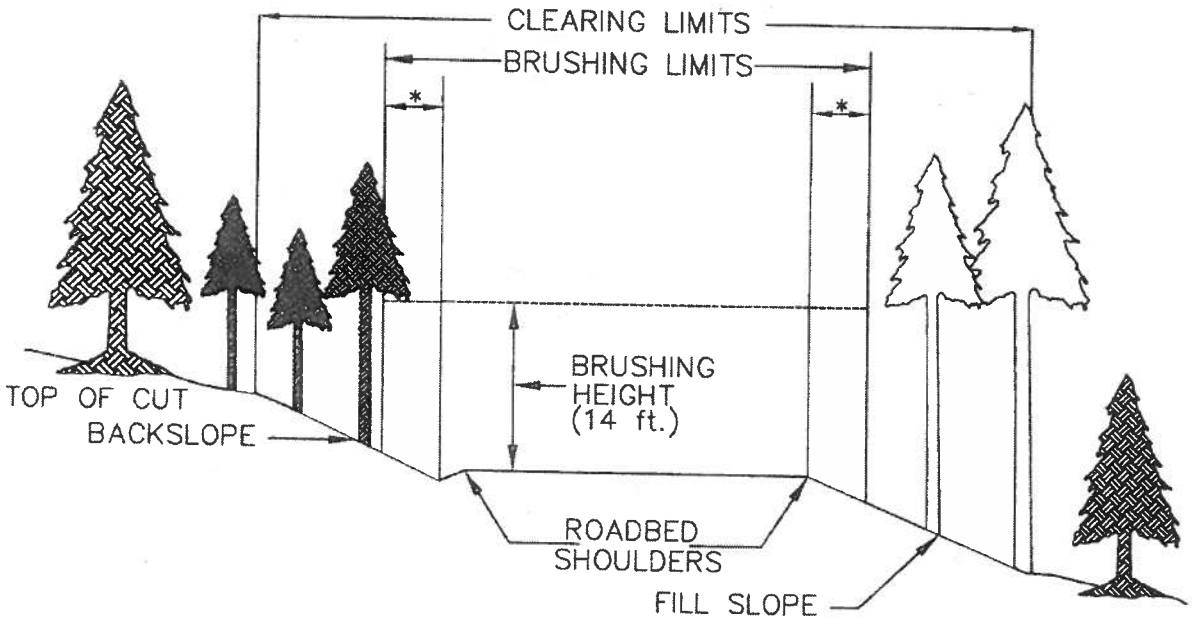


BYPASS TYPICAL PLAN VIEW

NOT TO SCALE

DEWATERING PLAN

STATE	FOREST	PROJECT	SHEET NUMBER	TOTAL SHEETS
OREGON	WILLAMETTE	Blue Thin T.S.	2	30



N.T.S.

NOTES

1. Remove all vegetative growth inside the brushing limits, from the shoulders of the road or the bottom of the ditch, to a maximum height of 6 inches above ground surfaces.

2. Trees larger than 6 inches in diameter (when measured 6 inches above the ground) that do not interfere with ditch and surface maintenance are designated to remain.

3. Trim limbs on remaining trees from ground level to a clearing height limit of 14 feet above the travelway surface.

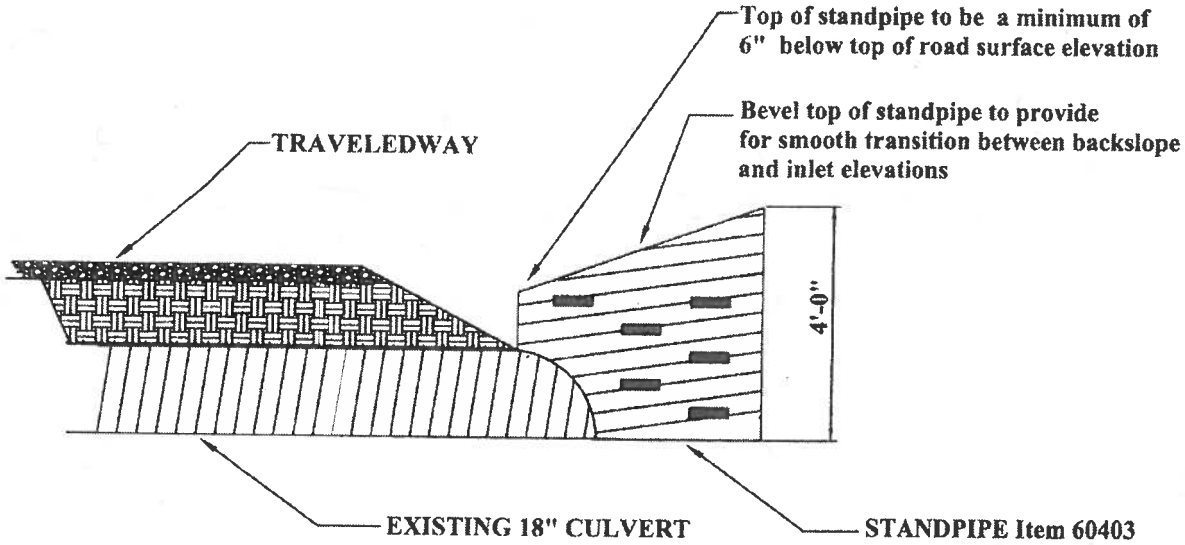
4. Grub areas designated in reconstruction summaries.

