

Battle Thin STWD Roads
RECONSTRUCTION OF SPECIFIED ROADS

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	69 pages FSSS Specifications Package
	82 pages total

UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE - REGION SIX SIUSLAU NATIONAL FOREST HEBO RANGER DISTRICT

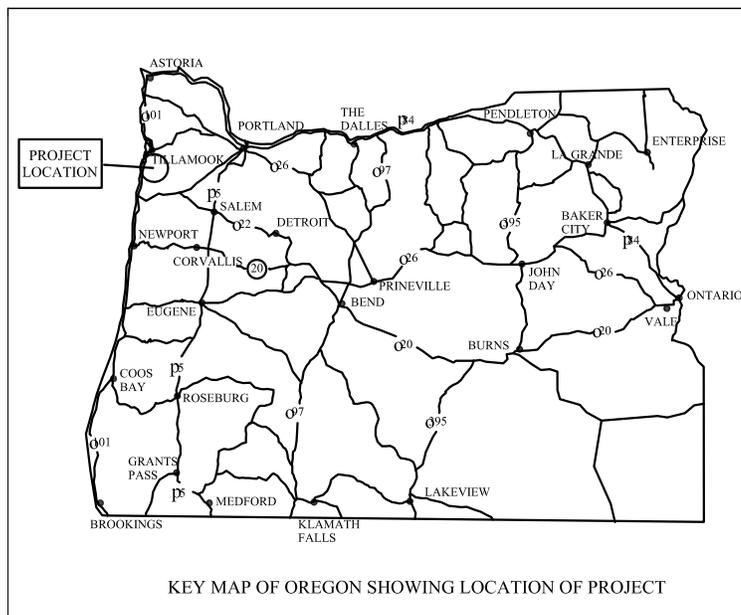


PLANS FOR PROPOSED
BATTLE THIN STWD
TILLAMOOK COUNTY

INDEX OF SHEETS	
SHEET NO	DESCRIPTION
1	TITLE SHEET
2	VICINITY MAP
3	ESTIMATE OF QUANTITIES
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5	ROAD STRUCTURE DETAIL AND DRAINAGE LISTING
6	BRUSHING AND VEGETATION REMOVAL TYPICAL
7	DRAINAGE CONSTRUCTION DETAILS
8 & 9	RECONSTRUCTION LOG

ROAD NO.	TERMINI (MP to MP)	LENGTH (MILES)	TYPE OF WORK
8172000	0.00 - 4.81	4.81	RECONSTRUCTION

Plan In Hand Review: February 24, 2014



Designed by:

Designer (J. Latham) _____ Date

Reviewed by:

Reviewer (R. Tomlinson) _____ Date

Development Engineer (J. Caswell) _____ Date

Recommended by:

Zone Engineer (J. Acosta) _____ Date

Approved by:

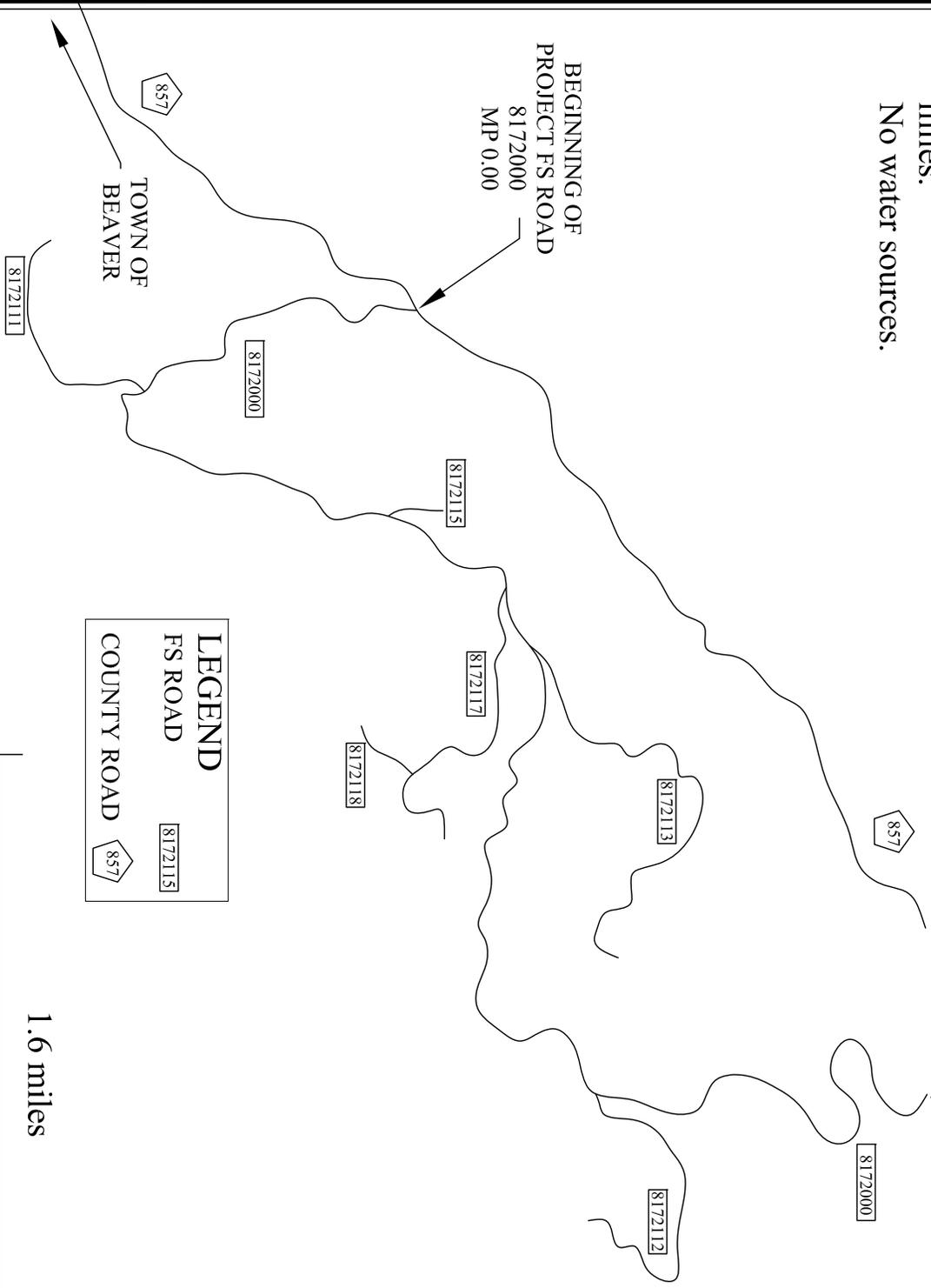
Line Officer (G. Buckingham) _____ Date

Forest Engineer (C. McKenna) _____ Date

T03S-R09W
 SEC 01, 02, 10, 11, 12 and 15
 From Beaver, OR, the junction of FS
 Road 8172000 and TIL-857 is 3.4
 miles.
 No water sources.

