

Ona Thin STWD Roads

Specified Road Reconstruction Plans	13 pages
Costing	1 page Cost Summary
	2 pages Schedule of Items
Specifications	2 pages Specifications Listing
	75 pages FSSS Specifications Package
	93 pages total

UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE - REGION SIX SIUSLAW NATIONAL FOREST CENTRAL COAST RANGER DISTRICT

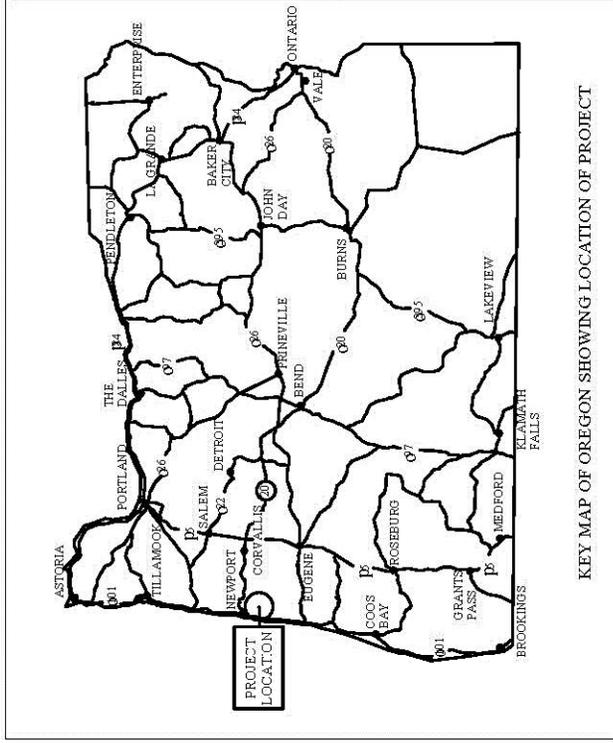


PLANS FOR PROPOSED
ONA THIN STWD ROADS
LINCOLN COUNTY

INDEX OF SHEETS	DESCRIPTION
1	TITLE SHEET
2	VICINITY MAP
3	ESTIMATE OF QUANTITIES
4	ROAD STRUCTURE DETAIL AND DRAINAGE LISTING
5	BRUSHING AND VEGETATION REMOVAL TYPICAL
6	DRAINAGE CONSTRUCTION DETAILS
7-8	FILL REPAIR DETAILS AND SCHEDULE
9-13	RECONSTRUCTION LOGS

FS ROAD NO.	TERMINI (MP to MP)	LENGTH (MILES)	TYPE OF WORK
50	1.38-3.21	1.83	RECONSTRUCTION
51	0.00 - 6.00	6.00	RECONSTRUCTION

Plan In Hand Review: Jan 14, 2015



Designed by: J. Latham Date: 1/15/2015
 Designer (J. Latham)

Reviewed by: J. Latham Date: 1/15/15
 Reviewer (J. Acosta)

Development Engineer (J. Caswell) Date: 1/26/15

Recommended by: J. Acosta Date: 1/15/15
 Zone/Engineer (J. Acosta)

Approved by: M. Jones Date: 1/16/15
 Line Officer (M. Jones)

Forest Engineer (D. Demmon) Date: Jan 26 2015

UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE - REGION SIX SIUSLAW NATIONAL FOREST CENTRAL COAST RANGER DISTRICT

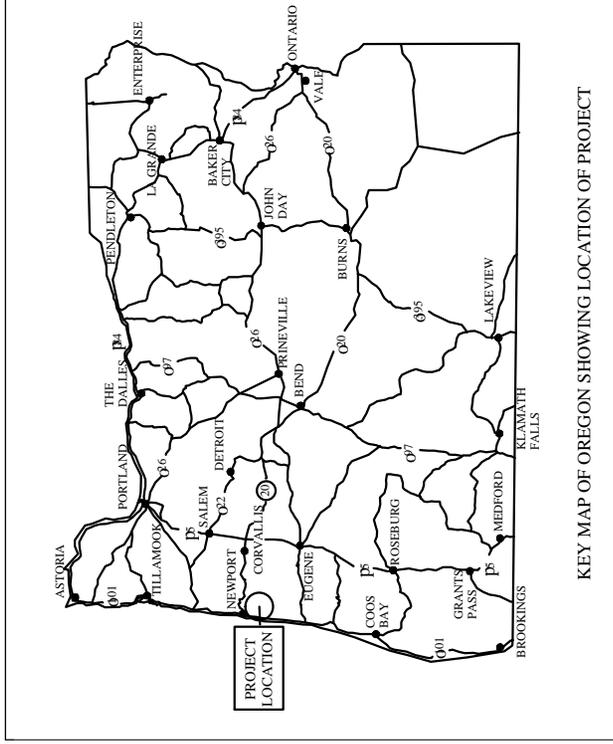


PLANS FOR PROPOSED
ONA THIN STWD ROADS
LINCOLN COUNTY

INDEX OF SHEETS	DESCRIPTION
1	TITLE SHEET
2	VICINITY MAP
3	ESTIMATE OF QUANTITIES
4	ROAD STRUCTURE DETAIL AND DRAINAGE LISTING
5	BRUSHING AND VEGETATION REMOVAL TYPICAL
6	DRAINAGE CONSTRUCTION DETAILS
7-8	FILL REPAIR DETAILS AND SCHEDULE
9-13	RECONSTRUCTION LOGS

FS ROAD NO.	TERMINI (MP to MP)	LENGTH (MILES)	TYPE OF WORK
50	1.38-3.21	1.83	RECONSTRUCTION
51	0.00 - 6.00	6.00	RECONSTRUCTION

Plan In Hand Review: Jan 14, 2015



KEY MAP OF OREGON SHOWING LOCATION OF PROJECT

Designed by:

Designer (J. Latham) _____ Date _____

Reviewed by:

Reviewer (J. Acosta) _____ Date _____

Development Engineer (J. Caswell) _____ Date _____

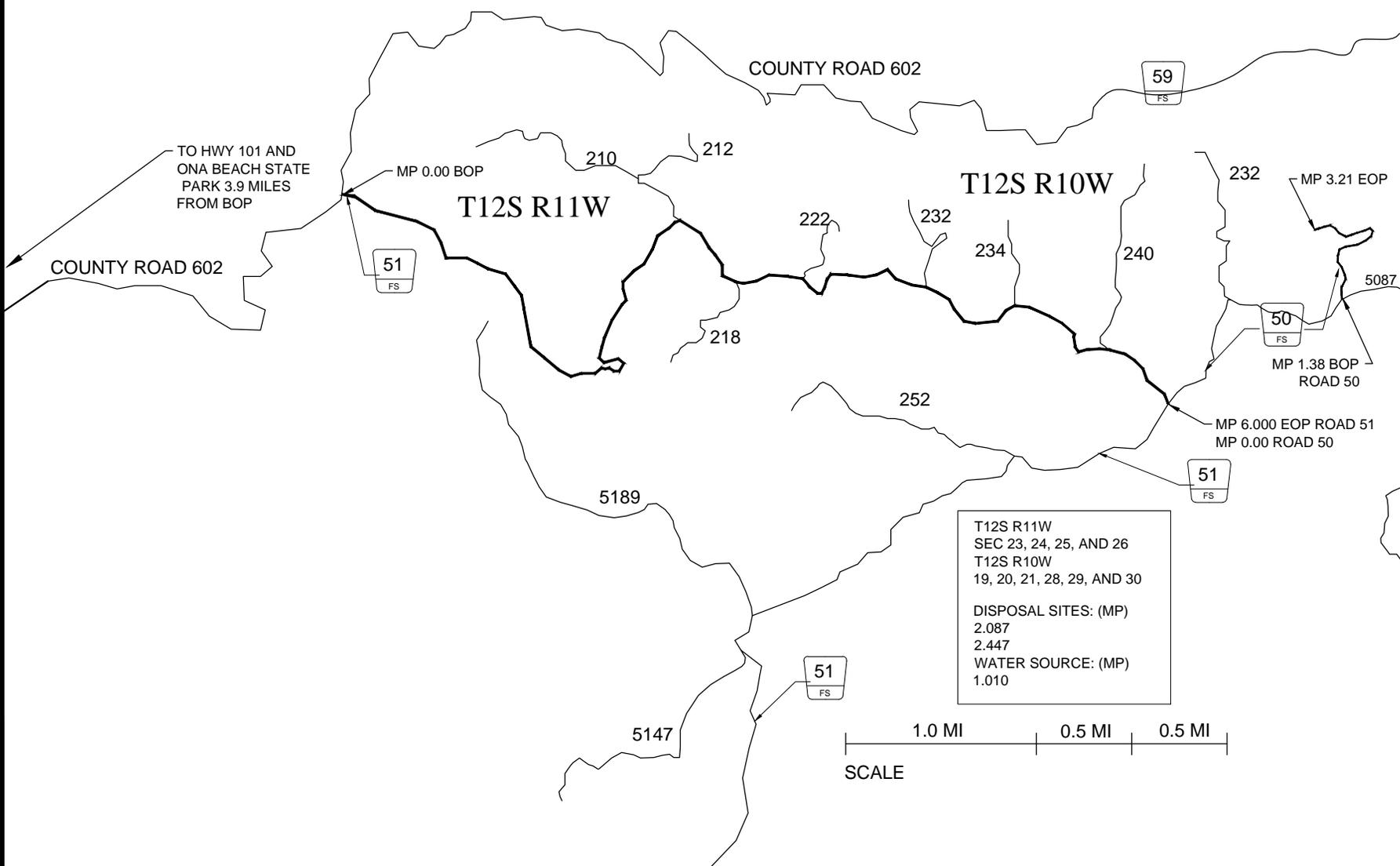
Recommended by:

Zone Engineer (J. Acosta) _____ Date _____

Approved by:

