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APPROVED BY:

DEAN VILLETT, DISTRICT RANGER — DATE 7/6/16

USDA FOREST SERVICE - REGION SIX

OLYMPIC NATIONAL FOREST

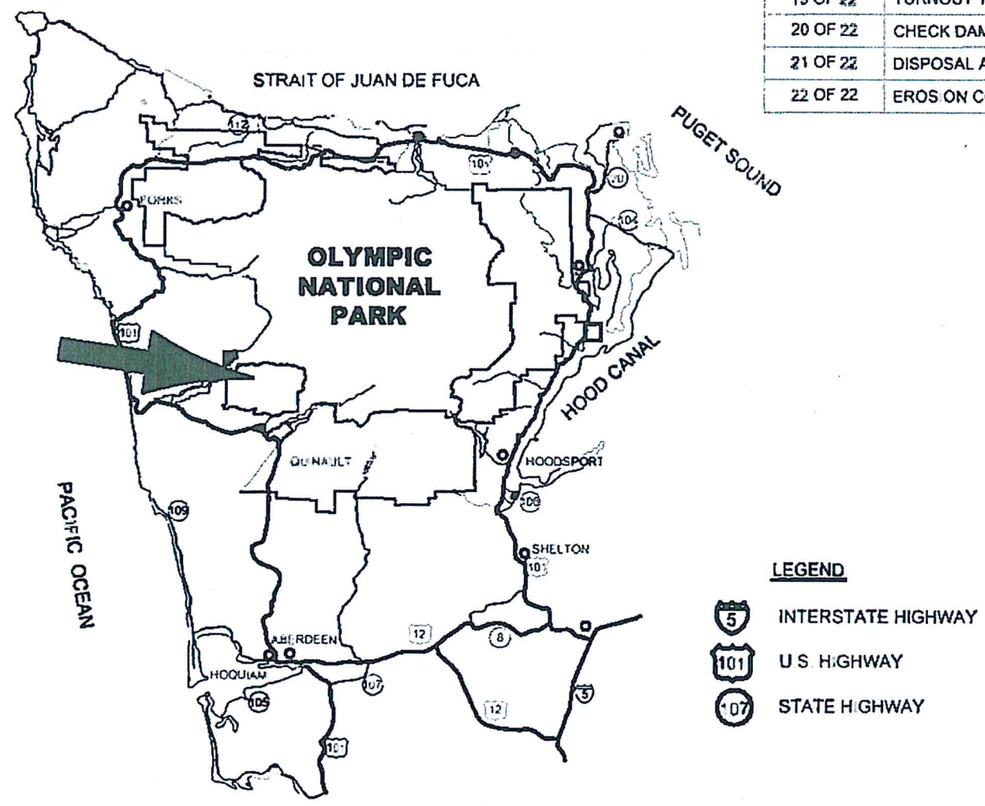
JEFFERSON COUNTY, WA.

PACIFIC RANGER DISTRICT

RECONSTRUCTION PLANS FOR:

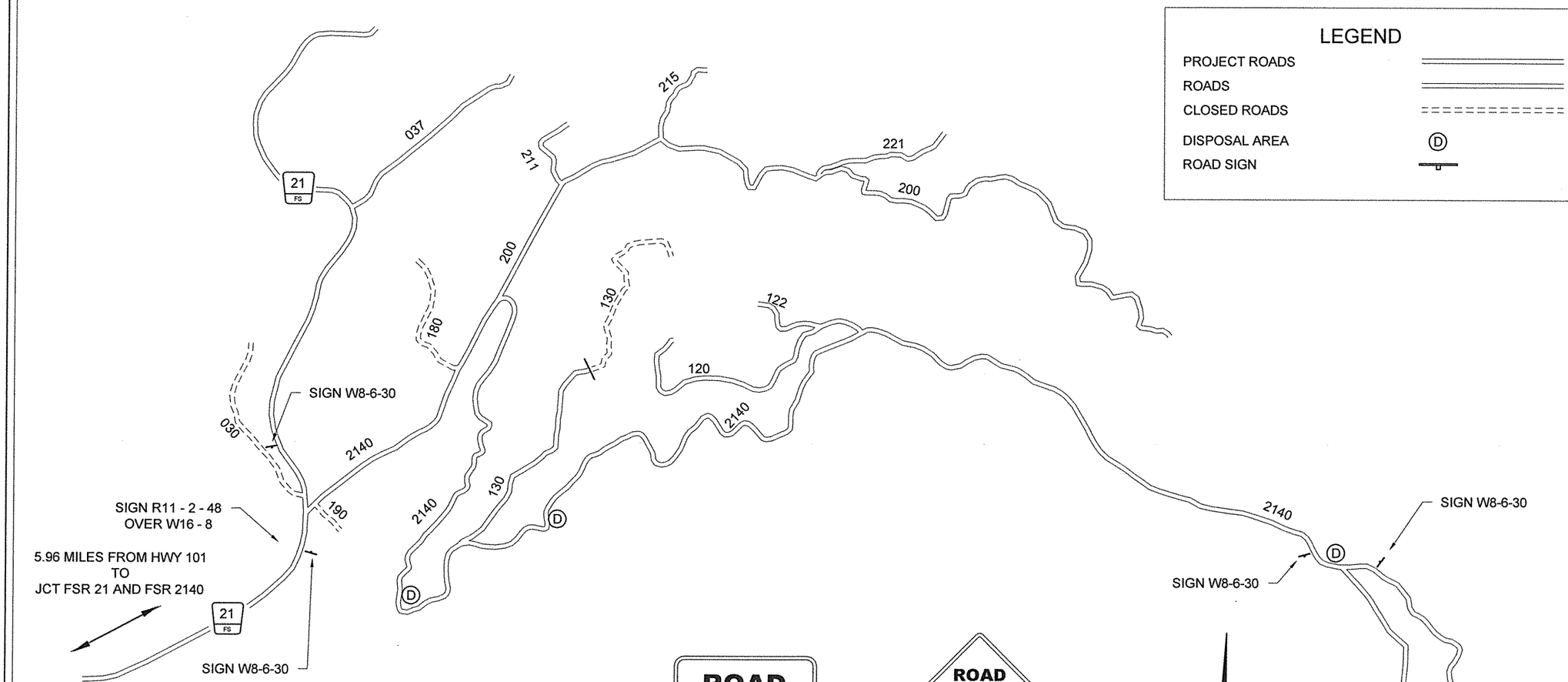
CARCASS TIMBER SALE

SPECIFIED ROADS		
ROAD NO.	**MILE POSTS**	**TYPE OF WORK**
NFSR 2140000	0.00 - 6.91	RECONSTRUCTION
NFSR 2140090	0.00 - 0.50	RECONSTRUCTION