BEGINNING OF
 PROJECT FS ROAD
 8172000
 MP 0.00

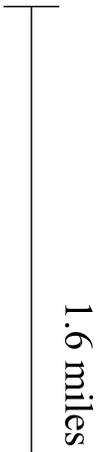
END OF PROJECT
 MP 4.81



LEGEND

FS ROAD  8172113

COUNTY ROAD  857



BATTLE THIN STWD

VICINITY MAP



Road Number		8172000	Payment will be made on actual work performed as described in FP-03 109.01 unless otherwise noted.	
Project Length (Miles)		4.81		
Item No	DESCRIPTION	Unit	Quantities	Remarks
15101	Mobilization	Lump Sum	All	Traffic control, hazardous spill equipment, equipment washing, fire prevention, and sign installation are included by indirect payment.
15204	Drainage structure survey and staking	Each	5	All pipe installations including single wall shall be staked and approved prior to installation.
15713	Soil Erosion & Pollution Control	Lump Sum	All	Erosion control and dewatering are included in this pay item. Use Certified weed free straw or other approved erosion control materials as needed during the project. Dewatering will be required at all culvert sites.
20301	Removal of Culvert	Each	4	Dispose of legally off National Forest lands.
20301CG	Removal of cattle guard	Each	1	Dispose of legally off National Forest lands.
20307	Cutting and disposal of roadway vegetation: tops and limbs (f(1)), logs (f(1)), stumps N/A	Mile	2.71	Alder within clearing limits. Cut and deck material in areas along project site as approved by CO.
20401	Roadway excavation, compaction method B, finishing method A	Cubic Yard*	87	Fill Repair, includes endhaul of excess material to disposal area.
20418	Drainage excavation, type pipe culvert, compaction method B	Cubic Yard*	700	24" culverts, includes processing material on site and endhaul of excess material to disposal area.
20419	Drainage excavation, type ditch	Foot	2646	Includes slide clean up, haul material to closest disposal area.
23051	Roadside Brushing	Mile	4.81	Scatter outside of clearing limits
25101	Keyed riprap class 4	Cubic Yard*	20	Commercial Source. Includes material testing per FP-03 703.05.
30359	Roadway reconditioning, compaction method E	Mile	4.81	See Reconstruction Logs for scarification location and depth.
30805	Bedding and backfill aggregate, compaction method B	Cubic Yard*	41	Culvert Bedding, commercial source. Includes material testing per 703.06.
32203	Aggregate base, grading C, compaction method B	Cubic Yard*	984	Commercial Source. Includes material testing per FP-03 703.05.
32218	Screened aggregate grading Q, compaction method B	Cubic Yard*	610	Commercial Source. Includes material testing per FP-03 703.05.
6027818	18 inch corrugated polyethylene pipe, type S, method B	Foot	80	Culvert excavation included.
6027824	24 inch corrugated polyethylene pipe, type S, method B	Foot	117	Excavation will be paid as 20418.
6065418	18 inch full circle polyethylene outlet pipe, type C	Foot	60	Single wall corrugated, flex elbow and anchors included.
6065424	24 inch full circle polyethylene outlet pipe, type C	Foot	60	Single wall corrugated, flex elbow and anchors included.
63359	Installation on signs (Government furnished)	Each	6	Install signs as staked by CO. Includes disposal of existing signs.
Disposal Area: 6' maximum heights of material, 1V:2H slopes, shape to drain & reconstruct ditchline between road and disposal site. Disposal areas will be flagged by CO prior to any material placement.				
See Timber Sale provisions and specifications for daily and seasonal restrictions.				
All utility locates, permits, and water rights are the responsibility of the purchaser.				
* Denotes Contract Quantities				

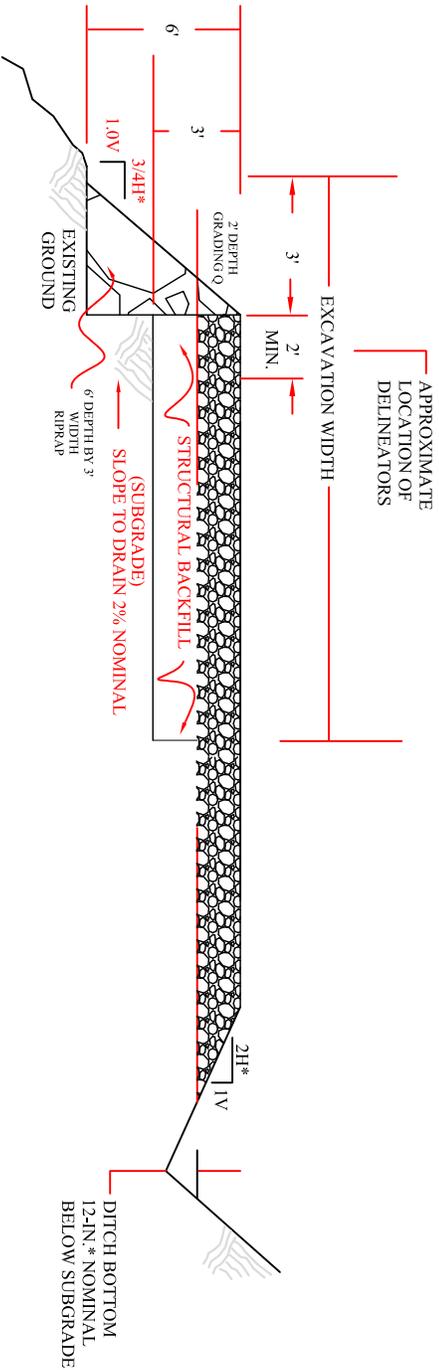
BATTLE THIN STWD
ESTIMATE OF QUANTITIES



ROAD / MILEPOST	FILL REPAIR TYPE (A, B, C)	ROADBED EXCAVATION DIMENSIONS			ROADBED EXCAVATION (cy) *	CRUSHED AGGREGATE (cy)		RIPRAP
		{REW} WIDTH (ft)	LENGTH (ft)	{ED} DEPTH (ft)		GRADING Q	RIPRAP	
8172000								
1.934	A	13	60	3	87	7	20	
SUB TOTALS					87	7	20	

Riprap to be placed on outside of fill edge as a slope of 3/4:1 as staked by CO

* Calculations include 2' average shoulder and 1 1/2 : 1 fill slope
Lengths and widths shown are "NOMINAL" Field dimensions may vary.

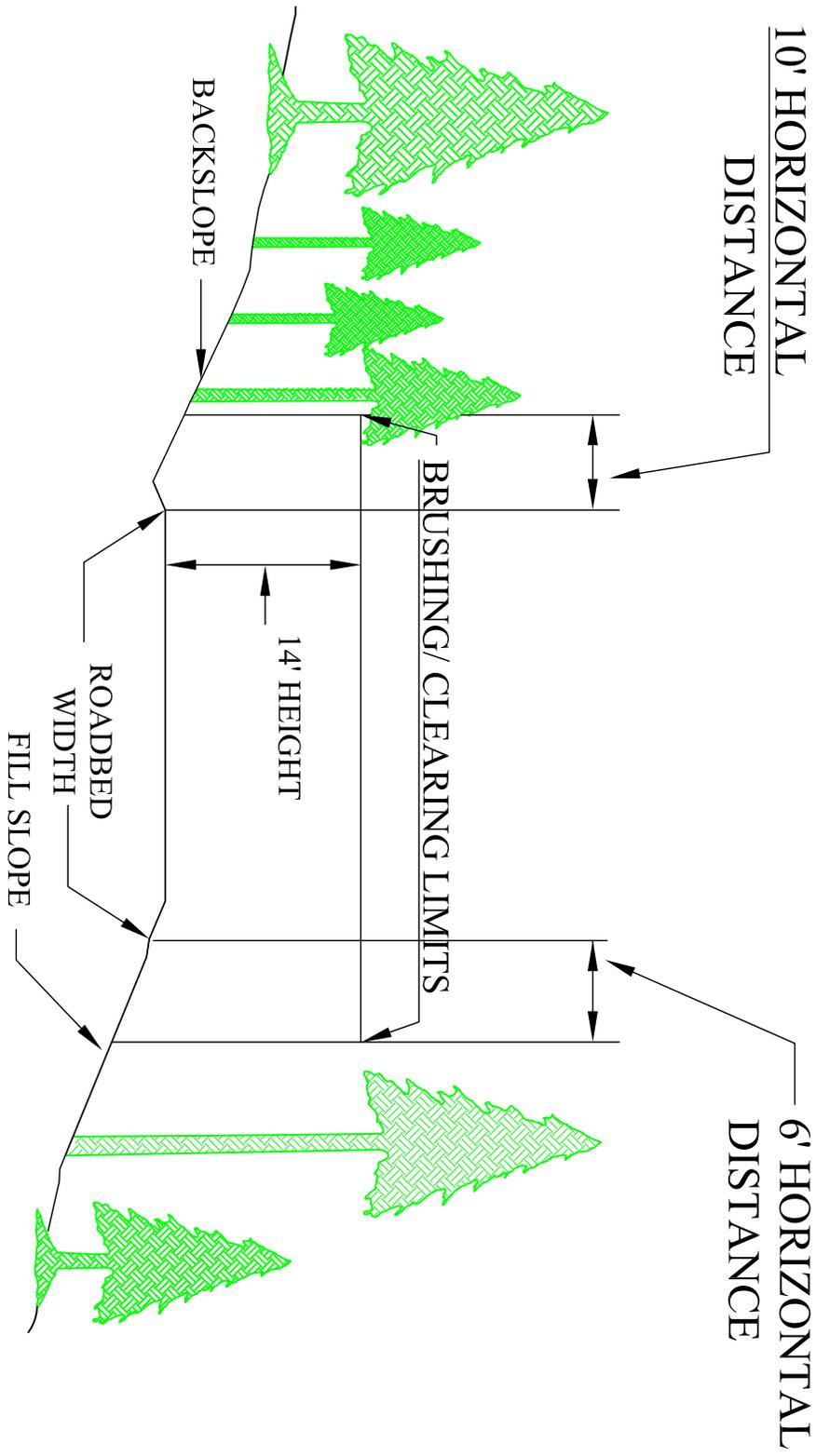


Cross-Section View
(NOT TO SCALE)