Line Officer (M. Jones) _____ Date _____

Forest Engineer (D. Lemon) _____ Date _____



TO HWY 101 AND
ONA BEACH STATE
PARK 3.9 MILES
FROM BOP

MP 0.00 BOP

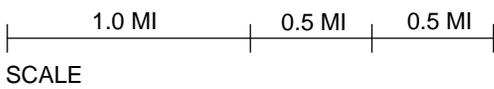
MP 3.21 EOP

MP 1.38 BOP
ROAD 50

MP 6.000 EOP ROAD 51
MP 0.00 ROAD 50

T12S R11W
SEC 23, 24, 25, AND 26
T12S R10W
19, 20, 21, 28, 29, AND 30

DISPOSAL SITES: (MP)
2.087
2.447
WATER SOURCE: (MP)
1.010



ONA THIN STWD ROADS

VICINITY MAP



SHEET NUMBER	TOTAL SHEETS
2	13

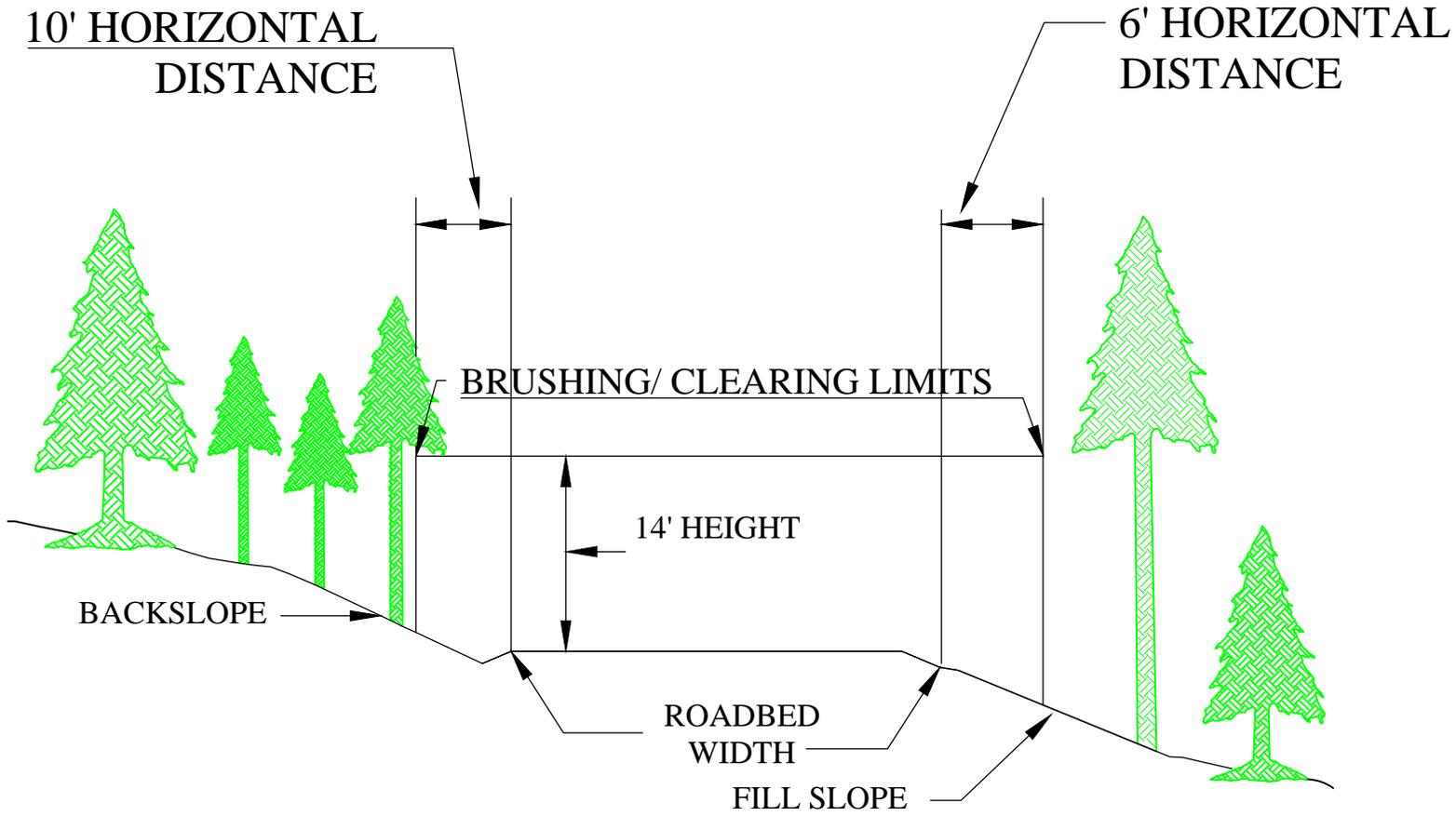
Road Number		50	51	Payment will be made on actual work performed as described in FP-03 109.01 unless otherwise noted.	
Project Length (Miles)		1.83	6.00		
Item No	DESCRIPTION	Unit	Quantities		Remarks
15204	Drainage structure survey and staking	Each		1	MP 1.010
15101	Mobilization	Lump Sum		All	Covers entire project: Traffic control, hazarous spill equipment, equipment washing, fire prevention, and sign installation are included by indirect payment.
15713	Soil Erosion & Pollution Control	Lump Sum		All	Covers entire project: Use Certified weed free straw or other approved erosion control materials as needed. Dewatering plan for Road 3413127
20301	Removal of culvert	Each		9	Dispose of legally off National Forest lands.
20303	Removal of asphalt	Sqyare Yard*		1209	Dispose of legally off National Forest lands.
20350	Remove and reset cattleguard	Each		1	
20457	Roadway excavation, compaction method E	Cubic Yard*		3165	Includes clearing for culvert excavation.
21201	Linear grading	Mile	0.89		Reconstruct road bed including
23051	Roadside Brushing	Mile	0.94	6.00	Scatter outside of clearing limits
25101	Keyed riprap, class 3	Cubic Yard*		182	Commercial Source.
30359	Roadway reconditioning, compaction method E	Mile	0.94	6.00	Includes both asphalt surface and aggregate surface.
32203	Aggregate base, grading D, compaction method B	Cubic Yard*		566	Commercial Source. Includes material testing per FP-03 703.05.
32218	Screened aggregate grading Q, compaction method B	Cubic Yard*	341		Surface material for culvert crossings and Linear grading.
40451	ODOT 1/2" dense graded HMAc, level II, asphalt cement PG 64-22	Ton		332	Commercial source. Includes material testing per FP-03 404.09.
6027636B	36 Inch corrugated aluminized steel pipe 0.109 inch thickness, method C	Foot	40		Includes excavation and embankment
6027648	48 Inch corrugated aluminized steel pipe 0.109 inch thickness, method C	Foot		90	
6027648B	48 Inch corrugated aluminized steel pipe 0.109 inch thickness, method C	Foot	140		Includes excavation and embankment
6027818	18 Inch corrugated polyethylene pipe, type S, method B	Foot		38	
6027818B	18 Inch corrugated polyethylene pipe, type S, method B	Foot	40		Includes excavation and embankment
6027824	24 Inch corrugated polyethylene pipe, type S, method B	Foot		345	
6065418	18-inch full circle polyethylene outlet pipe, type C	Foot		20	Includes all installation hardware and anchors
6065424	24-inch full circle polyethylene outlet pipe, type C	Foot		40	Includes all installation hardware and anchors
Disposal Area: 6' maximum height 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					
See contract provisions and specifications for daily and seasonal restrictions.					
All utility locates, permits, and water rights are the responsibility of the purchaser.					
* Denotes Contract Quantities					

ONA THIN STWD ROADS

ESTIMATE OF QUANTITIES



SHEET NUMBER	TOTAL SHEETS
3	13



ONA THIN STWD ROADS

BRUSHING AND VEGETATION REMOVAL TYPICAL

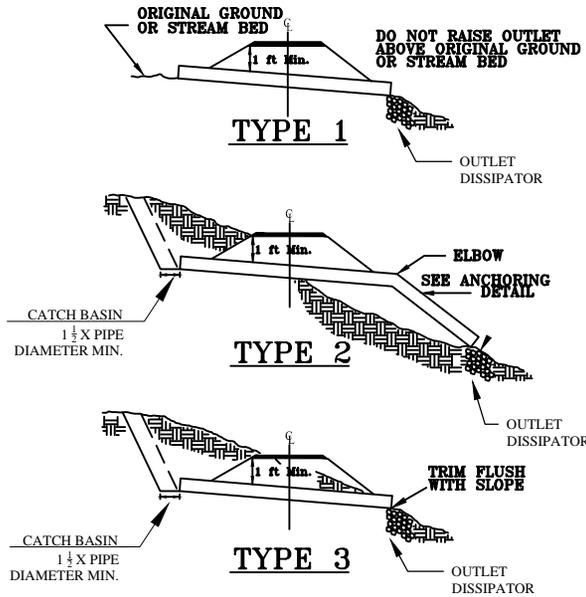
PACIFIC NORTHWEST REGION

U.S.D.A. FOREST SERVICE



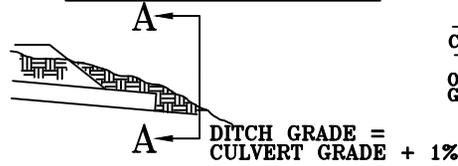
SHEET NUMBER	TOTAL SHEETS
5	13

CULVERT INSTALLATION TYPES



CULVERT INVERT - THE LOWEST INTERIOR ELEVATION OF THE CULVERT AT ANY SELECTED POINT.