OLYMPIC PENINSULA

INDEX TO SHEETS



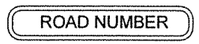
TRAFFIC CONTROL PLAN FOR ROAD CLOSURE

1. NOTIFY CO. 10 DAYS BEFORE ROAD CLOSURE UNDER SUPPLEMENTAL SPECIFICATION 156.05. OPERATIONS AT ALL OTHER TIMES WILL ACCOMMODATE TRAFFIC.
2. TRAFFIC CONTROL DEVICES SHALL BE MAINTAINED FOR DURATION OF CLOSURE.
3. ALL SIGNS SHALL CONFORM WITH MUTCD SECTIONS 2A-11, THROUGH 2A-16, AND 6B-1, AND 6B-2 OF THE 2009 EDITION
4. POST AND MAINTAIN R11-2-48 SIGN ON ALL ROADS REQUIRING SPEC ROAD RECONSTRUCTION. IF THE ROAD CAN BE ACCESSED FROM MORE THAN ONE DIRECTION, CLOSURE SIGNS MUST BE PLACED ON EACH END OF THE CONSTRUCTION SEGMENT.
5. POST AND MAINTAIN W8-6-30 AT NFSR 21 & 2140 JUNCTION FOR THE DURATION OF THE CONSTRUCTION.
6. THIS TRAFFIC CONTROL PLAN IS FOR ILLUSTRATION PURPOSE ONLY, CONTRACTOR SHALL CONFORM TO CURRENT EDITION OF MUTCD FOR SIGN PLACEMENT.

R11-2-48

W20 - 3

W8-6-30



W20 -1 OVER
W16 - 8

NOTE:
SIGNS, LOCATIONS, AND INSTALLATION DETAILS PER MUCTD (2009 EDITION)

UNIT / REGION:	NATIONAL FOREST:	DISTRICT:	CONTRACT NAME:	SHEET NAME:	SHEET NUMBER:
USDA - FOREST SERVICE - R6	**OLYMPIC**	**PACIFIC**	**CARCASS TIMBER SALE**	**VICINITY MAP & SIGN PLAN**	**2 OF 22**

GENERAL NOTES :

1. ALL ROADWAY EXCAVATION AND EMBANKMENT EARTHWORK SHALL HAVE MAXIMUM ALLOWABLE DEVIATIONS FROM PLAN LINES, GRADES, CROSS SECTIONS, AND DIMENSIONS ACCORDING TO CONSTRUCTION TOLERANCE CLASS D AS DEFINED BY FSSS TABLE 152-1 CONSTRUCTION TOLERANCES*.
2. EXISTING TREES MAY BE REMOVED ONLY AS NECESSARY TO COMPLETE SPECIFIED WORK ACCORDING TO THE CONTRACT. ALL TREES OF MERCHANTABLE QUALITY ARE PROPERTY OF THE US GOVERNMENT AND SHALL BE DECKED ON SITE AS DIRECTED BY THE CONTRACTING OFFICER. ALL TREES NOT OF MERCHANTABLE QUALITY SHALL BE DISPOSED OF ACCORDING TO FSSS 203.05 (F(1)).
3. REMOVE ALL BERMS, EXISTING OR CREATED, TO ALLOW FOR DRAINAGE OF WATER FROM THE ROAD TRAVELED WAY, UNLESS OTHERWISE DESIGNATED TO REMAIN.
4. ALL DETAILS ARE TYPICAL DETAILS, AND ARE SECTION VIEW UNLESS OTHERWISE NOTED.
5. DESIGNATED DISPOSAL AREAS WILL BE FLAGGED BY THE CO PRIOR TO MATERIAL PLACEMENT. SEE SHEET 21.
6. SALVAGE EXISTING AGGREGATE DURING CULVERT REPLACEMENT; USE AS BACKFILL MATERIAL.
7. DO NOT UNDERCUT BACKSLOPES WHEN CLEANING AND/OR RECONSTRUCTING DITCH LINES.
8. REBUILD FILLS WITH A MAXIMUM SLOPE STEEPNESS OF 1V:1.5H FILL SLOPES AND MINIMUM 1' SHOULDERS.
9. RECONDITIONING OF ROADBED INCLUDES TURNOUTS AND CURVE WIDENING TO THE EXISTING CONDITIONS ON THE GROUND.
10. SPOT ROCK LOCATIONS WILL BE STAKED BY THE CO. AGGREGATE TAPER LENGTHS ARE INCLUDED ON BOTH ENDS OF ALL SPOT ROCK LOCATIONS.
11. DATE AND TIME RESTRICTIONS ARE INCLUDED IN C5.12 AND C6.315 OF THE TIMBER SALE PROVISIONS AND SPECIFICATIONS IN FSSS 156.00 AND FSSS 107.
12. UNSUITABLE MATERIAL ENCOUNTERED DURING EXCAVATION SHALL BE HAULED TO AN APPROVED DISPOSAL AREA.
13. WHERE NECESSARY, LOWER CULVERT INSTALLATIONS TO OBTAIN THE MINIMUM 1' OF COVER OVER CULVERTS, NOT INCLUDING SURFACE AGGREGATE.
14. STORAGE OF ALL EQUIPMENT AND MATERIALS ON GOVERNMENT LANDS WILL BE AT APPROVED LOCATIONS ONLY AND BE STORED AT THE CONTRACTOR'S RISK.
15. ANY DAMAGE TO THE EXISTING ROAD SYSTEM, INSIDE OR OUTSIDE OF THE WORK AREA, WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE PRIOR TO FINAL ACCEPTANCE OF THE PROJECT.
16. EXTRACT WATER FOR CONSTRUCTION OPERATIONS ONLY FROM WATER SOURCES APPROVED BY THE CO.
    a. NO WATER SHALL BE WITHDRAWN FROM ANY OCCUPIED **LISTED FISH HABITAT (LFH)** STREAMS EXCEPT IN AN EMERGENCY (E.G., WILD FIRE) SITUATION.
    b. THE PURCHASER SHALL LIMIT WATER WITHDRAWALS FOR ROAD MAINTENANCE OR OTHER PURPOSES IN LFH AND WITHIN 1,500 FEET OF LFH TO 10 PERCENT OR LESS OF STREAM FLOW AT THE POINT OF WITHDRAWAL (VISUALLY ESTIMATED).
    c. THE PURCHASER SHALL LIMIT WATER WITHDRAWALS FOR ROAD MAINTENANCE OR OTHER PURPOSES IN NON-LFH STREAMS GREATER THAN 1,500 FEET FROM LFH LIMIT WITHDRAWAL BY 50 PERCENT OR LESS OF THE STREAM FLOW (VISUALLY ESTIMATED).
    d. REGARDLESS OF WATER WITHDRAWAL LOCATION, USE OF SCREEN MATERIAL WITH EITHER OF THE FOLLOWING MAXIMUM OPENINGS IS REQUIRED: 5/64 INCH OPENING FOR WOVEN WIRE OR 3/32 INCH OPENING FOR PERFORATED PLATE.
17. CHECK DAMS AS SHOWN ON SHEET 20 ARE TO BE INSTALLED ABOVE EACH CULVERT INLET AS MARKED BY THE CONTRACTING OFFICER AND PAID FOR UNDER PAY ITEM 15755.
18. REFUEL MECHANIZED EQUIPMENT AT LEAST 150 FEET FROM WATER BODIES. PARKING OF EQUIPMENT OVERNIGHT OR FOR LONGER PERIODS OF TIME SHALL BE AT LEAST 150 FEET FROM WATER BODIES.
19. PIPE ABANDONMENT ON 2140 ROAD M.P. 2.03 AND M.P. 2.73: LEAVE REMAINING DOWNSTREAM CULVERT IN PLACE AND PLUG ENDS IN ACCORDANCE WITH SECTION 203.04