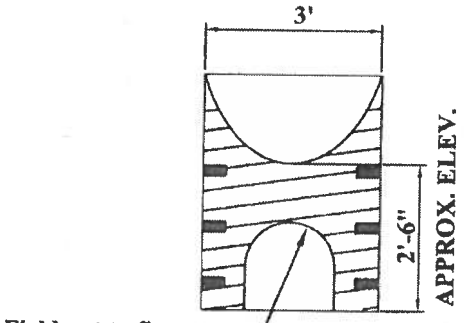
* BRUSHING LIMITS		
ROAD NO.	M.P. LOCATION OR STATION	BRUSHING WIDTH
1500130	0.00 – 4.61	4'
1500134	0.00 – 0.60	3'
1500500	0.00 – 1.33	4'
1500505	0.00 – 0.45	3'

CLEARING TYPICAL

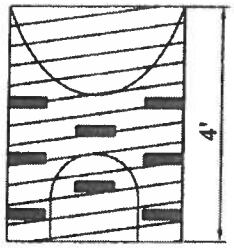
STATE	FOREST	PROJECT	SHEET	TOTAL SHEETS
OREGON	WILLAMETTE	Blue Thin T.S.		30

Road 1500130
Standpipe Detail

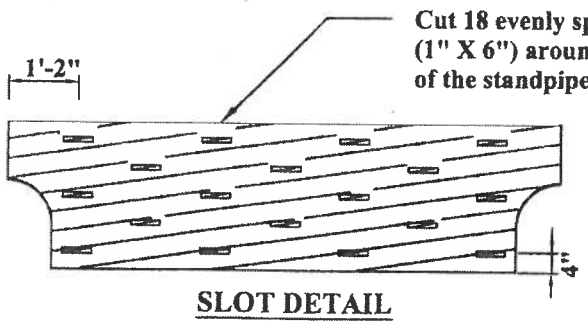




FROM INLET VIEW



FROM BACKSLOPE VIEW



SLOT DETAIL

Standpipe Detail

STATE	FOREST	PROJECT	SHEET NUMBER	TOTAL SHEETS
OREGON	WILLAMETTE	Blue Thin T.S.	30	30

	1500500								
PAY ITEM	DESCRIPTION	PAY UNIT	QTY	P.W. Unit Price	Adjusted PW Unit Cost	Public Works Total Cost	T.S.Unit Price	ADJUSTED T.S. UNIT COST	Timber Sale Total Cost
15755	Erosion control & pollution prevention	Each	2	$690.04	$703.84	$1,407.68	$571.35	$582.78	$1,165.56
20103	Cleanng and grubbing, disposal of tops and limbs (f), logs (f), stumps (f)	Mile	1.33	$1,225.99	$1,250.51	$1,663.18	$1,040.36	$1,061.17	$1,411.36
20207	Removal of individual trees, disposal of tops and limbs (f), logs (f), stumps (f)	Each	1	$93.01	$94.87	$94.87	$68.80	$70.18	$70.18
20253	Removal of individual trees, miscellaneous: disposal of tops and limbs (f) & logs (f)	Each	2	$111.94	$114.18	$228.36	$76.98	$78.52	$157.04
20358	Removal of corrugated metal pipe, disposal method (a)	Each	3	$415.62	$423.93	$1,271.79	$320.02	$326.42	$979.26
20302	Removal of culvert inlet/outlet	Foot	8	$12.22	$12.46	$99.68	$9.41	$9.60	$76.80
20419A	Drainage excavation, type culvert outlet ditch	Foot	75	$5.52	$5.63	$422.25	$4.01	$4.09	$306.75
20419B	Drainage excavation, type leadoff ditch	Foot*	15	$8.67	$8.84	$132.60	$6.41	$6.54	$98.10
20420	Drainage excavation, type catchbasin	Each	1	$86.71	$88.44	$88.44	$64.13	$65.41	$65.41
20462	Unclassified borrow, compaction method B	Cubic Yard*	15	$35.38	$36.09	$541.35	$26.35	$26.88	$403.20
20464	Excavation, compaction method B	Lump sum	1	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
20479	Drainage excavation, type roadway ditch	Mile	0.75	$1,596.21	$1,628.13	$1,221.10	$1,188.50	$1,212.27	$909.20
30359	Roadway reconditioning, compaction method B	Mile	1.33	$1,368.33	$1,395.70	$1,856.28	$1,071.53	$1,092.96	$1,453.64
32232	Haul and place stockpiled aggregate, compaction method B	Cubic Yard*	720	$15.52	$15.83	$11,397.60	$12.88	$13.14	$9,460.80
60256	18-inch corrugated steel pipe, 0.064-inch thickness, method B	Foot	8	$37.46	$38.21	$305.68	$32.54	$33.19	$265.52