- NOTES:
- 1) DIMENSIONS MARKED WITH AN ASTERISK MAY BE ADJUSTED BY THE CO IN ORDER TO FIT THE EXISTING SITE GEOMETRY
 - 2) STRUCTURAL BACKFILL - COMPLY WITH THE REQUIREMENTS OF THE SUBSECTION 704.04 OR AN ALTERNATIVE APPROVED BY THE CO
 - 3) COMPACT SEGMENTS OF FILL REPAIRS THAT CANNOT BE ROLLER COMPACTED WITH MECHANICAL WACKERS TO OBTAIN LIKE COMPACTION.
 - 4) MAINTAIN EXISTING SUPER ELEVATION, CROWN AND SLOPE OF ROAD. CREATE SMOOTH TRANSITIONS TO EXISTING ROAD SURFACE AND PRISM.
 - 5) INSTALL GOVERNMENT FURNISHED SIGNS (OBJECT MARKERS) AS MARKED BY CO IN SHOULDER.

METHOD A FILL REPAIR DETAILS
SUBGRADE REPAIR WITHOUT GEOGRID





BATTLE THIN STWD

BRUSHING AND VEGETATION REMOVAL TYPICAL



MP	Remarks	Pay Item	Quantity
0.000	BOP		
	Begin Ditch reconstruction	20419	1109
	Roadside brushing, disposal method 1	23051	4.81
	Roadway reconditioning, compaction E, scarification 4" depth	30359	4.81
	Aggregate base, grading C, compaction method B	32203	984
0.210	End Ditch reconstruction		
0.324	Cattle guard		
	Remove cattle guard, dispose of legally off National Forest.	20301CG	1
0.340	Replace existing culvert with 24"X75' CPP	6027824	75
	Drainage structure survey and staking	15204	1
	Drainage excavation, type pipe culvert, compaction method B	20418	650
	Grading Q aggregate, compaction method B	32218	35
	Removal of culvert	20301	1
	Bedding and backfill aggregate, compaction method B	30805	15
0.500	Begin placement of 1' depth grading Q aggregate, compaction method B	32218	195
0.530	Replace existing culvert with 18"X18' CPP	6027818	18
	Drainage structure survey and staking	15204	1
	Bedding and backfill aggregate, compaction method B	30805	3
	Removal of culvert	20301	1
0.550	End grading Q aggregate placement		
0.575	Reconstruct ditch Both sides	20419	275
0.601	End Ditch reconstruction		
0.635	Begin placement of 6" depth grading Q aggregate, compaction method B	32218	25
0.650	End grading Q placement		
0.900	End grading C aggregate placement and scarification		
1.481	JCT Left 115		
1.550	Old pit left- disposal area		
1.711	Replace existing culvert with 18"X24' CPP	6027818	24
	Drainage structure survey and staking	15204	1
	Removal of culvert	20301	1
	Grading Q aggregate, compaction method B, 1' depth, 50' before, to 50' after culvert	32218	59
	Bedding and backfill aggregate, compaction method B	30805	3
1.740	Jct Temp Road left		
1.934	Fill Repair A		
	Roadway excavation, compaction method B, finishing method A	20401	87
	Grading Q aggregate, compaction method B	32218	7
	Riprap	25101	20
	Installation of carsonite delineator (Gov Furnished), along outside shoulder for the length of repair, as marked by CO	63359	6
2.098	Wide area- left disposal area		
	Begin cutting and disposal of roadway vegetation- both sides of road	20307	2.71
	Jct left, 113		
	Begin Ditch reconstruction	20419	1067
2.300	End ditch recon		
2.386	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
2.450	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
2.497	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
2.548	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
2.594	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
2.663	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
2.693	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
2.747	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
2.794	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
2.833	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
2.891	Fill waterbar with Grading Q aggregate, compaction method B	32218	10
2.936	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
2.986	Fill waterbar with Grading Q aggregate, compaction method B	32218	3

8

SHEET NUMBER

6

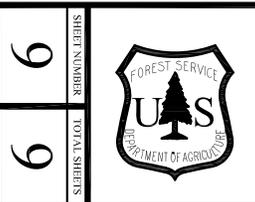
TOTAL SHEETS



BATTLE THIN STWD

RECONSTRUCTION LOGS

MP	Remarks	Pay Item	Quantity
3.051	Fill waterbar with Grading Q aggregate, compaction method B	32218	5
3.085	Begin Ditch reconstruction	20419	195
	Begin placement of 1' depth Grading Q aggregate, compaction method B	32218	120
3.102	Replace existing culvert with 24"X42' CPP with 24"X60' outlet pipe	6027824	42
		6025424	60
	Drainage structure survey and staking	15204	1
	Drainage excavation, type pipe culvert, compaction method B	20418	50
	Bedding and backfill aggregate, compaction method B	30805	10
	Removal of culvert	20301	1
3.122	End Ditch recon		
	End placement of grading Q aggregate		
3.160	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
3.231	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
3.292	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
3.370	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
3.433	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
3.488	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
3.537	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
3.608	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
3.658	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
3.705	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
3.730	Jct Rd 112		
3.749	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
3.803	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
3.859	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
3.910	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
3.969	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
4.041	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
4.091	Disposal area		
4.098	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
4.152	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
4.215	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
4.256	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
4.271	Install 18'X38' CPP with 18"X60' outlet pipe as an overflow structure. Depth shall be 8' below existing road surface, measured at the outlet	6027818	38
		6025418	60
	Drainage structure survey and staking	15204	1
	Bedding and backfill aggregate, compaction method B	30805	10
	Grading Q aggregate, compaction method B	32218	25
4.282	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
4.349	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
4.402	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
4.457	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
4.497	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
4.524	Landing/ Jct		
4.549	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
4.606	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
4.652	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
4.699	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
4.733	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
4.788	Fill waterbar with Grading Q aggregate, compaction method B	32218	3
4.811	EOP		
	End Brushing		
	End veg removal		
	End Roadway reconditioning		



Battle Thin STWD Cost Summary

Road	TS Cost	PW Cost
8172000	\$ 129,897.40	136,860.56
DRES	\$17,800.00	\$17,800.00
Totals	\$147,697.40	\$154,660.56

**SCHEDULE OF ITEMS
BATTLE THIN STWD**

Road Number 8172000
Mile post 0.00 to Mile post 4.81

TS COSTS

Pay Item	Item Description	Pay Unit	Estimated Quantity	Unit Price	Total
15101	Mobilization	Lump Sum	All	\$13,920.00	\$13,920.00
15204	Drainage structure survey and staking	Each	5	\$94.00	\$470.00
15713	Soil Erosion & Pollution Control	Lump Sum	All	\$2,648.00	\$2,648.00
20301	Removal of Culvert	Each	4	\$175.00	\$700.00
20301CG	Removal of cattle guard	Each	1	\$1,000.00	\$1,000.00
20307	Cutting and disposal of roadway vegetation: tops and limbs (f(1)), logs (f(1)), stumps N/A	Mile	2.71	\$758.00	\$2,054.18
20401	Roadway excavation, compaction method B, finishing method A	Cubic Yard*	87	\$9.00	\$783.00
20418	Drainage excavation, type pipe culvert, compaction method B	Cubic Yard*	700	\$10.00	\$7,000.00
20419	Drainage excavation, type ditch	Foot	2646	\$0.40	\$1,058.40
23051	Roadside Brushing	Mile	4.81	\$734.00	\$3,530.54
25101	Keyed riprap class 4	Cubic Yard*	20	\$48.00	\$960.00
30359	Roadway reconditioning, compaction method E	Mile	4.81	\$2,388.00	\$11,486.28
30805	Bedding and backfill aggregate, compaction method B	Cubic Yard*	41	\$25.00	\$1,025.00
32203	Aggregate base, grading C, compaction method B	Cubic Yard*	984	\$46.00	\$45,264.00
32218	Screened aggregate grading Q, compaction method B	Cubic Yard*	610	\$37.00	\$22,570.00
6027818	18 Inch corrugated polyethylene pipe, type S, method B	Foot	80	\$61.00	\$4,880.00
6027824	24 Inch corrugated polyethylene pipe, type S, method B	Foot	117	\$50.00	\$5,850.00
6065418	18 Inch full circle polyethelene outlet pipe, type C	Foot	60	\$30.00	\$1,800.00
6065424	24 Inch full circle polyethelene outlet pipe, type C	Foot	60	\$36.00	\$2,160.00
63359	Installation on signs (Government furnished)	Each	6	\$123.00	\$738.00

TOTAL COST: \$129,897.40

*Denotes Contract Quantities

FP-03 SPECIFICATIONS LIST FOR Battle Thin STWD

All specifications not included in the specification listing, but included by reference, are applicable. "X" denotes applicable standard and/or supplemental specification. The supplementals shown on the specification list are physically attached.