ESTIMATE OF QUANTITIES

	FS ROAD NUMBER		2140000	2140090	
	PROJECT LENGTH (MILES)		6.91	0.50	
Pay Item Number	Description	Unit of Measure	Quantity		Remarks
15101	Mobilization	Lump Sum	All	All	Includes equipment washing, material testing, and fire protection measures.
15755	Soil erosion & pollution control	Each	18	6	Begin installation of check dams (wood wattles) upstream from each culvert inlet after completion of 30359. As shown on Sheet 22.
15755A	Dewatering structure	Each	8		Site dewatering for culvert installations.
20105	Clearing and grubbing, disposal of tops and limbs f, logs i, stumps f	Lump Sum	All	All	Clearing and grubbing at culvert installation sites.
20253A	Removal of individual trees, miscellaneous; disposal of tops & limbs (f) & logs (i)	Each	16		Remove trees and logs (approximately 4" to 14") as marked by the CO.
20253B	Removal of individual trees, miscellaneous; disposal of tops & limbs (f) & logs (i)	Each	7		Remove trees and logs as marked by the CO. (approximately 15" to 30")
20301	Removal, down drain pipe	Each	1		Remove detached downdrain pipe from fillslope. Dispose of in a legal manner off of Government Lands.
20358	Removal of culvert, disposal method a	Each	7		Remove excavated culverts and appurtenances from Government Lands. Dispose of in a legal manner.
20419A	Drainage excavation, type ditch reconstruction	Foot	1136		Reconstruct ditch as staked by the CO.
20419B	Drainage excavation, type lead off ditch	Foot	20		Construct lead off ditch as staked by the CO.
20427	Earth berm	Each		1	Removal of berm at road entrance. Berm material to be stockpiled adjacent to road as staked by the C.O.
20453A	Excavation, compaction method B	Each		7	Reconstruct existing waterbars to match the original roadway template including, ditches, shoulders and catch basins when appropriate. Utilize the onsite materials to shape, bench and compact roadway.
20453B	Excavation, compaction method B	Each		5	Prepare existing waterbar/trench for installation of new corrugated polyethylene pipe. Use onsite suitable material as backfill.
20457	Roadway excavation, compaction method B	Cubic Yard*	470	207	See reconstruction summaries.
20477	Drainage excavation, abandon existing CMP	Lump Sum	All		See reconstruction summary and general notes section 20.
20950	Pipe bedding	Cubic Yard*	30	15	Haul and place 4" bedding material for new culvert installation.
21201	Linear grading	Mile	0.04	0.02	See reconstruction summary
23051	Roadside brushing, disposal method f	Mile	6.91	0.50	See roadside brushing typical shown on Sheet 21.
25101	Placed riprap, class 3	Cubic Yard*	4		See reconstruction summary. Commercial source.
30359	Roadway reconditioning, compaction B	Mile	6.91	0.50	Clean culverts as specified.
32211	Aggregate surface course grading D, compaction method B	Cubic Yard*	598	174	See reconstruction summary. Commercial source.
32222	Pit run maximum size 4", compaction method B	Cubic Yard*	85	17	Commercial source.
60276A	24-inch corrugated aluminized steel pipe, 0.109-inch thickness method B.	Foot	58		Install 24" CMP as staked by the CO. Riprap Inlet only. Riprap is an indirect cost to this Payitem.
60276B	36-inch corrugated aluminized steel pipe, 0.109-inch thickness method B.	Foot	64		Install 36" CMP as staked by the CO. Riprap Inlet only. Riprap is an indirect cost to this Payitem.
60278A	18-inch corrugated polyethylene pipe, type S, method B	Foot	98	212	Install 18" CPP as staked by the CO. Riprap inlet and outlet. Riprap is an indirect cost to this Payitem.
60278B	24-inch corrugated polyethylene pipe, type S, method B	Foot	166		Install 24" CPP as staked by the CO. Riprap inlet and outlet. Riprap is an indirect cost to this Payitem.
60278C	30-inch corrugated polyethylene pipe, type S, method B	Foot	38		Install 30" CPP as staked by the CO. Riprap inlet and outlet. Riprap is an indirect cost to this Payitem.
60655A	24-inch full-circle aluminized steel outlet pipe	Foot	80		16 gage. Install as staked by the CO.
60655B	36-inch full-circle aluminized steel outlet pipe	Foot	80		16 gage. Install as staked by the CO.
60708	Cleaning culverts in place	Each	5		Work beyond that required in 303 Spec. Purchaser shall remove all material/obstructions from inside culvert.
60710	Reconditioning drainage structures, downdrain pipe	Each	3		See reconstruction summary. Hardware is indirect.
63307	Delineators, carsonites	Each	3		Install white carsonite with reflectors.
63501	Temporary traffic control	Lump Sum	All	All	Includes all necessary labor and materials.
	* Denotes Contract Quantity				