OUTLET DITCH



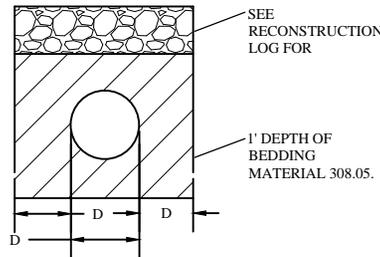
SECTION A-A



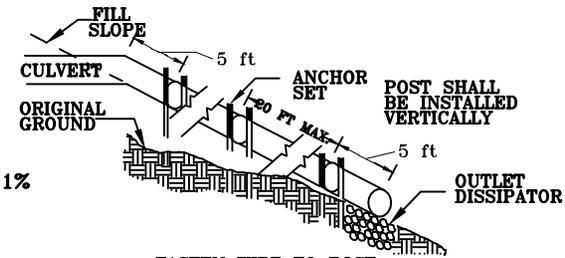
CULVERT DIAMETER

MATERIAL TO BE DEPOSITED ON BOTH SIDES OF DITCH

CULVERT INSTALLATION DETAIL



ANCHOR DETAILS



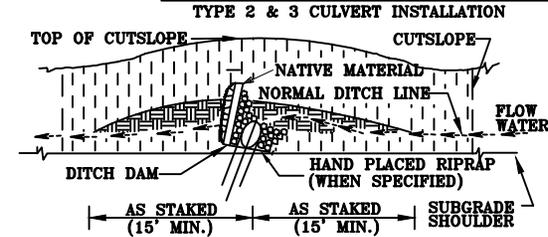
FASTEN WIRE TO POST



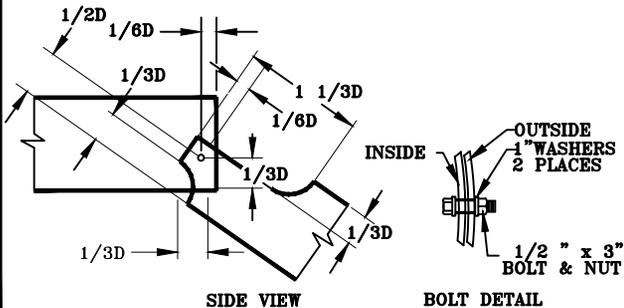
NO. 9 WIRE (FASTEN WIRE TO POSTS)

NOTE:
3 FT DIAMETER AND LARGER DOWNPIPE SHALL BE HALF BURIED.
ANCHOR SETS SHALL CONSIST OF TWO 6 FT STEEL FENCE POSTS (AASHTO M 281) AND NO. 9 GALVANIZED WIRE. 3 STRANDS OF WIRE SHALL BE TWISTED TOGETHER AND ENCOMPASS THE ENTIRE CIRCUMFERENCE OF THE PIPE.

DITCH DAM PLAN VIEW

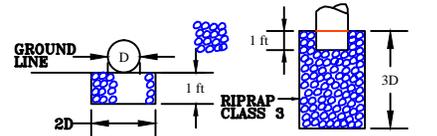


FLEX ELBOW



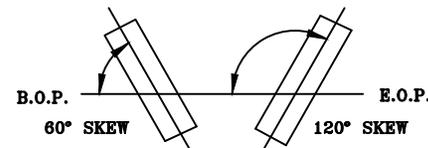
ALL FASTENERS SHALL BE GALVANIZED

OUTLET DISSIPATER DETAIL



APRON SURFACE MUST CONFORM TO SHAPE OF EXISTING GROUND AND BE LEFT ROUGH TO REDUCE WATER VELOCITY.

SKEW DIAGRAM



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

ONA THIN STWD ROADS

DRAINAGE CONSTRUCTION DETAILS



SHEET NUMBER TOTAL SHEETS

6

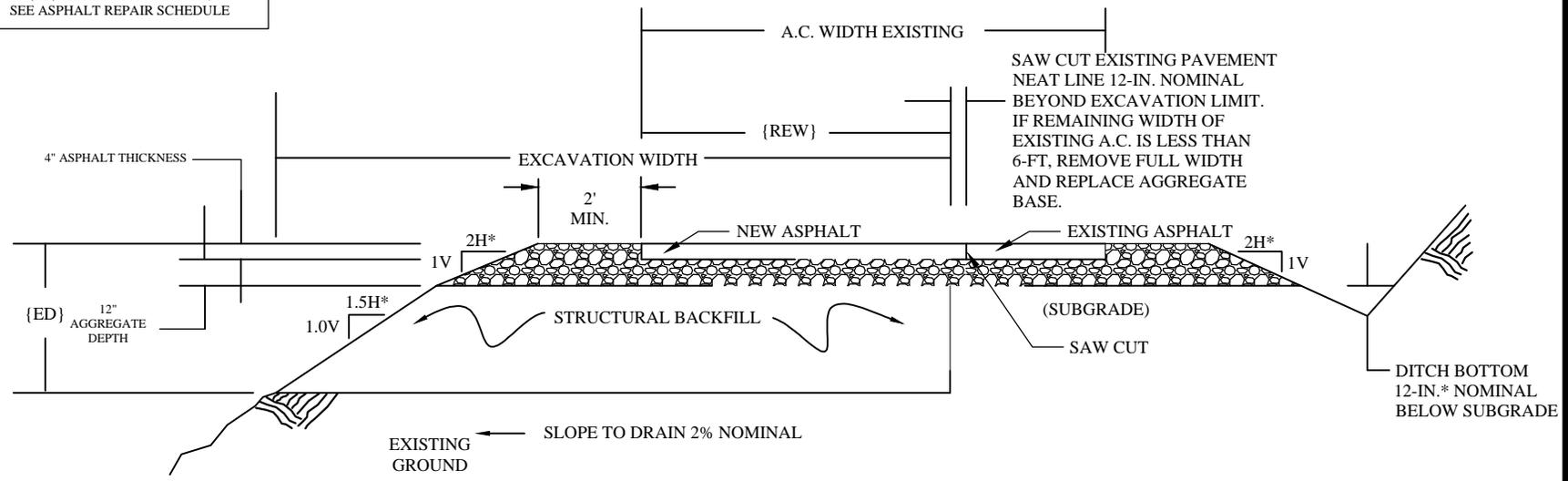
13

METHOD A FILL REPAIR DETAILS

SUBGRADE REPAIR WITHOUT GEOGRID

{REW} - ROADBED EXCAVATION WIDTH,
SEE ASPHALT REPAIR SCHEDULE

{ED} - EXCAVATION DEPTH,
SEE ASPHALT REPAIR SCHEDULE



Cross-Section View

NOTES:

- 1) ALL TYPICALS ARE SECTION VIEWS UNLESS OTHERWISE NOTED
- 2) DIMENSIONS ARE LISTED ON THE ASPHALT REPAIR SCHEDULE.
- 3) DIMENSIONS MARKED WITH AN ASTERISK MAY BE ADJUSTED BY THE CO IN ORDER TO FIT THE EXISTING SITE GEOMETRY
- 4) STRUCTURAL BACKFILL - COMPLY WITH THE REQUIREMENTS OF THE SUBSECTION 704.04 OR AN ALTERNATIVE APPROVED BY THE CO
- 5) COMPACT SEGMENTS OF FILL REPAIRS THAT CANNOT BE ROLLER COMPACTED WITH MECHANICAL WACKERS TO OBTAIN LIKE COMPACTION.
- 6) MAINTAIN EXISTING SUPER ELEVATION, CROWN AND SLOPE OF ROAD. CREATE SMOOTH TRANSITIONS TO EXISTING ROAD SURFACE AND PRISM.

(NOT TO SCALE)



SHEET NUMBER	TOTAL SHEETS
7	13

ROAD / MILEPOST	FILL REPAIR TYPE (A, B, C) FULL PATCH (FP) Skin Patch (SP)	ASPHALT CUT DIMENSIONS OR SKIN PATCH DIMENSIONS		ROADBED EXCAVATION DIMENSIONS			ASPHALT EXCAVATION (sy)	ROADBED EXCAVATION (cy) *	HMAC (Ton)	CRUSHED AGGREGATE (cy)
		AVE. WIDTH (ft)	LENGTH (ft)	{REW} WIDTH (ft)	LENGTH (ft)	{ED} DEPTH (ft)				
51										
0.334	FP	5	5				3		1	
0.408	FP	6	5				3		1	
	FP	8	5				4		1	
	FP	3	3				1		1	
1.215	A	7	47	5	45	3	37	25	8	8
1.245	A	14	90	15	88	3	140	147	31	49
1.477	FP	5	5	5	5	0.67	3		1	
1.488	FP	14	15	14	15	0.5	23		5	4
2.352	A	8	23	8	21	3	20	19	5	6
2.873	FP	3	6				2		1	
4.044	SP	10	12				13		3	
4.081	SP	10	10				11		2	
4.569	A	7	100	7	98	3	78	76	17	25
SUB TOTALS							338	267	77	93

{REW} = Corresponds to fill repair detail

{ED} = Corresponds to fill repair detail

* Calculations include 2' average shoulder and 1 1/2 : 1 fill slope

Lengths and widths shown are "NOMINAL" Field dimensions may vary.