	<u>Title</u>	<u>Revised</u>	<u>Road Number</u> <u>8172</u>
Preface	Preface	3/15/2004	X
101	Terms Format, and Definitions	FP03	X
101 01	Meaning of Terms	1/22/2009	X
101 03	Abbreviations	6/16/2006	X
101 04	Definitions	3/29/2007	X
101 04	Definitions	11/6/2007	X
102	Bid, Award, and execution of Contract	FP03	X
102 00	Bid, Award, and execution of Contract	2/16/2005	X
103	Scope of Work	FP03	X
103 00	Deletions	2/16/2005	X
104	Control of work	FP03	X
104 00	Deletions	6/16/2006	X
104 03	Specifications and Drawings	1/22/2009	X
104 03	Specifications and Drawings	2/22/2005	X
104 06	Use of Roads by Contractor	2/17/2005	X
105	Control of Material	FP03	X
105 02	Material Sources	1/18/2007	X
105 02	Material Sources	3/8/2007	X
105 05	Use of Material Found in the Work	5/12/2004	X
106	Acceptance of Work	FP03	X
106 01	Conformity with Contract Requirements	7/31/2007	X
106 07	Delete	5/11/2004	X
107	Legal Regulations and responsibility to Public	FP03	X
107 05	Responsibility for Damage Claims	5/11/2004	X
107 06	Contractor's Responsibility for Work	6/16/2006	X
107 08	Sanitation, Health, and Safety	3/29/2005	X
107 09	Legal Relationship of the Parties	6/16/2006	X
107 10	Enviromental Protection	6/16/2006	X
108	Prosecution and Progress	FP03	X
108 00	108 Delete	2/16/2005	X
109	Measurement and Payment	FP03	X
109 00	Deletions	2/17/2005	X
109 02	Measurement Terms and Definitions	6/16/2006	X
151	Mobilization	FP03	X
152	Construction Surveying and Staking	FP03	X
152 00	Construction Surveying and Staking	8/5/2005	X
153	Contractor Quality Control	FP03	X
153 04	Records	10/24/2007	X
155	Schedules for Construction Contracts	FP03	X
155 00	Delete	5/11/2004	X
156	Public Traffic	FP03	X
156 00	Public Traffic	4/17/2007	X
156 03	Accomidating Traffic Durring Work	2/24/2005	X
156 04	Maintaining Roads During Work	2/24/2005	X
156 08	Traffic and Safety Supervisor	2/24/2005	X
157	Soil Erosion Control	FP03	X

FP-03 SPECIFICATIONS LIST FOR Battle Thin STWD

All specifications not included in the specification listing, but included by reference, are applicable. "X" denotes applicable standard and/or supplemental specification. The supplementals shown on the specification list are physically attached.

	<u>Title</u>	<u>Revised</u>	<u>Road Number</u> <u>8172</u>
157	02 Materials	5/11/2008	X
157	03 General	2/24/2005	X
170	00 Develop Water Supply and Watering	3/26/2007	X
203	Removal of Structures and Obstructions	FP03	X
203	01 Description	2/25/2005	X
203	04 Removing Material	2/18/2005	X
203	05 Disposing of Material	3/26/2007	X
203	05 Disposing of Material	3/26/2007	X
203	08 Payment	2/24/2005	X
204	00 Complete Specification	3/26/2009	X
230	00 Complete Specification	3/31/2010	X
251	Riprap	FP-03	X
303	Road Reconditioning	FP03	X
303	01 Work	3/2/2005	X
303	05 Work	3/26/2007	X
303	06 Aggregate Surface Reconditioning	8/5/2008	X
303	07 Roadway Reconditioning	3/2/2005	X
303	07 Roadway Reconditioning	3/23/2007	X
303	10 Measurement	3/29/2005	X
308	Minor Crushed Aggregate	FP03	X
322	00 Minor Aggregate Coarses	10/14/2011	X
602	Culverts and Drains	FP03	X
602	03 General	9/6/2005	X
602	06 Laying Plastic pipe	8/5/2009	X
606	Corrugated Metal Spillways	FP-03	X
633	Permanent Traffic Control	FP-03	X
635	Temporary Traffic Control	FP03	X
635	03 General	5/13/2004	X
703	Aggregate	FP03	X
703	05 Subbase, Base, Surface Coarse, and Screened Aggre	8/14/2009	X
703	10 Flakiness Index	4/11/2011	X

Battle Thin STWD Supplemental Specifications

Preface

Preface_wo_03_15_2004_m

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.

Battle Thin STWD Supplemental Specifications

101 - Terms, Format, and Definitions

101.00_nat_us_07_25_2005

101.01_nat_us_01_22_2009

101.01 Meaning of Terms

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

101.03_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_nat_us_03_29_2007

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.

Battle Thin STWD Supplemental Specifications

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.

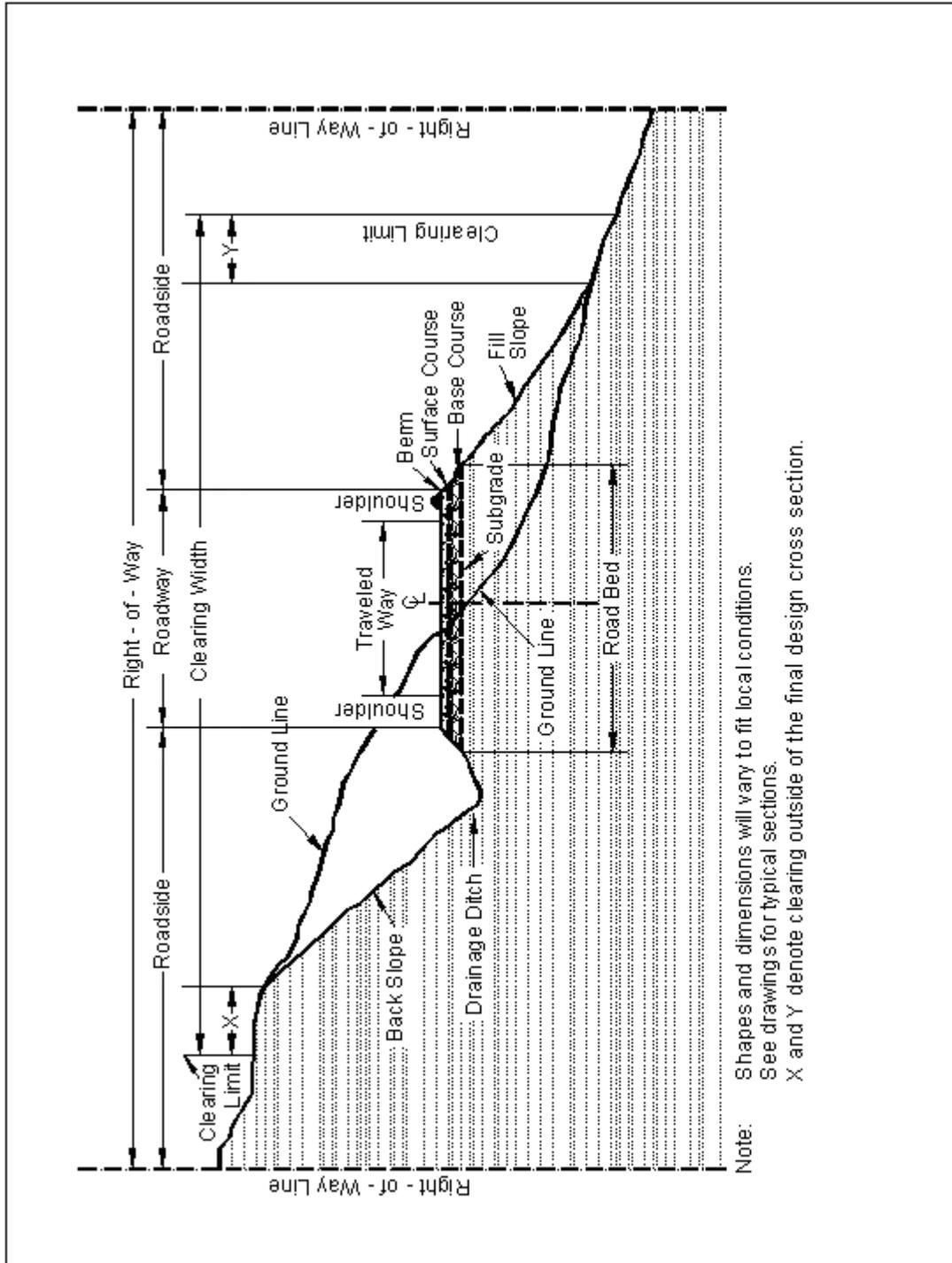
Schedule of Items--A schedule in the contract that contains a listing and description of construction items, quantities, units of measure, unit price, and amount.