FS ROAD 2140000 ROADWORK SUMMARY

MILE POST	PAY ITEM	QUANTITY	UNIT	DESCRIPTION OF WORK
0.00				Beginning of project. Junction with Forest Service Road 2100000 at Mile Post 5.96
	20105	All	Lump Sum	Begin clearing and grubbing within clearing limits at designated areas as staked by the CO.
	23051	6.91	Mile	Begin roadside brushing. Refer to the brushing typical sheet 23 of 23.
	30359	6.91	Mile	Begin roadway reconditioning. Grubbing & disposal of all vegetation & root masses within the roadbed including turnouts and the ditch is required unless otherwise noted in the work summary. Haul material from ditch reconditioning, root wads, slough and slide removal to disposal areas. Scatter all logs and woody debris from top of cutbank to the opposite road shoulder outside clearing limits. Scarify to depth 1" minimum below all potholes and surface irregularities. Clean culverts per the specification.
	15755	18	Each	Place wood wattles for erosion control for each culvert as staked by CO.
	63501	All	Lump Sum	Install temporary traffic control.
0.04	32211	15	Cubic Yard*	Place 100' L x 12' W x 4" D crushed aggregate over approved subgrade as staked by the CO. Taper length shown on Sheet 21. Blend taper to adjacent road surfaces to provide a smooth transition.
0.09	32211	11	Cubic Yard*	Place 50' L x 12' W x 4" D crushed aggregate over approved subgrade as staked by the CO. Taper length shown on Sheet 21. Blend taper to adjacent road surfaces to provide a smooth transition.
0.12	20253A	3	Each	Remove trees as marked by CO (approximately two 12" diameter trees and one 8" diameter).
0.15	20419A	100	Foot	Reconstruct ditch on both sides of the sag as staked by CO.
0.20	20419A	100	Foot	Begin reconstruction of left side ditch to capture springs in cut slope.
0.22	15755A	1	Each	Dewater site.
	20457	10	Cubic Yard*	Excavate trench and prepare for new 24" culvert installation.
	20950	3	Cubic Yard*	Haul and place 4" bedding material for new culvert installation.
	60278B	35	Foot	Install 24" polyethylene pipe as staked by the CO.
	20358	1	Each	Remove excavated culvert from Government lands and dispose in legal manner.
	32211	10	Cubic Yard*	Place 40' L x 12' W x 4" D crushed aggregate over approved subgrade as staked by the CO. Taper length shown on Sheet 21. Blend taper to adjacent road surfaces to provide a smooth transition.
0.33	20253A	3	Each	Remove 3 trees of (approximately 14-in diameter) from 24-in CMP outlet as marked by CO.
	32211	15	Cubic Yard*	Place 100' L x 12' W x 4" D crushed aggregate over approved subgrade as staked by the CO. Taper length shown on Sheet 21. Blend taper to adjacent road surfaces to provide a smooth transition.
	20419B	20	Foot	Construct 20' lead off ditch at culvert outlet as staked by the CO.
0.47	60708	1	Each	Clean interior of 24" galvanized CMP
0.50				Remove root wad and slough (approx. 10 cubic yards) from the right side of the road to designated disposal site. (indirect to pay item 30359)
0.53	20253A	3	Each	Remove 3 logs as marked by the CO from 36" galvanized pipe inlet. Scatter materials so as not to obstruct inlet.
0.62	32211	22	Cubic Yard*	Place 130' L x 12' W x 3" D crushed aggregate over approved subgrade as staked by the CO. Taper length shown on Sheet 21. Blend taper to adjacent road surfaces to provide a smooth transition.
0.66	20253B	1	Each	Remove tree (approx. 24" diameter) on left side of the road.
0.79	15755A	1	Each	Dewater site.
	20457	16	Cubic Yard*	Excavate trench to remove existing 18" CMP and prepare site for installation of new 30" CPP.
	20950	3	Cubic Yard*	Haul and place 4" bedding material for new culvert installation.
	60278C	38	Foot	Install 30" polyethylene pipe as staked by the CO.
	20358	1	Each	Remove excavated culvert from Forest Service land and dispose in legal manner.
	32211	11	Cubic Yard*	Place 50' L x 15' W x 3" D crushed aggregate over approved subgrade as staked by the CO. Taper length shown on Sheet 21. Blend taper to adjacent road surfaces to provide a smooth transition.
0.93				2140200 road left
1.07	20253B	5	Each	Disposal site right. Remove 5 trees as directed by CO.
1.10	20253B	1	Each	Remove log as marked by the CO from 18-in galvanized pipe inlet.
1.15	20457	3	Cubic Yard*	Remove material from culvert inlet and reshape basin. Haul material to designated disposal site.
1.33	60708	1	Each	Clean interior 18" galvanized CMP
1.40	32211	46	Cubic Yard*	Place 150' L x 21' W x 4" D crushed aggregate over approved subgrade as staked by the CO. Taper length shown on Sheet 21. Blend taper to adjacent road surfaces to provide a smooth transition.
	21201	.04	Mile	Begin linear grading, reshape existing road to provide 22' subgrade width with curve widening sections as staked by the CO prior to placing pit run (pay item 32222). PC and PT staked by CO.
	32222	36	Cubic Yard*	Place 87' L x 22' W x 6" D pit run over approved subgrade as staked by the CO. Pit run quantity includes quantity for curve widening.
1.44	20419A	264	Foot	Reconstruct ditch as staked by the CO.