ONA THIN STWD ROADS

FILL REPAIR SCHEDULE



SHEET NUMBER TOTAL SHEETS

8

13

ROAD 50

MP	Remarks	Pay Item	Quantity
1.38	BOP- Junction with Road 51		
	Roadside brushing, disposal method 1	23051	0.940
	Begin roadway reconditioning- includes construction of roadbed and ditchline	30359	0.940
	Use 3 CY grading Q aggregate for waterbar reconstruction at 12 locations	32218	36
2.32	Begin Linear grading, includes all work to reconstruct road bed.	21201	0.89
2.44	Junction left		
2.49	Install 48" X 60' CMP- Fill material in roadway, embankment included in culvert cost	6020148B	60
	Place grading Q aggregate full width, 1' depth, for 40' both sides of culvert for surfacing	32218	53
2.57	Install 48" X 40' CMP- Fill material in roadway, embankment included in culvert cost	60201	40
	Place grading M aggregate full width, 1' depth, for 40' both sides of culvert for surfacing	32218	53
2.62	Roadbed width changes from 16' to 12'		
2.66	Install 48" X 40' CMP- Fill material in roadway, embankment included in culvert cost	6020148B	40
	Place grading Q aggregate full width, 1' depth, for 30' both sides of culvert for surfacing	32218	31
2.67	Begin realignment. Balance material to construct 14' bench along flag line, sag grade if needed but, ensure smooth transitions to accommodate haul.	21201	
	Place grading Q aggregate full width, 1' depth, entire length of bench for surface coarse	32218	95
2.71	End realignment.		
2.89	Install 18" X 40' CMP- Fill material in roadway, embankment included in culvert cost	6027818B	40
	Place grading Q aggregate full width, 1' depth, for 40' both sides of culvert for surfacing	32218	10
2.98	Junction left. Construct turnaround with minimum 60' radius, included in linear grading	21201	
3.02	Begin reconstruction over slough area- shape roadway with smooth transitions to accommodate haul.	21201	
	Place grading Q aggregate full width, 1' depth, entire length of slough for surface coarse	32218	95
2.32	End slough area		
3.05	Construct turnaround minimum 60' radius to facilitate log truck traffic.	21201	
3.14	Install 36" X 40' CMP- Fill material in roadway, embankment included in culvert cost	6020136B	40
	Place grading Q aggregate full width, 1' depth, for 30' both sides of culvert for surfacing	32218	31
3.21	EOP		

ONA THIN STWD ROADS

RECONSTRUCTION LOGS

PACIFIC NORTHWEST REGION

U.S.D.A. FOREST SERVICE



SHEET NUMBER	TOTAL SHEETS
9	13

ROAD 51

MP	Remarks	Pay Item	Quantity
0.000	BOP- Junction with County Road 702		
	Roadside brushing, disposal method 1	23051	10.215
	Begin roadway reconditioning including asphalt surface cleaning	30359	10.215
0.070	Remove and reset cattleguard 10" above current elevation. Saw cut and remove existing asphalt 50' before and 50' after structure. Place minimum 12" depth aggregate for base to allow for smooth transition. Place asphalt surface, 4" depth.	20350	1
	Use crushed rock to raise elevation of pad for structure. Reuse existing foundation materials for cattle guard. Reset wingwall to function.		
	Removal of asphalt, dispose of off National Forest Lands	20303	167
	Aggregate base, grading D, compaction method B	32203	25
	ODOT 1/2" dense graded HMAC, Level II, asphalt cement PG 64-22	40451	37
0.218	Clean cattle guard	30359	1
0.321	Clean cattle guard	30359	1
0.334	Saw cut and remove asphalt, replace with full depth patch 5'X5'		
	Removal of asphalt, dispose of off National Forest Lands	20303	3
	ODOT 1/2" dense graded HMAC, Level II, asphalt cement PG 64-22	40451	1
0.408	Three full depth patches: 6'X5', 8'X5', and 3'X3'. New asphalt depth shall be 8".		
	Removal of asphalt, dispose of off National Forest Lands	20303	8
	ODOT 1/2" dense graded HMAC, Level II, asphalt cement PG 64-22	40451	3
0.748	Replace existing culvert with 24" X40' CPP with dissipater. Aggregate base 12 inch depth, AC 4 inch	6027824	40
	Roadway excavation, compaction method E	20457	110
	Aggregate base, grading D, compaction method B	32203	12
	placed Riprap, class 3	25101	3
	Removal of culvert	20301	1
	Removal of asphalt, dispose of off National Forest Lands	20303	25
	ODOT 1/2" dense graded HMAC, Level II, asphalt cement PG 64-22	40451	7
0.798	Replace existing culvert with 24" X45' CPP, lower outlet 3' and install dissipater. Aggregate base 12 inch depth, AC 4 inch depth.	6027824	45
	Roadway excavation, compaction method E	20457	125
	Aggregate base, grading D, compaction method B	32203	14
	Placed Riprap, class 3	25101	3
	Removal of culvert	20301	1
	Removal of asphalt, dispose of off National Forest Lands	20303	18
	ODOT 1/2" dense graded HMAC, Level II, asphalt cement PG 64-22	40451	7
0.858	Replace existing culvert with 24" X40' CPP with dissipater. Aggregate base 12 inch depth, AC 4 inch	6027824	40
	Roadway excavation, compaction method E	20457	100
	Aggregate base, grading D, compaction method B	32203	12
	Placed Riprap, class 3	25101	3
	Removal of culvert	20301	1
	Removal of asphalt, dispose of off National Forest Lands	20303	25
	ODOT 1/2" dense graded HMAC, Level II, asphalt cement PG 64-22	40451	7

ONA THIN STWD ROADS

RECONSTRUCTION LOGS

PACIFIC NORTHWEST REGION

U.S.D.A. FOREST SERVICE



SHEET NUMBER	TOTAL SHEETS
10	13

MP	Remarks	Pay Item	Quantity
0.884	Replace existing culvert with 24" X50' CPP with dissipater. Aggregate base 12 inch depth, AC 4 inch	6027824	50
	Roadway excavation, compaction method E	20457	120
	Aggregate base, grading D, compaction method B	32203	20
	Placed Riprap, class 3	25101	3
	Removal of culvert	20301	1
	Removal of asphalt, dispose of off National Forest Lands	20303	47
	ODOT 1/2" dense graded HMAc, Level II, asphalt cement PG 64-22	40451	12
0.900	Clean cattleguard to provide drainage	30359	1
1.010	Replace existing culvert with 48"X90' CPP with dissipater. Aggregate base 12 inch depth, AC 4 inch depth. Minor clearing included in excavation.	6027648	90
	Drainage structure survey and staking	15204	1
	Roadway excavation, compaction method E	20457	1450
	Placed Riprap, class 3 to armor slopes	25101	30
	Placed Riprap, class 3 as dissipator	25101	3
	Aggregate base, grading D, compaction method B	32203	57
	Removal of culvert	20301	1
	Removal of asphalt, dispose of off National Forest Lands	20303	125
	ODOT 1/2" dense graded HMAc, Level II, asphalt cement PG 64-22	40451	45
1.206	Replace existing culvert with 24"X60' CPP with dissipater and outlet pipe. Aggregate base 12 inch depth, AC 4 inch depth. Asphalt repair area is 14'X85'.	6027824	60
	Single wall outlet pipe with all installation hardware and anchors	6065424	20
	Roadway excavation, compaction method E	20457	260
	Placed Riprap, class 3 to armor slopes	25101	15
	Placed Riprap, class 3 as dissipator	25101	3
	Aggregate base, grading D, compaction method B	32203	57
	Removal of culvert	20301	1
	Removal of asphalt, dispose of off National Forest Lands	20303	133
	ODOT 1/2" dense graded HMAc, Level II, asphalt cement PG 64-22	40451	30
1.215	Fill repair type A 47'X7'X3' depth Aggregate base 12" depth, asphalt surface 4" depth.		
	Roadway excavation, compaction method E	20457	25
	Placed Riprap, class 3 to armor slopes	25101	10
	Aggregate base, grading D, compaction method B, 1' depth	32203	8
	Removal of asphalt, dispose of off National Forest Lands	20303	25
	ODOT 1/2" dense graded HMAc, Level II, asphalt cement PG 64-22	40451	8
1.245	Fill repair type A 14'X90'X3' depth. Aggregate base 12" depth, asphalt surface 4" depth.		
	Roadway excavation, compaction method E	20457	147
	Placed Riprap, class 3 to armor slopes	25101	31
	Aggregate base, grading D, compaction method B	32203	49
	Removal of asphalt, dispose of off National Forest Lands	20303	140
	ODOT 1/2" dense graded HMAc, Level II, asphalt cement PG 64-22	40451	31

ONA THIN STWD ROADS

RECONSTRUCTION LOGS

U.S.D.A. FOREST SERVICE

PACIFIC NORTHWEST REGION



SHEET NUMBER TOTAL SHEETS

11

13

MP	Remarks	Pay Item	Quantity
1.269	Replace existing culvert with 24"X55' CPP with dissipater and outlet pipe. Armor outlet slope with riprap.	6027824	55
	Aggregate base 12 inch depth, AC 4 inch depth. Asphalt repair area is 14'X85'.		
	Single wall outlet pipe with all installation hardware and anchors	6065424	20
	Roadway excavation, compaction method E	20457	400
	Placed Riprap, class 3 to armor slopes	25101	29
	Placed Riprap, class 3 as dissipator	25101	3
	Aggregate base, grading D, compaction method B	32203	57
	Removal of culvert	20301	1
	Removal of asphalt, dispose of off National Forest Lands	20303	132
	ODOT 1/2" dense graded HMAC, Level II, asphalt cement PG 64-22	40451	30
1.316	Replace existing culvert with 24"X55' CPP with dissipater. Armor outlet slope with riprap. Aggregate base	6027824	55
	12 inch depth, AC 4 inch depth. Asphalt repair areas are 3'X30' and 14'X85'.		
	Roadway excavation, compaction method E	20457	263
	Placed Riprap, class 3 to armor slopes	25101	40
	Placed Riprap, class 3 as dissipator	25101	3
	Aggregate base, grading D, compaction method B	32203	60
	Removal of culvert	20301	1
	Removal of asphalt, dispose of off National Forest Lands	20303	40
	ODOT 1/2" dense graded HMAC, Level II, asphalt cement PG 64-22	40451	33
1.477	Full depth patch. 5'X5' excavate to suitable base and repair with asphalt		
	ODOT 1/2" dense graded HMAC, Level II, asphalt cement PG 64-22	40451	1
	Removal of asphalt, dispose of off National Forest Lands	20303	3
1.488	Full depth patch, 15'X14'. Minor excavation included. Aggregate base depth 12 inch, asphalt depth 6 inch.		
	Aggregate base, grading D, compaction method B	32203	4
	Removal of asphalt, dispose of off National Forest Lands	20303	13
	ODOT 1/2" dense graded HMAC, Level II, asphalt cement PG 64-22. 6" depth	40451	5
2.087	Disposal Site		
2.352	Fill repair type A 8'X23'X3' depth. Aggregate base 12" depth, asphalt surface 4" depth.		
	Roadway excavation, compaction method E	20457	19
	Aggregate base, grading D, compaction method B	32203	6
	Removal of asphalt, dispose of off National Forest Lands	20303	20
	ODOT 1/2" dense graded HMAC, Level II, asphalt cement PG 64-22	40451	5
2.447	Disposal Site		
2.873	Full depth patch. 3'X6' excavate to suitable base and repair with asphalt		
	ODOT 1/2" dense graded HMAC, Level II, asphalt cement PG 64-22	40451	1
	Removal of asphalt, dispose of off National Forest Lands	20303	2