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

Add Figure 101-1—Illustration of road structure terms:

Battle Thin STWD Supplemental Specifications

Figure 101-1—Illustration of road structure terms.



101.04_nat_us_11_06_2007

Battle Thin STWD Supplemental Specifications

101.04 Definitions.

Delete the following definitions:

Contract Modification

Day

Notice to Proceed

Solicitation

Battle Thin STWD Supplemental Specifications

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.

Battle Thin STWD Supplemental Specifications

103 - Scope of Work

103.00_nat_us_02_16_2005

Deletions

Delete all but subsection 103.01 Intent of Contract.

Battle Thin STWD Supplemental Specifications

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.

104.03_nat_us_02_22_2005

104.03 Drawings and Specifications

Delete subsection 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.

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105 - Control of Material

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_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:

OPTION 1: LIST PROJECT-SPECIFIC WEEDS OR APPROPRIATE WEED LIST. YOU MAY INCLUDE ACCEPTABLE METHODS TO ESTABLISH "WEED-FREE" AS APPLICABLE TO YOUR PROJECT. DO THIS IN CONJUNCTION WITH YOUR UNIT WEED SPECIALIST.

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Weeds specific to this project:

Weeds & methods specific to this project:

Weed species or applicable weed list	Method

OPTION 2: REPLACE CONTRACTOR-DOCUMENTED DETERMINATION WITH FOREST SERVICE APPROVAL OF SOURCES BASED ON INSPECTION BY A FS WEED SPECIALIST – MAKE SURE THIS IS COORDINATED WITH YOUR UNIT WEED SPECIALISTS. USE OF THIS OPTION COMMITS FOREST SERVICE RESOURCES.

A Forest Service weed specialist will inspect proposed sources to determine weed-free status. Provide the Contracting Officer written notification of proposed material sources _____ days prior to use. Written approval of the specific source will be provided to the contractor. If weed species are present in the proposed source, appropriate mitigation measures may allow conditional use of the source as required by the Contracting Officer.

105.05_nat_us_05_12_2004

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.

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106 - Acceptance of Work

106.01_nat_us_07_31_2007

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.

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(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.

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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.

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107 - Legal Relations and Responsibility to the Public

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_05_11_2004

107.08 Sanitation, Health, and Safety.

Add the following:

Perform all operations in a prudent, conscientious, safe and professional manner. Ensure that all personnel involved in handling and packaging the hazardous waste are trained for the level of expertise required for the proper performance of the task and, in particular, in the areas of chemical incompatibility, general first aid procedures, and spills. Provide handling and personal protective equipment appropriate to ensure safe handling of the hazardous waste according to 29 CFR 1910.120). Notify the Forest Service of all hazardous material that may be brought onto the National Forest.

107.09_nat_us_06_16_2006

107.09 Legal Relationship of the Parties.

Delete the entire subsection.

107.10_nat_us_06_16_2006

107.10 Environmental Protection.

Add the following:

Design and locate equipment repair shops, stationary refueling sites, or other facilities to minimize the potential and impacts of hazardous material spills on Government land.

Before beginning any work, submit a Hazardous Spill Plan. List actions to be taken in the event of a spill. Incorporate preventive measures to be taken, such as the location of mobile refueling facilities, storage and handling of hazardous materials, and similar information. Immediately notify the CO of all hazardous material spills. Provide a written narrative report form no later than 24 hours after the initial report and include the following:

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- Description of the item spilled (including identity, quantity, manifest number, and other identifying information).
- Whether amount spilled is EPA or state reportable, and if so whether it was reported, and to whom.
- Exact time and location of spill including a description of the area involved.
- Containment procedures.
- Summary of any communications the Contractor had with news media, Federal, state and local regulatory agencies and officials, or Forest Service officials.
- Description of clean-up procedures employed or to be employed at the site including final disposition and disposal location of spill residue.

When available provide copies of all spill related clean up and closure documentation and correspondence from regulatory agencies.

The Contractor is solely responsible for all spills or leaks that occur during the performance of this contract. Clean up spills or leaks to the satisfaction of the CO and in a manner that complies with Federal, state, and local laws and regulations.

108 - Prosecution and Progress

108.00_nat_us_02_16_2005

108 Delete.

Delete Section 108 in its entirety.

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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_nat_us_06_16_2006

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.

152 - Construction Survey and Staking

152.00_nat_us_08_05_2005

Description

152.01(c) Material.

Add the following:

Use required stake dimensions and materials. Pre-paint the top 2 inches of all stakes and lath, or mark them with plastic flagging. Use designated colors for paint or flagging. Mark all stakes with a stake pencil that leaves a legible imprint, or with waterproof ink.

Do not use aerosol spray paints.

Use moisture-resistant paper for survey notes. Keep notes in books with covers that will protect the contents and retain the pages in numerical sequence.

Construction Requirements

152.02 General.

Delete the first two sentences.

Add the following:

When indicated on the plans, a preliminary survey line has been established on the ground. The project location line is established by offsets from this preliminary line.

Delete second sentence in second paragraph and replace with the following:

Reestablish missing reference, control lines, or stakes as necessary to control subsequent construction staking operations

152.03 Survey and Staking Requirements.

(b) Roadway cross-sections.

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Replace the first two sentences with the following:

Take roadway cross-sections normal to centerline. When the centerline curve radius is less than or equal to 200 feet, take cross-sections at a maximum centerline spacing of 25 feet. When the centerline curve radius is greater than 200 feet take cross-sections at a maximum centerline spacing of 80 feet.

c) Slope Stakes & References:

Replace section with the following:

Slope stakes and references. When required, locate slope stakes on designated portions of the road. Locate the slope stake catch points and use them to establish clearing limits and slope stake references.

Mark slope stakes with the station, the amount of cut or fill, the horizontal distance to centerline, and the slope ratios.

Place slope reference stakes at least 10 feet outside the clearing limit and mark with the offset distance to the slope stake. Place sight stakes when required.

Prior to clearing and grubbing operations, move the slope stake outside the clearing limit to the slope reference stake. After clearing and grubbing and before excavation, reset the slope stakes in their original position.

Use the designated method to establish the slope stake catchpoint.

- **Method I**—Computed Method. Use the template information shown in the plans or other Government-provided data to calculate the actual location of the catchpoint. The slope stake “catchpoint distance” provided may be used as a trial location to initiate slope staking. Recatch slope stakes on any section that does not match the staking report within the tolerances established in Table 152-2.
- **Method II**—Catchpoint Measurement Method. Determine the location of slope stake catchpoints by measuring the catchpoint distances shown in the plans or other Government-provided data.

(d) Clearing and grubbing limits.

Add the following:

Establish clearing limits on each side of the location line by measuring the required horizontal or slope distances shown in the stake notes. Mark the clearing limits with flagging or tags on trees to be left standing, or on lath. Make markings intervisible, and no more than 90 feet apart.