* Denotes Contract Quantity

FS ROAD 2140000 ROADWORK SUMMARY

MILE POST	PAY ITEM	QUANTITY	UNIT	DESCRIPTION OF WORK
1.55	20419A	212	Foot	Reconstruct ditch as staked by the CO.
1.59	20457	10	Cubic Yard*	Rebuild fill slope hinge, excavate 30' long x 6' wide x 1' deep.
	32222	10	Cubic Yard*	Haul and place pit run 30' long x 6' wide x 1' deep.
	32211	11	Cubic Yard*	Place 50' L x 12' W x 4" D crushed aggregate over approved subgrade as staked by the CO. Taper length shown on Sheet 21. Blend taper to adjacent road surfaces to provide a smooth transition.
1.66	25101	4	Cubic Yard*	Extend rip rap 12' L x 3' W x 3' D. As staked by CO.
	32211	10	Cubic Yard*	Place 75' L x 5' W x 8" D crushed aggregate over approved subgrade as staked by the CO. Blend taper to adjacent road surfaces to provide a smooth transition.
1.90	60710	1	Each	Reconnect existing down drain for 18" metal pipe. Hardware is indirect.
1.96				Disposal site right. (See typical Sheet 23)
2.03	20457	35	Cubic Yard*	Excavate trench and prepare installation of new 18" CPP. Construct ditch dam below new culvert inlet as shown on Sheet 16.
	20477	All	Lump Sum	Excavate, plug and seal existing CMP at inlet. Reestablish ditch to flow pass block culvert inlet.
	20253A	2	Each	Remove 2 trees of approximately 8"-12" from outlet.
	20950	4	Cubic Yard*	Haul and place 4" bedding material for new culvert installation.
	60278A	54	Foot	Install 18" polyethylene culvert pipe as staked by the CO.
	32211	12	Cubic Yard*	Place 52' L x 13' W x 4" D crushed aggregate over approved subgrade as staked by the CO. Taper length shown on Sheet 21. Blend taper to adjacent road surfaces to provide a smooth transition.
2.05				Log decking site right.
2.28	20253A	1	Each	Remove tree as marked by the CO (approximately 12" diameter.
2.52				2140130 road left
	32222	10	Cubic Yard*	Haul and place pit run 30' x 30' (equilateral triangle) x 6" deep as staked by the CO.
2.69	20253A	1	Each	Remove trees as marked by the CO (approx. 12" diameter). Haul material to designated disposal site.
2.72	32222	10	Cubic Yard*	Haul and place pit run 32' L x 4' W x 2' D as staked by the CO.
	32211	23	Cubic Yard*	Place 80' L x 18' W x 4" D crushed aggregate over approved subgrade as staked by the CO. Taper length shown on Sheet 20. Blend taper to adjacent road surfaces to provide a smooth transition.
	15755A	1	Each	Dewater site.
	20457	17	Cubic Yard*	Excavate trench and prepare installation of new 24" CPP as staked by the CO.
	20950	3	Cubic Yard*	Haul and place 4" bedding material for new culvert installation.
	60278B	46	Foot	Install 24" polyethylene culvert pipe as staked by the CO.
2.73	20477	All	Lump Sum	Excavate, plug and seal existing CMP at inlet. Reestablish ditch to flow pass block culvert inlet.
	63307	3	Each	Install carsonites as staked by the CO.
3.17	15755A	1	Each	Dewater site.
	20457	23	Cubic Yard*	Excavate trench to remove existing 18" CMP and prepare for installation of new 18" CPP.
	20950	3	Cubic Yard*	Haul and place 4" bedding material for new culvert installation.
	60278A	44	Foot	Install 18" polyethylene pipe as staked by the CO.
	20358	1	Each	Remove excavated culvert
	32211	6	Cubic Yard*	Place 20' L x 12' W x 4" D crushed aggregate over approved subgrade as staked by the CO. Taper length shown on Sheet 21. Blend taper to adjacent road surfaces to provide a smooth transition.
3.25	32211	41	Cubic Yard*	Place 240' L x 12' W x 4" D crushed aggregate over approved subgrade as staked by the CO. Taper length shown on Sheet 21. Blend taper to adjacent road surfaces to provide a smooth transition.
3.26	15755A	1	Each	Dewater site.
	20457	111	Cubic Yard*	Excavate trench to remove existing 18" CMP and prepare installation of new 24" CMP.
	20950	4	Cubic Yard*	Haul and place 4" bedding material for new culvert installation.
	60276A	58	Foot	Installation of new 14 gauge 24" x 58' aluminized corrugated steel culvert pipe. As staked by CO.
	60655A	80	Foot	Install 16 gauge 24" x 80' down drain with flex elbow and anchors as shown on Sheet 17. Elbow and anchors are indirect to this pay item.
	20358	1	Each	Remove excavated culvert.
3.28	15755A	1	Each	Dewater site.

* Denotes Contract Quantity

FS ROAD 2140000 ROADWORK SUMMARY

MILE POST	PAY ITEM	QUANTITY	UNIT	DESCRIPTION OF WORK
	20253A	3	Each	Remove trees (approximately 8" - 12" diameter) from 24" CMP outlet. As marked by CO. Haul material to designated disposal site.
	20457	136	Cubic Yard*	Excavate trench to remove existing 24" CMP and prepare installation of new 36" CMP.
	20950	4	Cubic Yard*	Haul and place 4" bedding material for new culvert installation.
	60276B	64	Foot	Installation of new 36" 14 gage aluminized corrugated steel culvert pipe as staked by the CO.
	60655B	80	Foot	Install 16 gage 36" x 80' down drain with flex elbow and anchors as shown on Sheet 17. Elbow and anchors are indirect to this pay item.
	20358	1	Each	Remove excavated culvert from Government lands and dispose in legal manner.
3.60	32211	39	Cubic Yard*	Place 150' L x 18' W x 4" D crushed aggregate over approved subgrade as staked by the CO. Taper length shown on Sheet 19. Blend taper to adjacent road surfaces to provide a smooth transition.
3.63				Remove root wad from 24" galvanized pipe outlet. Haul material to designated disposal site. (indirect to pay item 30359)
3.67	60710	1	Each	Reconnect existing down drain pipe (18" CMP). Hardware is indirect.
3.71				Turn out right
	32211	12	Cubic Yard*	Place 50' L x 13' W x 4" D crushed aggregate over approved subgrade as staked by the CO. Taper length shown on Sheet 19. Blend taper to adjacent road surfaces to provide a smooth transition.
3.78	32211	39	Cubic Yard*	Place 150' L x 18' W x 4" D crushed aggregate over approved subgrade as staked by the CO. Taper length shown on Sheet 21. Blend taper to adjacent road surfaces to provide a smooth transition.
3.93	15755A	1	Each	Dewater site.
	20457	69	Cubic Yard*	Excavate trench to remove existing 18" galvanized CMP
	20950	3	Cubic Yard*	Haul and place 4" bedding material for new culvert installation.
	60278B	43	Foot	Installation of new 24" polyethylene culvert pipe as staked by the CO.
	32211	12	Cubic Yard*	Place 52' L x 13' W x 4" D crushed aggregate over approved subgrade as staked by the CO. Taper length shown on Sheet 19. Blend taper to adjacent road surfaces to provide a smooth transition.
	20358	1	Each	Remove excavated culvert from Government Lands and dispose in legal manner.
4.05	15755A	1	Each	Dewater site.
	20457	40	Cubic Yard*	Excavate trench to remove existing 18" galvanized CMP
	60278B	42	Foot	Installation of new 24" polyethylene culvert pipe as staked by the CO.
	20358	1	Each	Remove excavated culvert from forest service land and dispose in legal manner.
	20950	3	Cubic Yard*	Haul and place 4" bedding material for new culvert installation.
	32211	12	Cubic Yard*	Place 52' L x 13' W x 4" D crushed aggregate over approved subgrade as staked by the CO. Taper length shown on Sheet 19. Blend taper to adjacent road surfaces to provide a smooth transition.
4.20	32211	51	Cubic Yard*	Place 200' L x 18' W x 4" D crushed aggregate over approved subgrade as staked by the CO. Taper length shown on Sheet 19. Blend taper to adjacent road surfaces to provide a smooth transition.
4.22	20301	1	Each	Remove old down drain pipe from fillslope. Dispose of off Government Lands.
4.33	60708	1	Each	Clean interior 18" galvanized CMP
4.38				Junction on left with Forest Service Road 2140120.
5.50	60710	1	Each	Repair 18" galvanized pipe inlet (jack out inlet).
6.08	20419A	460	Foot	Reconstruct ditch for 460' (18" min depth) as staked by the CO.
6.19				Junction on right with Forest Service Road 2140090.
6.21	32222	19	Cubic Yard*	Haul and place pit run over 50' x 20' x 6" depth as staked by the CO.
6.23				Disposal site left
6.48	60708	1	Each	Clean interior of 18" galvanized pipe
6.62	60708	1	Each	Clean inlet and outlet of 18" galvanized pipe
6.91	32211	200	Cubic Yard*	End of project. End pay items 23051 and 30359. Haul and place 200 cubic yards of surfacing aggregate as staked by the CO.
7.37	63501			Place "Road Closed" Sign.