ONA THIN STWD ROADS

RECONSTRUCTION LOGS

PACIFIC NORTHWEST REGION

U.S.D.A. FOREST SERVICE



SHEET NUMBER	TOTAL SHEETS
12	13

MP	Remarks	Pay Item	Quantity
4.338	Replace existing culvert with 18"X38' CPP with outlet pipe and dissipater. Armor outlet slope with riprap. Aggregate base 12 inch depth, AC 4 inch depth. Asphalt repair areas is 14'X132'.	6027818	38
	Single wall outlet pipe with all installation hardware and anchors	6065418	20
	Roadway excavation, compaction method E	20457	70
	Placed Riprap, class 3 as dissipater	25101	3
	Aggregate base, grading D, compaction method B	32203	88
	Removal of culvert	20301	1
	Removal of asphalt, dispose of off National Forest Lands	20303	205
	ODOT 1/2" dense graded HMAC, Level II, asphalt cement PG 64-22	40451	46
4.044	Skin patch, 10'X12'		
	ODOT 1/2" dense graded HMAC, Level II, asphalt cement PG 64-22	40451	3
4.081	Skin patch, 10'X10'		
	ODOT 1/2" dense graded HMAC, Level II, asphalt cement PG 64-22	40451	2.5
4.569	Fill repair type A 7'X100'X3' depth. Aggregate base 12" depth, asphalt surface 4" depth.		
	Roadway excavation, compaction method E	20457	76
	Aggregate base, grading D, compaction method B	32203	25
	Removal of asphalt, dispose of off National Forest Lands	20303	78
	ODOT 1/2" dense graded HMAC, Level II, asphalt cement PG 64-22	40451	17
6.000	EOP. End brushing and reconditioning Jct left.		

<p>ONA THIN STWD ROADS</p> <p>RECONSTRUCTION LOGS</p>	
	
SHEET NUMBER	TOTAL SHEETS
13	13

Ona Thin STWD Roads Cost Summary

Road	TS Cost	PW Cost
50	\$ 81,987.65	\$ 92,376.28
51	\$ 249,439.29	\$ 274,091.65
Totals	\$ 331,426.94	\$ 366,467.93
DRES		\$ 49,600.00

SCHEDULE OF ITEMS

Ona Thin STWD Roads

Road Number 50

Mile post 0.00 to Mile post 1.83

TS COSTS

Pay Item	Item Description	Pay Unit	Estimated Quantity	Unit Price	Total
21201	Linear grading	Mile	0.89	\$ 43,548.41	\$ 38,558.49
23051	Roadside Brushing	Mile	0.94	\$ 734.00	\$ 689.96
30359	Roadway reconditioning, compaction method E	Mile	0.94	\$ 1,764.00	\$ 1,658.16
32218	Screened aggregate grading Q, compaction method B	Cubic Yard*	341	\$ 33.48	\$ 11,416.09
6027636B	36 Inch corrugated aluminized steel pipe 0.109 inch	Foot	40	\$ 148.46	\$ 5,938.46
6027648B	48 Inch corrugated aluminized steel pipe 0.109 inch thickness, method C	Foot	140	\$ 156.78	\$ 21,948.72
6027818B	18 Inch corrugated polyethylene pipe, type S, method B	Foot	40	\$ 44.44	\$ 1,777.78
					<u>\$ 81,987.65</u>

SCHEDULE OF ITEMS

Ona Thin STWD Roads

Road Number 51
Mile post 0.00 to Mile post 6.00

TS COSTS

Pay Item	Item Description	Pay Unit	Estimated Quantity	Unit Price	Total
15204	Drainage structure survey and staking	Each	1	\$ 440.00	\$ 440.00
15101	Mobilization	Lump Sum	All	\$ 43,229.60	\$ 43,229.60
15713	Soil Erosion & Pollution Control	Lump Sum	All	\$ 2,000.00	\$ 2,000.00
20301	Removal of culvert	Each	9	\$ 1,056.00	\$ 9,504.00
20303	Removal of asphalt	Square Yard*	1209	\$ 4.68	\$ 5,658.12
20350	Remove and reset cattleguard	Each	1	\$ 1,700.00	\$ 1,700.00
20457	Roadway excavation, compaction method E	Cubic Yard*	3165	\$ 15.94	\$ 50,442.19
23051	Roadside Brushing	Mile	6.00	\$ 807.50	\$ 4,845.00
25101	Keyed riprap, class 3	Cubic Yard*	182	\$ 48.60	\$ 8,845.20
30359	Roadway reconditioning, compaction method E	Mile	6.00	\$ 1,745.10	\$ 10,470.60
32203	Aggregate base, grading D, compaction method B	Cubic Yard*	566	\$ 49.50	\$ 28,017.00
40451	ODOT 1/2" dense graded HMA, level II, asphalt cement PG 64-22	Ton	331.5	\$ 185.00	\$ 61,327.50
6027648	48 Inch corrugated aluminized steel pipe 0.109 inch thickness, method C	Foot	90	\$ 63.36	\$ 5,702.40
6027818	18 Inch corrugated polyethylene pipe, type S, method B	Foot	38	\$ 32.56	\$ 1,237.28
6027824	24 Inch corrugated polyethylene pipe, type S, method B	Foot	345	\$ 39.60	\$ 13,662.00
6065418	18-inch full circle polyethylene outlet pipe, type C	Foot	20	\$ 35.20	\$ 704.00
6065424	24-inch full circle polyethylene outlet pipe, type C	Foot	40	\$ 41.36	\$ 1,654.40
					\$ 249,439.29

FP-03 SPECIFICATIONS LIST FOR Ona Thin STWD Roads

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.

		Road Number		
	<u>Title</u>	<u>Revised</u>	<u>50</u>	<u>51</u>
Preface	Preface	3/15/2004	X	X
101	Terms Format, and Definitions	FP03	X	X
101 01	Meaning of Terms	1/22/2009	X	X
101 03	Abbreviations	6/16/2006	X	X
101 04	Definitions	3/29/2007	X	X
101 04	Definitions	11/6/2007	X	X
102	Bid, Award, and execution of Contract	FP03	X	X
102 00	Bid, Award, and execution of Contract	2/16/2005	X	X
103	Scope of Work	FP03	X	X
103 00	Deletions	2/16/2005	X	X
104	Control of work	FP03	X	X
104 00	Deletions	6/16/2006	X	X
104 03	Specifications and Drawings	1/22/2009	X	X
104 03	Specifications and Drawings	2/22/2005	X	X
104 06	Use of Roads by Contractor	2/17/2005	X	X
105	Control of Material	FP03	X	X
105 02	Material Sources	1/18/2007	X	X
105 02	Material Sources	3/8/2007	X	X
105 05	Use of Material Found in the Work	5/12/2004	X	X
106	Acceptance of Work	FP03	X	X
106 01	Conformity with Contract Requirements	7/31/2007	X	X
106 07	Delete	5/11/2004	X	X
107	Legal Regulations and responsibility to Public	FP03	X	X
107 05	Responsibility for Damage Claims	5/11/2004	X	X
107 06	Contractor's Responsibility for Work	6/16/2006	X	X
107 08	Sanitation, Health, and Safety	3/29/2005	X	X
107 09	Legal Relationship of the Parties	6/16/2006	X	X
107 10	Environmental Protection	6/16/2006	X	X
108	Prosecution and Progress	FP03	X	X
108 00	108 Delete	2/16/2005	X	X
109	Measurement and Payment	FP03	X	X
109 00	Deletions	2/17/2005	X	X
109 02	Measurement Terms and Definitions	6/16/2006	X	X
151	Mobilization	FP03	X	X
152	Construction Surveying and Staking	FP03	X	X
152 00	Construction Surveying and Staking	8/5/2005	X	X
153	Contractor Quality Control	FP03	X	X
153 04	Records	10/24/2007	X	X
155	Schedules for Construction Contracts	FP03	X	X
155 00	Delete	5/11/2004	X	X
156 00	Complete Specification	4/47/2014	X	X

FP-03 SPECIFICATIONS LIST FOR Ona Thin STWD Roads

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.

			Road Number	
	<u>Title</u>	<u>Revised</u>	<u>50</u>	<u>51</u>
157	Soil Erosion Control	FP03	X	X
157 03	General	2/24/2005	X	X
170 00	Develop Water Supply and Watering	3/26/2007	X	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	X
212 00	Complete Specification	5/19/2005	X	
230 00	Complete Specification	3/31/2010	X	X
251	Riprap	FP-03		X
303	Road Reconditioning	FP03	X	X
303 01	Work	9/10/2008	X	X
303 05	Work	3/26/2007	X	X
303 07	Roadway Reconditioning	3/2/2005	X	X
303 07	Roadway Reconditioning	3/23/2007	X	X
303 10	Measurement	3/26/2007	X	X
322 00	Minor Aggregate Coarses	10/14/2011	X	X
404	Minor Hot Asphalt Concrete	FP03		X
404 02	Composition	6/9/2006		X
404 03	Surface Preparation	6/9/2007		X
404 04	Weather Limitations	3/3/2005		X
404 06	Placing	3/2/2005		X
404 06	Placing	3/2/2005		X
404 07	Compaction	3/2/2005		X
404 09	Acceptance	3/2/2005		X
602	Culverts and Drains	FP03	X	X
602 03	General	9/6/2005	X	X
602 06	Laying Plastic pipe	8/5/2009	X	X
635	Temporary Traffic Control	FP03	X	X
635 03	General	5/13/2004	X	X
703	Aggregate	FP03	X	X
703 05	Subbase, Base, Surface Coarse, and Screened Aggre	8/14/2009	X	X
703 10	Flakiness Index	4/11/2011	X	X

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.

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.

Ona Thin STWD Roads Forest Service 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.