After establishing clearing limits, move the location line stake outside the clearing limits for station identification purposes, and mark it with horizontal distance to location line

(e) Centerline reestablishment.

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Replace with the following:

Reestablish centerline from instrument control points. The maximum spacing between centerline points is 25 feet when the centerline curve radius is less than or equal to 200 feet. When the centerline curve radius is greater than 200 feet, the maximum distance between centerline points is 80 feet.

(g) Culverts.

Replace subsection with the following:

Set culvert reference stakes at all culvert locations. Set a culvert reference stake on the centerline of the culvert 10 feet from each end or beyond the clearing limit, whichever is greater. Record the following on culvert reference stakes:

- (1) Diameter, actual field measured length, and type of culvert.
- (2) The vertical and horizontal distance from the reference stake to the invert at the ends of the culvert.
- (3) Station of actual point where culvert intersects centerline.

When required, stake headwall for culverts by setting a hub with a guard stake on each side of the culvert on line with the face of the headwall. Perform this work after clearing is completed.

152.03 (l) Miscellaneous Survey and Staking.

Add the following:

- (11) Cattleguards
- (12) Drain Dips
- (13) Erosion Control Measures

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Replace Table 152-1 with the following two tables:

Table 152-1 Tolerances for reestablishing P-line, traverse, and elevations.

Precision Class	Minimum Position Closure	Angular Accuracy (\pm)	L-Line Tangent Control Points^a (\pm)	Vertical Closure^b (\pm)
A (Bridges)	1/10,000	2 sets, direct/reverse 10 second rejection limit	N/A	0.02 ft or 0.02ft/1000ft ^c
B	1/5,000	2 sets, direct/reverse 20 second rejection limit	0.1 ft	0.02 ft or 0.02ft/1000ft ^c
C	1/1,000	1 set, direct/reverse 1 minute rejection limit	0.2 ft	0.5ft/1000ft ^c
D	1/300	Foresight and backsight; 15 minute rejection limit ^c	0.4 ft	1.0ft/1000ft ^c
E	1/100	Foresight and backsight; 30 minute rejection limit ^c	0.8 ft	1.0ft/1000ft ^c

a. Accuracy of offset measurement.

b. Determine vertical closures at intervals not to exceed 2000 ft as measured along centerline.

c. Use greater value.

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Table 152-2 Cross section and slope stake tolerances.

Item	Tolerances				
	A	B	C	D	E
Allowable deviation of cross-section line projection from a true perpendicular to tangents, a true bisector of angle points, or a true radius of curves	(±)2°	(±)3°	(±)3°	(±)5°	(±)5°
Take cross-sections topography measurements so that variations in ground from a straight line connecting the cross-section points will not exceed	0.5 ft	1.0 ft	2.0 ft	2.0 ft	3.0 ft
Horizontal and vertical accuracy for cross-sections, in feet or percentage of horizontal distance measured from traverse line, whichever is greater.	0.1 ft or 0.4%	0.15 ft or 0.6%	0.2 ft or 1.0%	0.2 ft or 1.0%	0.3 ft or 1.0%
Horizontal and vertical accuracy for slope stake, slope stake references, and clearing limits. In feet or percentage of horizontal distance measured from centerline or reference stake, whichever is greater.					
Slope reference stakes and slope stakes.	0.1 ft or 0.4%	0.15 ft or 0.6%	0.2 ft or 1.0%	0.2 ft or 1.0%	0.3 ft or 1.0%
Clearing limits	1.0 ft	1.0 ft	1.0 ft	1.5 ft	2.5 ft

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153 - Contractor Quality Control

153.04_nat_us_10_24_2007

153.04 Records.

Delete all but the first sentence

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155 - Schedules for Construction Contracts

155.00_nat_us_05_11_2004

155 Delete.

Delete Section 155 in its entirety.

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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 30 minutes at any one time followed by an open period of no less than 60 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.

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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

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Temporary Road Closures

Road Number	From Terminus	To Terminus	Maximum Consecutive Days of Closure	Minimum Consecutive Days Open
8172000	0.00	4.81	5 (Weekdays)	2 (Weekends)

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.

156.03_nat_us_02_24_2005

156.03 Accommodating Traffic During Work.

Delete the following from the last paragraph:
according to Subsection 106.07(b)

156.04_nat_us_02_24_2005

156.04 Maintaining Roadways During Work.

(a) Add the following:

Do not construct detours outside of the clearing limits or use alternate route detours without the approval of the CO.

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156.08_nat_us_02_24_2005

156.08 Traffic and Safety Supervisor;

Delete this subsection in its entirety.

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157 - Soil Erosion Control

157.02_0618_us_05_11_2008

Materials

157.02 Add the following:

Coarse Aggregate for Concrete.....	703.02
Watertight Gaskets.....	712.03

Construction Requirements

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 by 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, subsection 107.01 Laws to be

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Observed and subsection 107.10 Environmental Protection, and subsection 107.11, 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.

157.04 Controls and Limitations on Work. Add the following:

When erosion control materials are to be left on site after the project has been completed, construct erosion controls of organic and bio-degradable materials whenever possible.

157.09 Diversions. Add the Following:

Stream diversion, related appurtenances and measures.

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- (a) Stream Bypass Dam and Pipe. Construct a sandbag dam and bypass pipe as shown on the Plans or as approved by the CO.
- (1) Primary Bypass Dam. Construct the Sandbag Dam in a dry condition by first pumping the stream around the dam. Place temporary cofferdams as needed. Remove irregularities from the streambed to form smooth bedding for the bypass dam. Place the dam so that water does not seep from the downstream side of the dam; if seepage occurs, improve the dam by adding sandbags, improving or adding seals, or other means to minimize seepage from the dam. When it is impossible to eliminate seepage, construct a sump and pump clear water to the upstream side of the dam.
 - (2) Bypass Dam Impermeable Membrane. Place an impermeable membrane within the sandbag dam and entrenched in the streambed as shown on the Plans or approved by the CO. When approved by the CO, a small amount of granular bentonite may be used along the edges of the membrane to minimize seepage between the membrane and the streambed. Cut a hole in the membrane to fit the bypass pipe and seal the membrane to the Bypass Pipe or the Bypass Pipe Collar using gaskets, adhesive strips or other approved methods.
 - (3) Bypass pipe. Place bypass pipe as shown on the Plans or approved by the CO. Place the upstream invert of the pipe at the lowest point in the stream channel as practical. Install joints and elbows as shown on the Plans and as needed to accommodate the site layout. Use watertight seals meeting the requirements of Subsection 712.03. Do not place backfill until the pipe joints have been approved by the CO. Allow water to pass through pipe only after a downstream splash apron has been prepared in a manner that will protect the stream from scour and turbidity, and protect fish from harm. Construct the bypass in a manner that avoids injury to aquatic organisms.
 - (4) Downstream Dam. When water flows into the work area from downstream, construct a cofferdam as needed to prevent water from entering the work area.
 - (5) Sandbags. Prior to placing the lower rows of sandbags, remove the larger rocks or other irregularities from the streambed to form a smooth bed. Use only clean sand or coarse concrete aggregate in the sandbags. Loosely fill and tamp the sandbags in place to minimize seepage between, under, and around the bags.
 - (6) Bypass Pipe Collar. Install and maintain a leak-proof pipe collar as shown on the Plans or approved by the CO.
- (b) Pumps. Install pumps as required to re-route stream around construction site and dewater foundations. When failure of a pump would result in movement of sediment or turbidity beyond the work area, provide a back-up pump that is readily available. Use the pumps for installing and removing the gravity bypass pipes and dams, at other times to facilitate construction operations, and during storms to supplement the gravity bypass. Equip the pump with approved fish screens, appropriate suction and discharge hoses, fittings and flow regulation equipment as needed. Insure that the pumps are clean, free of leaks and that the oil used as lubricant in the pump seal systems is food grade mineral oil. Install

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and operate pumps in a manner that will avoid impingement of small fish against the intake screens.

- (1) Pump intakes. Use one of the following methods of screening on all draft hoses:
 - i. Perforated Plate; screen openings shall not exceed 3/32 or 0.0938-inches
 - ii. Profile Bar Screen; the narrowest dimension in the screen openings shall not exceed 0.0689-inches in the narrowest direction.
 - iii. Woven Wire Screen; screen openings shall not exceed 3/32 or 0.0938-inches the narrow direction.