* Denotes Contract Quantity

* Denotes Contr.

FS ROAD 2140090 RECONSTRUCTION SUMMARY

MILE POST	PAY ITEM	QUANTITY	UNIT	DESCRIPTION OF WORK
0.00				Junction with Forest Service road 2140 at mile post 6.19
	20105	All	Lump Sum	Begin clearing and grubbing within clearing limits and other designated areas as staked by the CO.
	23051	0.50	Mile	Begin roadside brushing. See sheet 23.
	20453B	1	Each	Prepare existing trench for installation of new CPP. Use onsite suitable material as backfill.
	20950	3	Cubic Yard*	Haul and place 4" bedding material for new culvert installation.
	60278A	40	Foot	Install 18" polyethylene pipe as staked by the CO.
	30359	0.50	Mile	Begin roadway reconditioning. Grubbing & disposal of all vegetation & root masses within roadbed includes turnouts and in the ditch is required unless otherwise noted in the work summary. Haul excess material from ditch reconditioning, root wads, slough and slide material removal to disposal area. Scatter all logs and woody debris from top of cut bank to the opposite road shoulder outside clearing limits. Scarify to depth 1" minimum below all potholes and surface irregularities. Clean culverts as specified in the specifications.
	15755	6	Each	Place wood wattles for erosion control for each pipe as staked by CO.
0.01	20427	1	Each	Remove earth berm for road access. Utilize existing onsite suitable material to fill in open trench across roadbed.
	32222	17	Cubic Yard*	Haul and place pit run over 50' x 18' x 6" depth as staked by the CO.
	32211	16	Cubic Yard*	Place 50' L x 18' W x 4" D crushed aggregate over approved subgrade as staked by the CO. Taper length shown on Sheet 21. Blend taper to adjacent road surfaces to provide a smooth transition.
0.05	20453A	1	Each	Reconstruct existing waterbars to match the original roadway template including, ditches, shoulders and catch basins when appropriate. Utilize the onsite materials to shape, blend and compact roadway.
0.06	20453B	1	Each	Prepare existing trench for installation of new CPP. Use onsite suitable material as backfill.
	20950	3	Cubic Yard*	Haul and place 4" bedding material for new culvert installation.
	60278A	40	Foot	Install 18" polyethylene pipe as staked by the CO.
	32211	10	Cubic Yard*	Place 40' L x 12' W x 4" D crushed aggregate over approved subgrade as staked by the CO. Taper length shown on Sheet 21. Blend taper to adjacent road surfaces to provide a smooth transition.
0.11	20453A	1	Each	Reconstruct existing waterbars to match the original roadway template including, ditches, shoulders and catch basins when appropriate. Utilize the onsite materials to shape, blend and compact roadway.
0.16	20453B	1	Each	Prepare existing trench for installation of new CPP. Use onsite suitable material as backfill.
	20950	3	Cubic Yard*	Haul and place 4" bedding material for new culvert installation.
	60278A	46	Foot	Install 18" polyethylene pipe as staked by the CO.
	32211	69	Cubic Yard*	Place 423' L x 12' W x 4" D crushed aggregate over approved subgrade as staked by the CO. Taper length shown on Sheet 21. Blend taper to adjacent road surfaces to provide a smooth transition.
0.23	20453B	1	Each	Prepare existing trench for installation of new CPP. Use onsite suitable material as backfill.
	20950	3	Cubic Yard*	Haul and place 4" bedding material for new culvert installation.
	60278A	46	Foot	Install 18" polyethylene pipe as staked by the CO.
	32211	69	Cubic Yard*	Place 423' L x 12' W x 4" D crushed aggregate over approved subgrade as staked by the CO. Taper length shown on Sheet 21. Blend taper to adjacent road surfaces to provide a smooth transition.
0.26	20453A	1	Each	Reconstruct existing waterbars to match the original roadway template including, ditches, shoulders and catch basins when appropriate. Utilize the onsite materials to shape, blend and compact roadway.
0.28	30359			Remove 20 CY slide/slough material indirect to pay item 30359
0.30	20453A	1	Each	Reconstruct existing waterbars to match the original roadway template including, ditches, shoulders and catch basins when appropriate. Utilize the onsite materials to shape, blend and compact roadway.
	20457	207	Cubic Yard*	Excavate cutslope to realign road prior to linear grading as shown on Sheets 13-17.
	21201	0.02	Mile	Linear grade section from MP 0.30 to 0.32 to provide 15' wide traveled way as shown on Sheets 13-17 and staked by the CO. Minor fillslope repairs are indirect.
0.35	20453B	1	Each	Prepare existing trench for installation of new CPP. Use onsite suitable material as backfill.
	20950	3	Cubic Yard*	Haul and place 4" bedding material for installation new culvert installation.
	60278A	40	Foot	Install 18" polyethylene pipe as staked by CO.
	32211	10	Cubic Yard*	Place 40' L x 12' W x 4" D crushed aggregate over approved subgrade as staked by the CO. Taper length shown on Sheet 21. Blend taper to adjacent road surfaces to provide a smooth transition.
0.40	20453A	1	Each	Reconstruct existing waterbars to match the original roadway template including, ditches, shoulders and catch basins when appropriate. Utilize the onsite materials to shape, blend and compact roadway.
0.45	20453A	1	Each	Reconstruct existing waterbars to match the original roadway template including, ditches, shoulders and catch basins when appropriate. Utilize the onsite materials to shape, blend and compact roadway.
0.48	20453A	1	Each	Reconstruct existing waterbars to match the original roadway template including, ditches, shoulders and catch basins when appropriate. Utilize the onsite materials to shape, blend and compact roadway.
0.50				End of project (End of pay items 23051 and 30359)