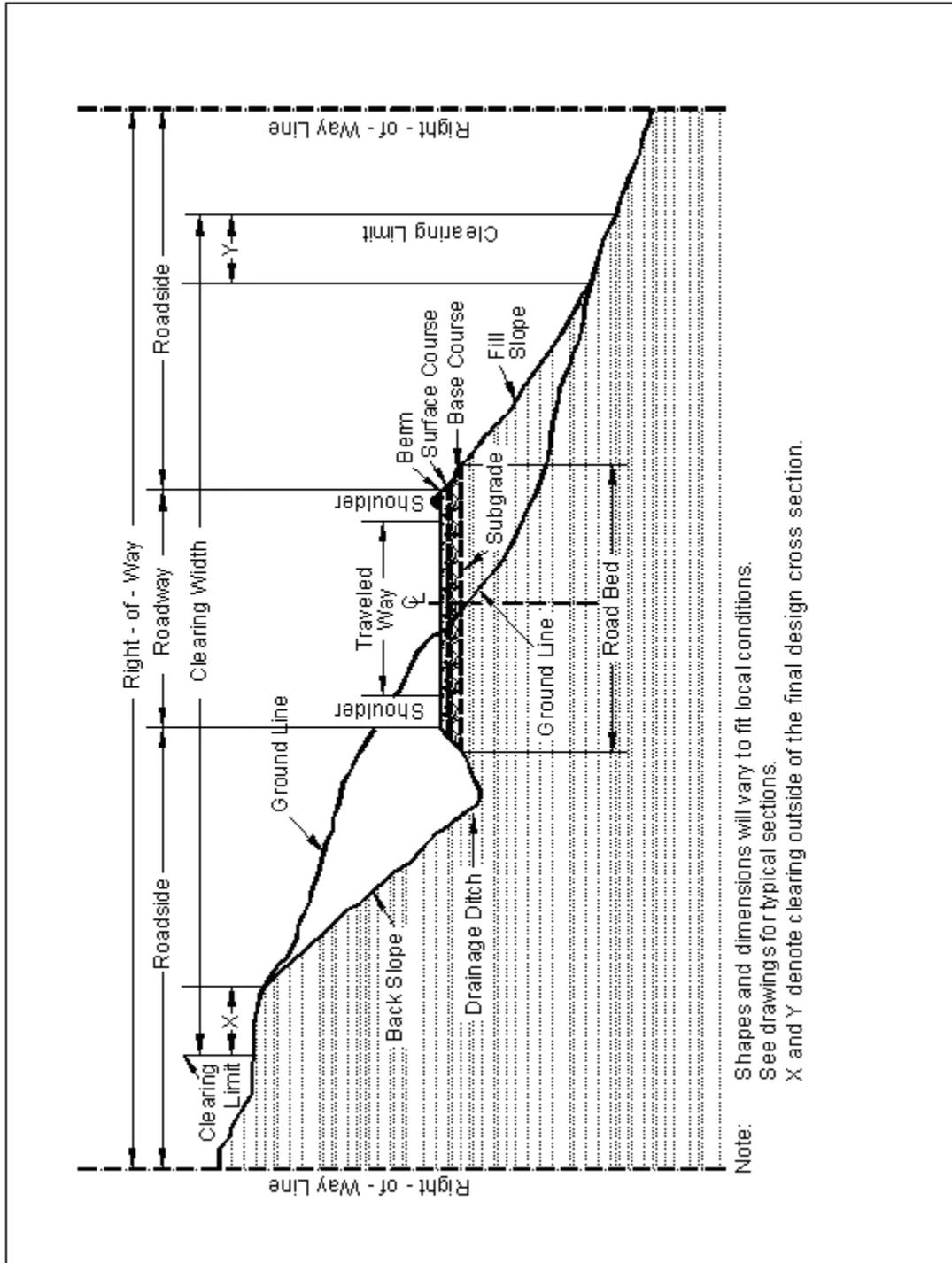
Road Order--An order affecting and controlling traffic on roads under Forest Service jurisdiction. Road Orders are issued by a designated Forest Officer under the authorities of 36 CFR, part 260.

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:

Figure 101-1—Illustration of road structure terms.



102 - Bid, Award, and Execution of Contract

102.00_nat_us_02_16_2005

102 Bid, Award, and Execution of Contract

Delete Section 102 in its entirety.

103 - Scope of Work

103.00_nat_us_02_16_2005

Deletions

Delete all but subsection 103.01 Intent of Contract.

104 - Control of Work

104.00_nat_us_06_16_2006

Deletions

Delete Sections 104.01, 104.02, and 104.04.

104.03_nat_us_01_22_2009

104.03 Specifications and Drawings.

Delete 104.03.

104.03_nat_us_02_22_2005

104.03 Specifications and Drawings.

Add the following:

(c) As-Built-Plans. Furnish one set of as built plans. The Government will provide one set of contract plans to be used exclusively for recording the as-built details of the project. Use red pencil or red ink to record the information on the as-built plans.

Note all additions or revisions to the location, character, and dimensions of the prescribed work shown on the contract plans. Line out all details shown that are not applicable to the completed work. Check off details shown that were incorporated into the completed work without change.

Retain the plans at the project site and, as work progresses, continually update them to reflect the as-built details. Upon request, make the plans available to the CO to review for compliance with these specifications.

Show the following types of changes on the as-built plans:

- (1) Typical section(s)
 - (a) Revisions in dimensions
 - (b) Revisions in materials
- (2) Plan and profile
 - Revisions to the alignment
 - Changes in the construction limits
 - Revisions in location, type, and grade of road approaches
 - Location and type of utilities
 - Location, size, and type of underdrains
 - Skew of culverts
 - Channel changes
 - Location of monuments and permanent references
 - Elevations for all aerial and underground crossings of utilities

Ona Thin STWD Roads Forest Service Supplemental Specifications

- Location, length, and type of fencing

Ona Thin STWD Roads Forest Service Supplemental Specifications

- Revisions to grades, elevations, and stationing of intersection PIs
- Equations
- Culvert diameter, length, type, and stationing. On culvert extensions, indicate the length of the existing pipe and the length of the extension.
- Location, length, stationing, and type of retaining walls
- Location, length, stationing, and end treatment of guardrail

(3) Bridge

- (a) Stationing of bridge ends
- (b) Revisions to footing and seal elevations
- (c) Pile length, size, type, and tip elevation
- (d) Any changes in plan or dimensions including any major changes in reinforcing

(4) Miscellaneous

- (a) Revisions to parking areas or turnouts
- (b) Final location, type and length of curbs, sidewalks, etc.

Furnish the as-built working plans to the CO before the final inspection. Correct all details found during the final inspection that are not shown on the as-built plans and return to the CO within 5 days.

104.06_nat_us_02_17_2005

Add the following subsection:

104.06 Use of Roads by Contractor

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

105 - Control of Material

105.02_nat_us_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:

<u>Common Name</u>	<u>Scientific Name</u>
African rue	<i>Peganum harmala</i>
Bamboo	<i>Sasa palmata</i>
Beachgrass, European	<i>Ammophila arenaria</i>
Bean-caper, Syrian	<i>Zygophyllum fabago</i>
Biddy-biddy	<i>Acaena novae-zelandiae</i>
Bindweed, field	<i>Convolvulus arvensis</i>
Blackberry, evergreen	<i>Rubus laciniatus</i>
Blackberry, Himalaya	<i>Rubus discolor</i>
Blueweed, Texas	<i>Helianthus ciliaris</i>
Broom, French	<i>Genista monspessulana</i>
Broom, Portuguese	<i>Cytisus striatus</i>
Broom, Scot's	<i>Cytisus scoparius</i>
Broom, Spanish	<i>Spartium junceum</i>

Ona Thin STWD Roads Forest Service Supplemental Specifications

Broomrape, small	<i>Orobanche minor</i>
Buffalobur	<i>Solanum rostratum</i>
Bugloss, common	<i>Anchusa officinalis</i>
Buttercup, creeping	<i>Ranunculus repens</i>
Butterflybush	<i>Buddleja globosa</i>
Camelthorn	<i>Alhagi pseudalhagi</i>
Canary grass, reed	<i>Phalaris arundinacea</i>
Cherry, laurel	<i>Prunus laurocerasus</i>
Cinquefoil, sulfur	<i>Potentilla recta</i>
Clematis	<i>Clematis vitalba</i>
Cocklebur, spiny	<i>Xanthium spinosum</i>
Coltsfoot	<i>Tussilago farfara</i>
Cordgrass, Common	<i>Spartina anglica</i>
Cordgrass, Dense-flowered	<i>Spartina densiflora</i>
Cordgrass, Saltmeadow	<i>Spartina patens</i>
Cordgrass, smooth	<i>Spartina alterniflora</i>
Cress, creeping yellow	<i>Rorippa sylvestris</i>
Crupina, common	<i>Crupina vulgaris</i>
Daisy, ox-eye	<i>Chrysanthemum leucanthemum</i>
Dyers woad	<i>Isatis tinctoria</i>
False brome	<i>Brachypodium sylvaticum</i>
Floating heart, yellow	<i>Nymphoides peltata</i>
Garlic Mustard	<i>Alliaria petiolata</i>
Geranium, Robert	<i>Geranium robertianum</i>
Geranium, shining	<i>Geranium lucidum</i>
Goatgrass, barbed	<i>Aegilops triuncialis</i>
Goatgrass, jointed	<i>Aegilops cylindrical</i>
Goatgrass, ovate	<i>Aegilops ovata</i>
Gorse	<i>Ulex europaeus</i>
Halogeton	<i>Halogeton glomeratus</i>
Hawkweed, king devil	<i>Hieracium piloselloides</i>
Hawkweed, meadow	<i>Hieracium pratense</i>
Hawkweed, mouse-ear	<i>Hieracium pilosella</i>
Hawkweed, orange	<i>Hieracium aurantiacum</i>
Hawkweed, yellow	<i>Hieracium floribundum</i>
Holly, English	<i>Ilex aquafolium</i>
Hogweed, giant	<i>Heracleum mantegazzianum</i>
Horsetail, giant	<i>Equisetum telmateia</i>
Houndstongue	<i>Cynoglossum officinale</i>
Hydrilla	<i>Hydrilla verticillata</i>
Iris, flag	<i>Iris pseudocorus</i>
Ivy, English	<i>Hedera helix</i>
Johnsongrass	<i>Sorghum halepense</i>
Knapweed, diffuse	<i>Centaurea diffusa</i>
Knapweed, meadow	<i>Centaurea pratensis (jacea x nigra)</i>