Check intakes frequently and clean as needed with wire brushing, flushing, or any other acceptable method.

- (2) Sump Pumps. Supply pumps capable of dewatering the structure foundation. Insure that pumps are clean and free of leaks. Remove sediment and turbidity in the Sump Pump discharge water prior to re-entering the stream.
- (c) Sump Water Discharge. Discharge sump water as shown on the Plan or as approved by the CO. Apply one or more methods to remove sediment from sediment-laden water. Apply additional methods as needed to eliminate increase in downstream turbidity. Use the following methods as needed:
- (1) Natural Vegetation/Soil Dispersal and Filtration. Discharge sump water onto areas of ground most advantageous for dispersal and filtration of sediment, e.g. flat heavily vegetated soil. When single point discharge does not function adequately, discharge water into a perforated pipe or series of pipes laid approximately level so that the brown water disperses over a wide area.
 - (2) Silt Bag Filtration. Discharge sump water into one or more Silt Bags. Silt Bags are constructed of Mirafi 180N (or approved equal) with sewn seam strengths of 90% efficiency according to ASTM D4632. Construct bag to hold and filter sump water. Place silt bag(s) on level ground having layer of straw one foot thick minimum.
 - (3) Settling Basin. Discharge sump water into one or more Basins. The Basins may be pre-manufactured tanks, folding tanks, geotextile or membranes placed over a sandbag or weed-free straw berm, or other similar basins designed to separate sediment from the water.
 - (4) Suspended Sediment Coagulation Agent. When other methods do not function adequately, add an approved coagulation agent to water prior to discharging the water onto natural vegetation, Silt Bag, or Settling Basin. Use a flocculation agent such as Chitisan-based Storm-Klear Gel-Floc, or approved equal. Use Suspended Sediment Coagulation Agent according to manufacturer's recommendations.
- (d) Sedimats. Place Sedimats across the streambed as shown on the Plans or approved by the CO. The Sedimat is a proprietary product manufactured by Indian Valley Industries, Inc. and distributed by Columbia Storage Inc., Vancouver Washington, phone: (800) 426-7976. Use Sedimats according to manufacturer's recommendations.

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(d) Simulated Streambed. After placement of the simulated streambed rock materials as shown on the Plans, wash the fines from the surface of the new streambed and remove the sediment using a downstream sump pump. Provide temporary sandbag dam if needed.

157.13 Maintenance & Cleanup. Add the following:

When removing sandbags, spread sand away from the waterway; if coarse concrete aggregate meeting the requirements of Section 703.02 is used in the sandbags, the gravel may be distributed evenly across the waterway.

Remove geotextile and other non-biodegradable materials used in dewatering and sediment control operations from Government property, unless otherwise approved by the CO.

157.03_nat_us_02_24_2005

157.03 General

Delete the entire subsection and replace with the following:

Prior to the start of construction, submit a written plan that provides permanent and temporary erosion control measures to minimize erosion and sedimentation during and after construction. Do not begin work until the necessary controls for that particular phase of work have been implemented. Do not modify the type, size, or location of any control. An alternate erosion control plan with all necessary permits may be submitted 30 days before intended use.

Incorporate all permanent erosion control features into the project at the earliest practicable time, as outlined in the approved plan.

When erosion control measures are not functioning as intended, immediately take corrective action.

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170 - Develop Water Supply and Watering

170.00_0618_us_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.
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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.

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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_nat_us_02_18_2005

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_0618_us_03_26_2007

203.05 Disposing of Material

(a) Remove from project.

Delete the last two sentences

203.05_0618_us_03_26_2007

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

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of windrows, provided the excavated material is kept within the clearing limits and does not adversely affect the road construction.

(f(1)) Scattering method outside clearing limits. 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.

(f(2)): Scattering method inside clearing limits. Scatter pieces of wood less than 3 inches in diameter and 3 feet in length within the clearing limits. Do not place construction slash in lakes, meadows, streams, or streambeds. Immediately remove construction slash that interferes with drainage structures.

(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.

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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_nat_us_03_26_2009

Replace Section 204 in its entirety with the following:

Description

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

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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. Dispose of unsuitable or excess excavation material according to Subsection 204.14.

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. Place unsuitable material in designated areas.

(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

(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.

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204.07 Subexcavation. Excavate material to the limits designated by the CO. 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. When designated, remove topsoil and 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.

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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:

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(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

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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.

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.

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(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. Do not mix clearing or other material not subject to payment with the waste material.

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:

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- (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.

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(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.

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**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 6000 yd ²	“	“	“
		Compaction	—	AASHTO T 310 or other approved procedures	1 per 6000 yd ² 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 6000 yd ²	“	“	“
Compaction	—	AASHTO T 310 or other approved procedures	1 per 6000 yd ² but not less than 1 per layer	In-place	—	Before placing next layer		

(1) Minimum of 5 points per proctor

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**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.

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**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 the grade change is greater than or equal to 10 percent. The centerline grade is not to exceed 20 percent in 100 feet of length.

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230 - Roadside Brushing

230.00_0618_us_03_31_2010

230.01 Description. This work consists of removing limbs, residual slash, roadside brush and small trees within the brushing limits designated in the plans, including turnouts.

Construction Requirements

230.02 General. Cut all brush and small trees, (8 inch diameter or less at the point of cut) within the brushing limits and outside the roadbed no higher than 6 inches above the ground surface or obstructions such as rocks or stumps. Trees beyond the bottom of ditch and beyond the hinge point on the fill slope side, with a diameter larger than 8 inches at a point 2 feet above the ground shall be limbed to a height of 14 feet above the road surface.

Cut all brush and trees located in the roadbed. Grub and haul stumps to designated waste areas or as directed by the Contracting Officer. Smooth and shape the disturbed areas where stumps are removed to prevent water ponding.

230.03 Windfalls. Cut windfalls lying within or across the brushing limits to a horizontal distance of 8 feet from each shoulder or at the brushing limit, whichever is least. Dispose of windfall material as slash.

230.04 Slash Treatments. Remove limbs, chunks, and debris within the roadway in excess of 2 feet in length or 1 inche in diameter, or concentrations which may plug ditches or culverts, from the traveled way, shoulders, ditches and water courses.

Dispose of slash in accordance with one or more of the following methods, as shown in the bid schedule:

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- (1) **Scattering.** Scatter slash outside the roadway limits without damaging trees. Do not scatter any material in streambeds, culvert inlets or outlets, drainage ways or cattleguards.
- (2) **Chipping.** Process slash through a chipping machine. Deposit chips on embankment slopes or outside the roadway to a loose depth less than 6 inches.
- (3) **Piling.** Pile slash in designated locations. Place and construct piles so that if the piles are burned, the burning will not damage surrounding trees. Keep piles free of dirt. Cut unmerchantable logs into lengths less than 20 feet.
- (4) **Decking.** Deck logs in excess of ___feet long and ___inches in diameter in designated locations. Logs shall be limbed and decks are to be stable and free of brush and soil. Treat other material according to designated slash treatment methods.
- (5) **Placing slash on embankment slopes.** Place slash on embankments slopes as designated in the plans to reduce soil erosion. Place slash as flat as practicable on slope. Do not place closer than 2 feet below shoulder. Priority for use of available slash in for: (1) through fills; (2) insides of curves.
- (6) **Burying.** Bury slash at designated locations. Mat slash down in layers and cover with rock and soil.
- (7) **Piling & burning.** Pile and burn slash in designated locations. Construct piles so that burning does not damage remaining trees.

Measurement

230.05 Measure the Section 230 items listed in the bid schedule according to Subsection 109.02. Quantities will be the number of miles and fractions thereof along the road centerline, regardless of the amount of work required.

Payment

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230.06 The accepted quantities will be paid at the contract price per unit of measurement for the Section 230 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

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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_nat_us_08_05_2008

303.06 Aggregate Surface Reconditioning.

Delete and replace with the following:

303.06 Asphalt and Aggregate Surface Reconditioning.

Repair soft and unstable areas to the full depth of the aggregate surface and according to Subsection 204.07. Scarify to the depth of the aggregate surface or to a depth of 6 inches, whichever is less, and remove surface irregularities. Reshape, finish, and compact the entire aggregate surface according to Subsection 301.05, Subsection 321.05, or Subsection 322.05 as applicable.