DRAINAGE LISTING

MILEPOST OR STATION	DESIGNED												INSTALLATION DETAILS						RIPRAP - CY						REMARKS
	PLASTIC PIPE			PLASTIC SPILLWAY				CORRUGATED METAL PIPE		CORRUGATED METAL SPILLWAY				GRADE %	SKEW °	ANCHOR ASSEMBLY	TYPE	PLASTIC SPILLWAY CONNECTION		HAND PLACED		MACHINE PLACED		DUMPED		
	DIAMETER (INCHES)	LENGTH (FEET)	THICKNESS (INCHES)	DIAMETER (INCHES)	LENGTH (FEET)	FULL CIRCLE	HALF ROUND	DIAMETER (INCHES)	LENGTH (FEET)	DIAMETER (INCHES)	LENGTH (FEET)	FULL CIRCLE	HALF ROUND					FLEX ELBOW		INLET - CY	OUTLET - CY	INLET - CY	OUTLET - CY	INLET - CY	OUTLET - CY	
NFSR 2140000																									
M.P. 0.22	24	35	0.060											EX	EX					1	0.50					
M.P. 0.33																									REMOVE TREES (3) FROM OUTLET.
M.P. 0.47																									CLEAR CULVERT INTERIOR OF MATERIAL / OBSTRUCTIONS.
M.P. 0.79	30	38	0.060											EX	EX					1	0.50					
M.P. 1.10																									REMOVE LOG FROM INLET.
M.P. 1.15																									RESHAPE CATCH BASIN.
M.P. 1.33																									CLEAR CULVERT INTERIOR OF MATERIAL / OBSTRUCTIONS.
M.P. 1.90										18		X													RECONNECT EXISTING DOWN DRAIN. HARDWARE INDIRECT TO PAY ITEM
M.P. 2.03	18	54	0.052											9	120					0.50	0.50					EXCAVATE AND INSTALL NEW CPP. AS STAKED BY CO.
M.P. 2.72	24	46	0.060											7	125					1	0.50					EXCAVATE AND INSTALL NEW CPP. AS STAKED BY CO.
M.P. 2.73																									EXCAVATE PLUG AND SEAL EXISTING CMP.
M.P. 3.17	18	44	0.052											EX	EX					0.50	0.50					
M.P. 3.26			0.079					24	58	24	80	X		EX	EX	X				1						SEE SHEET 19 FOR ANCHOR DETAILS.
M.P. 3.28			0.079					36	63	36	80	X		EX	EX	X				1						SEE SHEET 19 FOR ANCHOR DETAILS.
M.P. 3.63																									REMOVE TREE FROM OUTLET

EX = EXISTING, V = VARIES. ALL NEW CPP TO BE BELL & SPIGOT JOINTS (NO BANDED JOINTS). ALL NEW CMP TO BE 14 GAGE WITH 2' LONG 16 GAGE ANNULAR BANDS IN THE ROAD PRISM.Downspout/Spillways = 16 Gage