Ona Thin STWD Roads Forest Service Supplemental Specifications

Knapweed, Russian	<i>Acroptilon repens</i>
Knapweed, short-fringed	<i>Centaurea nigrescens</i>
Knapweed, spotted	<i>Centaurea maculosa</i>
Knapweed, squarrose	<i>Centaurea virgata</i>
Knotweed, giant	<i>Polygonum sachalinense</i>
Knotweed, Himalayan	<i>Polygonum polystachyum</i>
Knotweed, Japanese	<i>Polygonum cuspidatum</i>
Kudzu	<i>Pueraria lobata</i>
Loosestrife, purple	<i>Lythrum salicaria</i>
Matgrass	<i>Nardus stricta</i>
Millet, wild proso	<i>Panicum miliaceum</i>
Nightshade, silverleaf	<i>Solanum elaeagnifolium</i>
Nutsedge, yellow	<i>Cyperus esculentus</i>
Nutsedge, purple	<i>Cyperus rotundus</i>
Pampas grass	<i>Cortaderia selloana</i>
Parrot feather	<i>Myriophyllum aquaticum</i>
Paterson's curse	<i>Echium plantagineum</i>
Peavine, everlasting	<i>Lathyrus latifolius</i>
Peaweed, Austrian	<i>Sphaerophysa salsula</i>
Policeman's helmet	<i>Impatiens glandulifera</i>
Puncturevine	<i>Tribulus terrestris</i>
Quackgrass	<i>Agropyron repens</i>
Ragweed	<i>Ambrosia artemisiifolia</i>
Rush skeletonweed	<i>Chondrilla juncea</i>
Saltcedar	<i>Tamarix ramosissima</i>
Skeletonleaf bursage	<i>Ambrosia tomentosa</i>
Spikeweed	<i>Hemizonia pungens</i>
Spurge, leafy	<i>Euphorbia esula</i>
Spurge, myrtle	<i>Euphorbia myrsinites</i>
St. John's-wort	<i>Hypericum perforatum</i>
Starthistle, yellow	<i>Centaurea solstitialis</i>
Starthistle, Iberian	<i>Centaurea iberica</i>
Starthistle, purple	<i>Centaurea calcitrapa</i>
Tansy ragwort	<i>Senecio jacobaea</i>
Teasel	<i>Dipsacus sylvestris</i>
Teasel, cutleaf	<i>Dipsacus laciniatus</i>
Thistle, bull	<i>Cirsium vulgare</i>
Thistle, Canada	<i>Cirsium arvense</i>
Thistle, Italian	<i>Carduus pycnocephalus</i>
Thistle, musk	<i>Carduus nutans</i>
Thistle, plumeless	<i>Carduus acanthoides</i>
Thistle, Scotch	<i>Onopordum acanthium</i>
Thistle, slender-flowered	<i>Carduus tenuiflorus</i>
Thistle, smooth distaff	<i>Carthamus baeticus</i>
Thistle, woolly distaff	<i>Carthamus lanatus</i>

Ona Thin STWD Roads Forest Service Supplemental Specifications

Toadflax, yellow	<i>Linaria vulgaris</i>
Toadflax, Dalmatian	<i>Linaria dalmatica</i>
Velvetleaf	<i>Abutilon theophrasti</i>
Water chestnut, European	<i>Trapa natans</i>
Waterlily, fragrant	<i>Nymphaea odorata</i>
Watermilfoil, Eurasian	<i>Myriophyllum spicatum</i>
Waterweed, South. American.	<i>Elodea densa</i>
Whitetop	<i>Lepidium draba</i>
Whitetop, hairy	<i>Lepidium pubescens</i>
Whitetop, lens-podded	<i>Lepidium chalepensis</i>

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.

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.

(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.

Ona Thin STWD Roads Forest Service Supplemental Specifications

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

106.07_nat_us_05_11_2004

106.07 Delete

Delete subsection 106.07.

107 - Legal Relations and Responsibility to the Public

107.05_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”.

107.09_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:

- 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.

Ona Thin STWD Roads Forest Service Supplemental Specifications

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.

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.

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.

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

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 (±)	L-Line Tangent Control Points^a (±)	Vertical Closure^b (±)
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
<p>a. Accuracy of offset measurement.</p> <p>b. Determine vertical closures at intervals not to exceed 2000 ft as measured along centerline.</p> <p>c. Use greater value.</p>				

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

153 - Contractor Quality Control

153.04_nat_us_10_24_2007

153.04 Records.

Delete all but the first sentence

155 - Schedules for Construction Contracts

155.00_nat_us_05_11_2004

155 Delete.

Delete Section 155 in its entirety.

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

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

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

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

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

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

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

Table 156-1

Temporary Road Closures

Road Number	From Terminus	To Terminus	Maximum Consecutive Days of Closure	Minimum Consecutive Days Open
51	0.00	10.215	1	0

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

Measurement and Payment

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

157 - Soil Erosion Control

157.03_nat_us_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.

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.

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.

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_nat_us_02_18_2005

203.05 Disposing of Material.

Add the following:

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

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

(g) Chipping or Grinding. Use an approved chipping machine to grind slash and stumps greater than 3 inches in diameter and longer than 3 feet. Deposit chips or ground woody material on embankment slopes or outside the roadway to a loose depth less than 6 inches. Minor amounts of

chips or ground woody material may be permitted within the roadway if they are thoroughly mixed with soil and do not form a layer.

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

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

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

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

(l) Placing Slash on Embankment Slopes. Place construction slash on completed embankment slopes to reduce soil erosion. Place construction slash as flat as practicable on the completed slope. Do not place slash closer than 2 feet below subgrade. Priority for use of available slash is for: (1) through fills; (2) insides of curves; and (3) ditch relief outlets.

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

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

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

203.05_0618_us_03_26_2007

203.05 Disposing of Material.

Add the following:

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

(f(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:

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

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

203.08 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.

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.

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.

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

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

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

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

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

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

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

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

- (1) Reduce rock to less than 48 inches in the largest dimension.
- (2) Distribute rock within the embankment to prevent nesting.
- (3) Place layers of embankment material around each rock to a depth not greater than that permitted by (b) above. Fill all the voids between rocks.
- (4) Compact each layer according to Subsection 204.11 before placing the next layer.

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

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

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

If there is 50 to 80 percent retained on the No. 4 sieve use procedure (2). If there is less than 50 percent retained on the No. 4 sieve use procedure (3).

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

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

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

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

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

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

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

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

(3) Classify the material according to AASHTO M 145. For material classified A-1 or A-2-4, determine the maximum density according to AASHTO T 180, method D. For other material classifications, determine the optimum moisture content and maximum density according to AASHTO T 99, method C.

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

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

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

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

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 through M roads.

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

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

(c) **Shaping.** Shape the subgrade to a smooth surface and to the cross-section required. Shape slopes to gradually transition into slope adjustments without noticeable breaks. At the ends of

cuts and at intersections of cuts and embankments, adjust slopes in the horizontal and vertical planes to blend into each other or into the natural ground.

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

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

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

- (1) **Method A.** Remove all material larger than 6 inches from the top 6 inches of the roadbed and replace with suitable material.
- (2) **Method B.** Use a vibratory grid roller or approved equal with a minimum weight of 10 tons. Roll at least 5 full-width passes or until there is no visible evidence of further consolidation.
- (3) **Method C.** For roads designated as Construction Tolerance Class K, L, or M, finish the roadbed by spreading the excavation. Eliminate rock berms.

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

When there is a pay item for waste, shape and compact the waste material in its final location. 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:

- (1) Include the following volumes in roadway excavation:

- (a) Roadway prism excavation;
 - (b) Rock material excavated and removed from below subgrade in cut sections;
 - (c) Unsuitable material below subgrade and unsuitable material beneath embankment areas when a pay item for subexcavation is not shown in the bid schedule;
 - (d) Ditches, except furrow ditches measured under a separate bid item;
 - (e) Topsoil;
 - (f) Borrow material used in the work when a pay item for borrow is not shown in the bid schedule;
 - (g) Loose scattered rocks removed and placed as required within the roadway;
 - (h) Conserved material taken from stockpiles and used in Section 204 work; and
 - (i) Slide and slipout material not attributable to the Contractor's method of operation.
- (2) Do not include the following in roadway excavation:
- (a) Overburden and other spoil material from borrow sources;
 - (b) Overbreakage from the backslope in rock excavation;
 - (c) Water or other liquid material;
 - (d) Material used for purposes other than required;
 - (e) Roadbed material scarified in place and not removed;
 - (f) Material excavated when stepping cut slopes;
 - (g) Material excavated when rounding cut slopes;
 - (h) Preparing foundations for embankment construction;
 - (i) Material excavated when benching for embankments;
 - (j) Slide or slipout material attributable to the Contractor's method of operation;
 - (k) Conserved material taken from stockpiles constructed at the option of the Contractor; and
 - (l) Material excavated outside the established slope limits.
- (3) When both roadway excavation and embankment construction pay items are shown in the bid schedule, measure the following as roadway excavation only:
- (a) Unsuitable material below subgrade in cuts and unsuitable material beneath embankment areas when a pay item for subexcavation is not shown in the bid schedule;
 - (b) Slide and slipout material not attributable to the Contractor's method of operations; and
 - (c) Drainage ditches, channel changes, and diversion ditches.

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

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

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

(1) Include the following volumes in embankment construction:

- (a) Roadway embankments;
- (b) Material used to backfill subexcavated areas, holes, pits, and other depressions;
- (c) Material used to restore obliterated roadbeds to original contours; and
- (d) Material used for dikes, ramps, mounds, and berms.