60276A	18-inch corrugated aluminized steel pipe, 0.064-inch thickness, method B	Foot	60	$37.46	$38.21	$2,292.60	$32.54	$33.19	$1,991.40
60276B	24-inch corrugated aluminized steel pipe, 0.064-inch thickness, method B	Foot	32	$48.16	$49.12	$1,571.84	$39.71	$40.50	$1,296.00
			1500500	PUBLIC WORKS TOTAL		$24,595.30	TIMBER SALE TOTAL		$20,110.22

	1500130								
PAY ITEM	DESCRIPTION	PAY UNIT	QTY	P.W. Unit Price	Adjusted PW Unit Cost	Public Works Total Cost	T.S.Unit Price	ADJUSTED T.S. UNIT COST	Timber Sale Total Cost
20103	Clearing & grubbing, disposal of tops and limbs (f), logs (f), stumps (f)	Mile	4.61	$1,225.99	$1,250.51	$5,764.85	$1,040.36	$1,061.17	$4,891.99
20207	Removal of individual trees, disposal of tops and limbs (f), logs (j), stumps (f)	Each	2	$93.01	$94.87	$189.74	$68.80	$70.18	$140.36
20253	Removal of individual trees, miscellaneous: disposal of tops and limbs (f) & logs (f)	Each	52	$111.94	$114.18	$5,937.36	$76.98	$78.52	$4,083.04
20358	Removal of corrugated metal pipe, disposal method (a)	Each	4	$415.62	$423.93	$1,695.72	$320.02	$326.42	$1,305.68
20301A	Removal of rock boulder	Each	2	$57.38	$58.53	$117.06	$45.22	$46.12	$92.24
20419A	Drainage excavation, type culvert outlet ditch	Foot	80	$5.52	$5.63	$450.40	$4.01	$4.09	$327.20
20420	Drainage excavation, type catchbasin	Each	11	$86.71	$88.44	$972.84	$64.13	$65.41	$719.51
20462	Unclassified borrow, compaction method B	Cubic Yard*	5	$35.38	$36.09	$180.45	$26.35	$26.88	$134.40
20479	Drainage excavation, type roadway ditch	Mile	0.53	$1,596.21	$1,628.13	$862.91	$1,188.50	$1,212.27	$642.50
25101	Placed riprap, class 4	Cubic Yard*	8	$137.24	$139.98	$1,119.84	$100.32	$102.33	$818.64
30359	Roadway reconditioning, compaction method B	Mile	4.1	$1,368.33	$1,395.70	$5,722.37	$1,071.53	$1,092.96	$4,481.14
32232	Haul and place stockpiled aggregate, compaction method B	Cubic Yard*	65	$15.52	$15.83	$1,028.95	$12.88	$13.14	$854.10
60276A	18-inch corrugated aluminized steel pipe, 0.064-inch thickness, method B	Foot	138	$37.46	$38.21	$5,272.98	$32.54	$33.19	$4,580.22
60403	Inlet, 36" full-circle stand pipe	Each	1	$748.37	$763.34	$763.34	$590.29	$602.10	$602.10
60710	Reconditioning drainage structures, culvert inlet or outlet	Each	5	$71.94	$73.38	$366.90	$52.19	$53.23	$266.15
62509	Mulching, dry method	Lump sum	1	$973.87	$993.35	$993.35	$671.65	$685.08	$685.08
			1500130	PUBLIC WORKS TOTAL		$30,445.71	TIMBER SALE TOTAL		$24,624.35