For asphalt surfaces, clean the existing surface of all loose material, dirt, or other deleterious substances by approved methods. Remove and dispose of unsuitable material that shows evidence of distress, excess asphalt material, or settlement in the roadbed. Patch the areas with approved material that conforms to and is compatible with the adjacent pavement structure. Perform the patch work according to Section 301, 404, 430, or other sections as applicable for the layer or courses being repaired. Clean and seal cracks in the existing asphalt surface according to Subsection 414.05. Correct surface irregularities exceeding 6 inches in depth with a specified aggregate. Place and compact the aggregate according to Subsections 301.04 and 301.05. Prelevel other dips, depressions, sags, excessive or nonexistent crown, or other surface irregularities with asphalt concrete according to Section 404. Spread and compact the asphalt concrete in layers parallel to the grade line not to exceed 2 inches in compacted depth.

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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 incorporating 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 yd ²	In-place	—	Before placing next layer	

(1) Minimum of 5 points per proctor.

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303.07_nat_us_03_02_2005

303.07 Roadway Reconditioning.

Add the following:

Remove cattleguard decks. Clean the deck and the area beneath the cattleguard of soil and other material to the bottom of the original foundation over the entire width of the installation.
Reinstall the cattleguard deck.

303.07_0618_us_03_23_2007

303.07 Roadway Reconditioning.

Delete and add the following:

Perform all the applicable work described in Subsection 303.03 through 303.06. Recondition the traveled way, shoulders and ditchline of intersecting roads to provide a smooth transition as shown on the plans.

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.

322 - Minor Aggregate Courses

322.00_nat_us_10_14_2011

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.

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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. Removed.

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. Removed.

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.

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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 1/2 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.

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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.

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**Table 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)	L.A. 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

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**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 F	—	AASHTO T 180 ⁽¹⁾	“	“	“	“
		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

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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.

602.06_nat_us_08_05_2009

602.06 Laying Plastic Pipe.

Delete the second paragraph and substitute the following:

Provide soil-tight bell and spigot joints for plastic pipe culverts.

635 - Temporary Traffic Control

635.03_nat_us_05_13_2004

635.03 General.

Add the following:

Install temporary traffic control signs to temporary posts or approved temporary sign mounts.

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703 - Aggregate

703.05_nat_us_08_14_2009

Delete 703.05 and replace with the following:

703.05 Subbase, Base, Surface Course, and Screened Aggregate.

(a) Subbase or base aggregate. Furnish hard, durable particles or fragments of crushed stone, crushed slag, or crushed gravel conforming the following:

(1) Gradation	Table 703-2
(2) Liquid limit, AASHTO T 89	25 max.
(3) Plastic limit, AASHTO T 90	Nonplastic
(4) Los Angeles abrasion, AASHTO T 96	40% max.
(5) Sodium sulfate soundness loss (5 cycles), AASHTO T 104	12% max.
(6) Durability index (coarse), AASHTO T 210	35 min.
(7) Durability index (fine), AASHTO T 210	35 min.
(8) Fractured faces, ASTM D 5821	50% min.
(9) Free from organic matter and lumps or balls of clay	

Do not use material that breaks up when alternately frozen and thawed or wetted and dried.

Obtain the aggregate gradation by crushing, screening, and blending processes as necessary. Fine aggregate, material passing the No. 4 sieve, shall consist of natural or crushed sand and fine mineral particles.

(b) Surface course aggregate. Furnish hard, durable particles or fragments of crushed stone, crushed slag, or crushed gravel conforming the following:

(1) Gradation	Table 703-3
(2) Liquid limit, AASHTO T 89	35 max.
(3) Plastic Index, AASHTO T 90	
a) If the percent passing the No. 200 sieve is less than 12%	2 to 9
b) If the percent passing the No. 200 sieve is greater than 12%	Less than 2
(4) Los Angeles abrasion, AASHTO T 96	40% max.
(5) Sodium sulfate soundness loss (5 cycles), AASHTO T 104	12% max.
(6) Durability index (coarse), AASHTO T 210	35 min.
(7) Durability index (fine), AASHTO T 210	35 min.
(8) Fractured faces, ASTM D 5821	75% min.
(9) Free from organic matter and lumps or balls of clay	

Do not use material that breaks up when alternately frozen and thawed or wetted and dried.

Do not furnish material that contains asbestos fibers.

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Obtain the aggregate gradation by crushing, screening, and blending processes as necessary. Fine aggregate, material passing the No. 4 sieve, shall consist of natural or crushed sand and fine mineral particles.

(c) Screened aggregate – Furnish hard, durable particles or fragments of stone, slag, or gravel conforming the following:

- | | |
|--|--------------|
| (1) Gradation | Table 703-16 |
| (2) Plastic Index, AASHTO T 90 | Less than 9 |
| (3) Los Angeles abrasion, AASHTO T 96 | 55% max. |
| (4) Free from organic matter and lumps or balls of clay. | |

Do not use material that breaks up when alternately frozen and thawed or wetted and dried.

Obtain the aggregate gradation by crushing, screening, and blending processes as necessary.

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Delete Table 703-2 and replace with the following:

Table 703-2
Target Value Ranges for Subbase and Base Gradation
Percent by Mass Passing Designated Sieve (AASHTO T 27 and T 11)

Sieve Size	Grading Designation					
	A (Subbase)	B (Subbase)	C (Base)	D (Base)	E (Base)	E (Base)
2½ inch	100					
2 inch	97 – 100	100				
1½ inch		97 – 100				
1 inch	65 – 79 (6)		80 – 100 (6)	100		
¾ inch			64 – 94 (6)	86 – 100 (6)	100	
½ inch	45 – 59 (7)					
⅜ inch			40 – 69 (6)	51 – 82 (6)	62 – 90 (6)	
No. 4	28 – 42 (6)	40 – 60 (8)	31 – 54 (6)	36 – 64 (6)	36 – 74 (6)	
No. 40	9 – 17 (4)			12 – 26 (4)	12 – 26 (4)	
No. 200	4.0 – 8.0 (3)	4.0 – 12.0 (4)	4.0 – 7.0 (3)	4.0 – 7.0 (3)	4.0 – 7.0 (3)	

() The value in the parentheses is the allowable deviation (±) from the target values..

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Delete Table 703-3 and replace with the following:

**Table 703-3
Target Value Ranges for Surface Gradation
Percent by Mass Passing Designated Sieve (AASHTO T 27 and T 11)**

Sieve Size	Grading Designation						
	F	G	H	S	T	U	
1 1/2 inch	100			100			
1 inch	97-100	100		72 - 92 (6)	100		
3/4 inch	76-89 (6)	97 - 100	97 - 100			100	
1/2 inch					71 - 91 (6)		
3/8 inch	56-68 (6)	70 - 80 (6)	80 - 92 (6)	51 - 71 (6)			71 - 90 (6)
No. 4	43-53 (7)	51 - 63 (7)	58 - 70 (7)	36 - 53 (7)	43 - 60 (7)		50 - 68 (7)
No. 8				26 - 40 (6)	30 - 46 (6)		34 - 51 (6)
No. 16	23-32 (6)	28 - 39 (6)	28 - 40 (6)				
No. 40	15-23 (5)	19 - 27 (5)	16 - 26 (5)	14 - 25 (5)	16 - 28 (5)		19 - 30 (5)
No. 200	10.0-16.0 (4)	10.0 - 16.0 (4)	9.0 - 14.0 (4)	8.0 - 15.0 (4)	8.0 - 15.0 (4)		8.0 - 15.0 (4)

() The value in the parentheses is the allowable deviation (\pm) from the target values.
If the plasticity index (PI) is greater than 0, the TV range for the No. 200 sieve size is 8-12 (4).

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Add Table 703-16:

Table 703-16

Gradation Requirements for Screened Aggregate

Sieve Size	Percent by Mass Passing Designated Sieve (AASHTO T 27 and T 11)						
	Grading Designation						
	L	M	N	O	P	Q	R
6 inch	100	100					
4 inch			100	100			
3 inch					100	100	
2 inch							100
No. 4		15-45		15-45		15-45	

703.10_nat_us_04_11_2011

703.10(e) Flakiness Index.

Delete and replace with the following:

Flakiness Index, FLH T 508 30% max.

703.10(i) Adherent Coating.

Add the following:

Adherent coating on the aggregate, FLH T 512 0.5% max.