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

- (a) Preparing foundations for embankment construction;
- (b) Adjustments for subsidence or settlement of the embankment or of the foundation on which the embankment is placed; and
- (c) Material used to round fill slopes.

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

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

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

Payment

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

Ona Thin STWD Roads Forest Service Supplemental Specifications

Table 204-1
Sampling and Testing Requirements

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Topping (704.05) & unclassified borrow (704.06)	Measured and tested for conformance (106.04)	Classification	—	AASHTO M 145	1 per soil type	Processed material before incorporating in work	Yes, when requested	Before using in work
		Moisture-density	—	AASHTO T 180, method D ⁽¹⁾ or T 99, method C ⁽¹⁾	1 per soil type but not less than 1 per	“	“	“
		Compaction	—	AASHTO T 310 or other approved procedures	1 per 6000 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	“	“	“
		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

Table 204-1 (continued)
Sampling and Testing Requirements

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

(1) Minimum of 5 points per proctor.

**Table 204-2
Construction Tolerances**

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

(a) Maximum allowable deviation from construction stakes and drawings.

(b) Maximum allowable deviation from staked slope measured from slope stakes or hinge points.

(c) Unless otherwise shown the centerline alignment and subgrade elevation, as built, have no horizontal curves with a radius of less than 80 feet, and no vertical curves with a curve length of less than 80 feet when the algebraic difference in the grade change is less than 10 percent, or a curve length of less than 100 feet when the algebraic difference of 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.

212 - Linear Grading

212.00_nat_us_05_19_2005

Delete the entire specification and replace it with the following:

Description

212.01 This work consists of clearing and grubbing, excavation and embankment, and erosion control to construct roadways and associated features.

Construction Requirements

212.02 Clearing & Disposal. Protect construction stakes and construction control markers. Remove or treat all trees, snags, downed timber, brush, and stumps within the clearing limits.

Immediately remove slash deposited in stream courses.

Fell all dead trees that are outside the clearing limits and that lean toward the road and are tall enough to reach the roadbed.

Leave stump heights less than 12 inches or one-third of the stump diameter; whichever is greater, measured on the side adjacent to the highest ground. Leave felled trees outside the clearing limits in place, and treat them no further unless otherwise designated.

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

Minimum Utilization Standards

Diameter (Inside Bark)

Length at Small End

8 feet _____ inches 33-1/3 Net Scale in % of Gross 2 Cubic Feet

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

Merchantable Timber

Insert appropriate treatment method from 201.

Unmerchantable Timber and Large Construction Slash

Insert appropriate treatment method from 203.

212.03 Pioneering. Do not undercut the final back slope during pioneering operations. Deposit material inside the roadbed limits. Do not restrict drainage.

212.04 Grubbing. Within the clearing limits remove stumps with less than 6 inches of cover.

212.05 Excavation & Embankment. Construct the roadway to the required template. Protect backslopes from being undercut. Embankment may be placed by side casting and end dumping.

Locate and use borrow material, and remove and treat unsuitable or excess material.

Place rocks that are too large to be incorporated in the embankment outside the traveled way on the downhill side so that they will not roll, obstruct drainage, or hinder roadbed use and maintenance.

Leave slopes that are to be seeded in a roughened condition.

Use a crawler tractor with a dozer blade to shape and finish the roadbed. Provide for drainage of surface water, unless otherwise designated. Do not permit individual rocks in the roadbed to protrude more than 4 inches above the subgrade. A motor grader finish is not required.

Do not encroach on stream channels, wetlands, or extend beyond right-of-way or easement limits. Do not make alignment or profile grade adjustments that adversely affect drainage.

Construct the roadbed within the following grading tolerances:

(a) Alignment (centerline). Alignment may be shifted a maximum of 10 feet left or right of the planned centerline. Curve radii may be reduced by up to 50 percent. Do not construct curves with radii less than 100 feet. Compound curves are permitted. Traveled way tolerance is (+) 2 feet unless otherwise designated.

(b) Profile grade. Profile grade may be shifted a maximum of 5 feet up or down from the plan elevation provided the new grade tangent does not vary more than 2 percent from the plan grade tangent. Connect revised forward and back grade tangents with a uniform vertical curve consistent with the design.

212.06 Drainage. Install culverts and other drainage structures according to Section 602 and Section 209.

212.07 Erosion Control. Install erosion control measures and seeding according to the drawings and Section 625.

212.08 Acceptance. Linear grading will be evaluated under Subsections 106.02 and 106.04. Clearing and slash and timber treatment will be evaluated under Sections 201 and 203.

Measurement

212.09 Measure the Section 212 items listed in the bid schedule according to Subsection 109.02 and the following.

Do not measure changes in the clearing and grubbing quantity caused by alignment adjustments under Subsection 212.04.

Payment

212.10 The accepted quantities, measured as provided in Subsection 109.02 and above, will be paid at the contract price per unit of measurement for the Section 212 pay item listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

303 - Road Reconditioning

303.01_0618_us_09_10_2008

303.01 Work.

Delete and add the following:

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

303.07 Roadway Reconditioning.

Add the following:

Asphalt Surfaces

Clean the existing surface of all loose material, dirt, or other deleterious substances by approved methods.

Bridge Decks

Clean bridge deck and deck drains of all loose soil material, move all material longitudinally off the deck while cleaning. Use equipment that has the capability of removing all loose material without causing damage to the deck surface. Use of hydraulic flushing or pneumatic equipment will not be permitted unless approved by the Contracting Officer.

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.

303.07_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.

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.

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.

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.

**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)	LA abrasion (coarse)	—	AASHTO T 96	1 per type & source of material	Source of material	Yes, when requested	Before using in work
		Sodium sulfate soundness loss (coarse & fine)	—	AASHTO T 104	“	“	“	“
		Durability index (coarse & fine)	—	AASHTO T 210	“	“	“	“
		Fractured faces	—	ASTM D 5821	“	“	“	“
Subbase, Base, and Surface courses	Measured and tested for conformance (106.04)	Sample	—	AASHTO T 2	2 per day	From windrow or roadbed after processing or from approved crusher sampling device	Yes	48 hours

**Table 322-1 (continued)
Sampling and Testing Requirements**

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Subbase, Base, and Surface	Measured and tested for conformance (106.04)	Moisture-density Method D	—	AASHTO T 99 ⁽¹⁾	1 per type and source of material	Source of material	Yes, when requested	Before using in work
		Moisture-density Method 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

404 - Minor Hot Asphalt Concrete

404.02_nat_us_06_09_2006

404.02 Composition of Mix (Job-Mix Formula).

Delete the second paragraph and replace with the following:

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

404.03_0618_us_06_09_2007

404.03 Surface Preparation.

Change the following:

“Subsection 410.05” to “Subsection 401.06”

Add the following:

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

404.04_nat_us_03_02_2005

404.04 Weather Limitations.

Change 35° F to 45° F:

404.06_nat_us_03_02_2005

404.06 Placing.

Add the following:

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

Delete the last sentence and replace with the following:

Offset the longitudinal joint of one layer at least 6 inches from the joint in the layer immediately below. Make the longitudinal joint in the top layer along the centerline of two-lane roadways or

at the lane lines of roadways with more than two lanes. Offset transverse joints in succeeding layers and in adjacent lanes at least 10 feet, where possible.

404.06_0618_us_03_23_2007

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

Place the mix with a paver conforming to Subsection 401.05.

404.07_nat_us_03_02_2005

404.07 Compacting (a).

Delete and replace with the following:

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

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

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

(3) Pneumatic-tire rollers with smooth tread tires of equal size that provide a uniform compacting pressure for the full width of the roller and capable of exerting a ground pressure of at least 80 lbf/in².

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

404.09 Acceptance.

Add the following to the second paragraph:

See Table 404-1 for sampling and testing requirements.

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

Table 404-1. Sampling and Testing Requirements.

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

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.

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.

Ona Thin STWD Roads Forest Service Supplemental Specifications

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.

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)
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)				
3/8 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..

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						100
3/4 inch	76-89 (6)	97-100	97-100								
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).

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	

703.07_nat_us_03_02_2005

Table 703-2 Correction

Include the following substitution

In Table 703-2, delete the “436 – 74 (6)” percent by mass passing for grading E (base) No. 4 sieve size and substitute “36 – 74 (6).”

Table 703-2 Correction

Include the following substitution

In Table 703-2, delete the “436 – 74 (6)” percent by mass passing for grading E (base) No. 4 sieve size and substitute “36 – 74 (6).”

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.

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.

703.10_nat_us_03_02_2005

Delete Table 703-7 and substitute the following:

Table 703-7 Target Value Ranges

**Table 703-7
Target Value Ranges for
Single and Multiple Course Surface Treatment Aggregate Gradation**

Ona Thin STWD Roads Forest Service Supplemental Specifications

Sieve Size	Percent by Mass Passing Designated Sieve (AASHTO T 27 & T 11)					
	Grading Designation					
	A	B	C	D	E	F
1½ inch	100 ⁽¹⁾					
1 inch	90-100(3)	100 ⁽¹⁾				
¾ inch	0-35(5)	90-100(3)	100 ⁽¹⁾			
½ inch	0-8(3)	0-35(5)	90-100(3)	100 ⁽¹⁾		
⅜ inch	—	0-12(3)	0-35(5)	85-100(3)	100 ⁽¹⁾	100 ⁽¹⁾
No. 4	—	—	0-12(3)	0-35(5)	85-100(3)	85-100 ⁽¹⁾
No. 8	—	—	—	0-8(3)	0-23(4)	—
No. 200	0-1(1)	0-1(1)	0-1(1)	0-1(1)	0-1(1)	0-10 ⁽¹⁾

(1) Statistical procedures do not apply.

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

718 - Traffic Signing and Marking Material

718.05_nat_us_08_05_2009

718.05 Aluminum Panels

Delete the third paragraph and replace with the following:

Clean, degrease and properly prepare the panels according to methods recommended by the sheeting manufacturer. Conversion coatings will conform to ASTM B-921 or ASTM B-449.