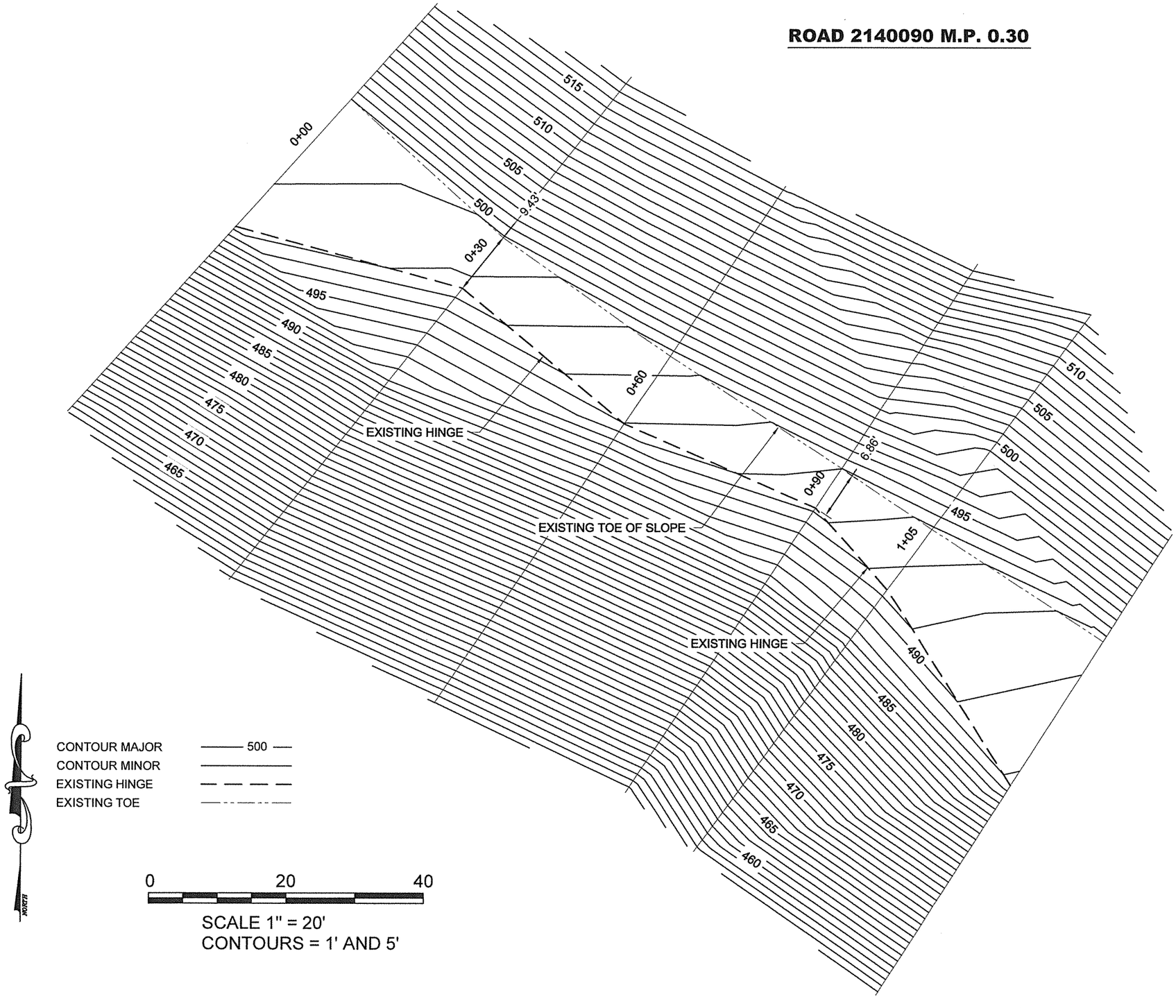
DRAINAGE LISTING

MILEPOST OR STATION	DESIGNED													INSTALLATION DETAILS						RIPRAP - CY						REMARKS
	PLASTIC PIPE			PLASTIC SPILLWAY				CORRUGATED METAL PIPE		CORRUGATED METAL SPILLWAY				GRADE %	SKEW °	ANCHOR ASSEMBLY	TYPE	PLASTIC SPILLWAY CONNECTION		HAND PLACED		MACHINE PLACED		DUMPED		
	DIAMETER (INCHES)	LENGTH (FEET)	THICKNESS (INCHES)	DIAMETER (INCHES)	LENGTH (FEET)	FULL CIRCLE	HALF ROUND	DIAMETER (INCHES)	LENGTH (FEET)	DIAMETER (INCHES)	LENGTH (FEET)	FULL CIRCLE	HALF ROUND					FLEX ELBOW		INLET - CY	OUTLET - CY	INLET - CY	OUTLET - CY	INLET - CY	OUTLET - CY	
ROAD 2140000																										
M.P. 3.67										18		X														RECONNECT EXISTING DOWN PIPE. HARDWARE INDIRECT TO PAY ITEM
M.P. 3.93	24	43	0.060											EX	EX					1	0.50					
M.P. 4.05	24	42	0.060											EX	EX					1	0.50					
M.P. 4.22																										REMOVE OLD DOWN DRAIN PIPE.
M.P. 4.33																										CLEAR CULVERT INTERIOR OF MATERIAL / OBSTRUCTIONS.
M.P. 5.50								18																		JACK OUT INLET
M.P. 6.48								18																		CLEAR CULVERT INTERIOR OF MATERIAL / OBSTRUCTIONS.
M.P. 6.62								18																		CLEAR CULVERT INTERIOR OF MATERIAL / OBSTRUCTIONS.
ROAD 2140090																										
M.P. 0.00	18	40	0.052											3%	90					0.50	0.50					
M.P. 0.06	18	40	0.052											EX	EX					0.50	0.50					
M.P. 0.16	18	46	0.052											EX	EX					0.50	0.50					
M.P. 0.23	18	46	0.052											EX	EX					0.50	0.50					
M.P. 0.35	18	40	0.052											EX	EX					0.50	0.50					

NOTE: ON NFSR 2140090, CULVERT SKEW & GRADE WILL FOLLOW EXISTING TRENCH SKEW & GRADE.

EX = EXISTING, V = VARIES. ALL NEW CPP TO BE BELL & SPIGOT JOINTS (NO BANDED JOINTS). ALL NEW CMP TO BE 14 GAGE WITH 2' LONG 16 GAGE ANNULAR BANDS IN THE ROAD PRISM.Downspout/Spillways = 16 Gage

ROAD 2140090 M.P. 0.30



CONTOUR MAJOR ——— 500 ———
CONTOUR MINOR ———————
EXISTING HINGE — — — —
EXISTING TOE —·—·—·—

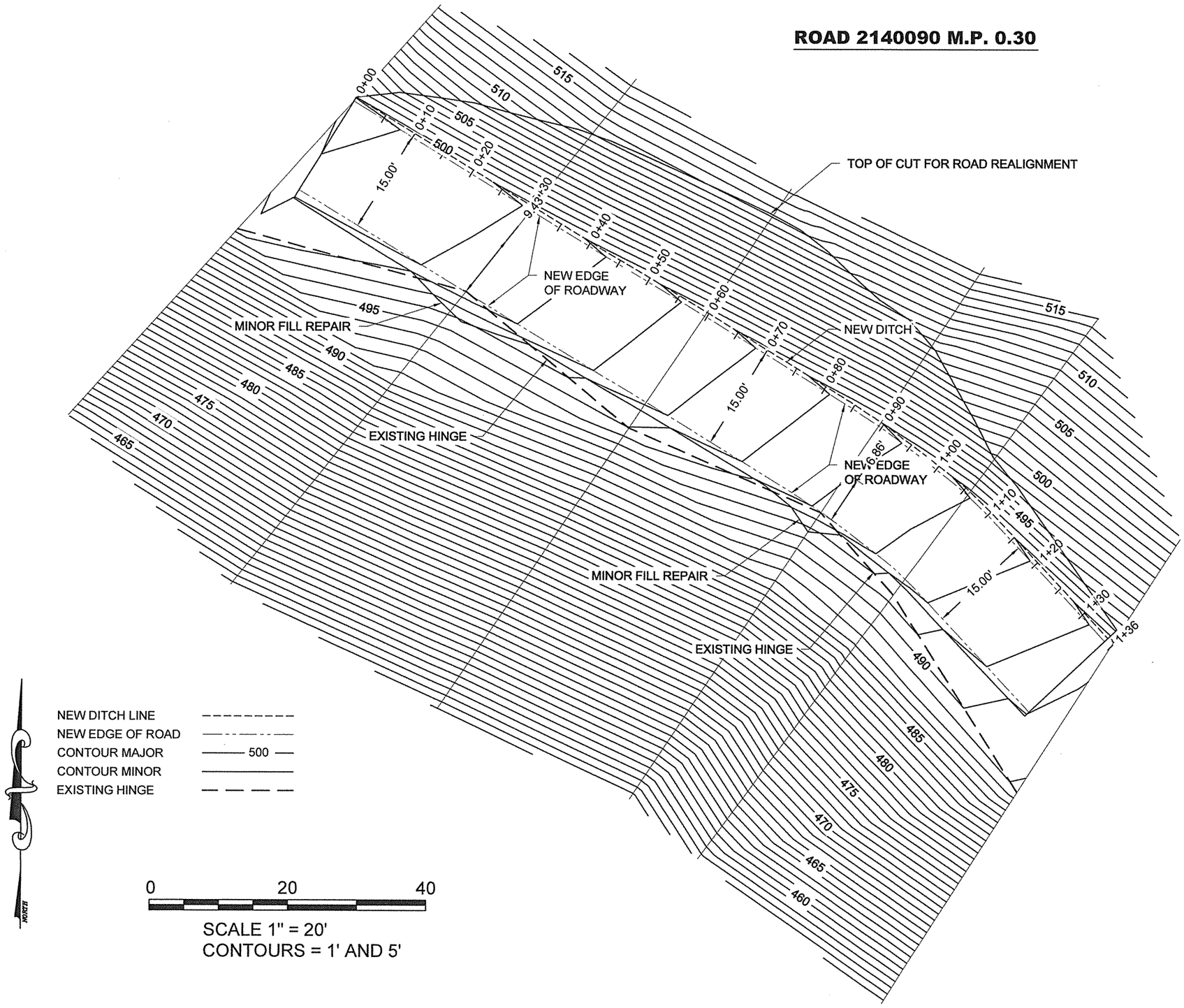
NORTH

0 20 40

SCALE 1" = 20'
CONTOURS = 1' AND 5'

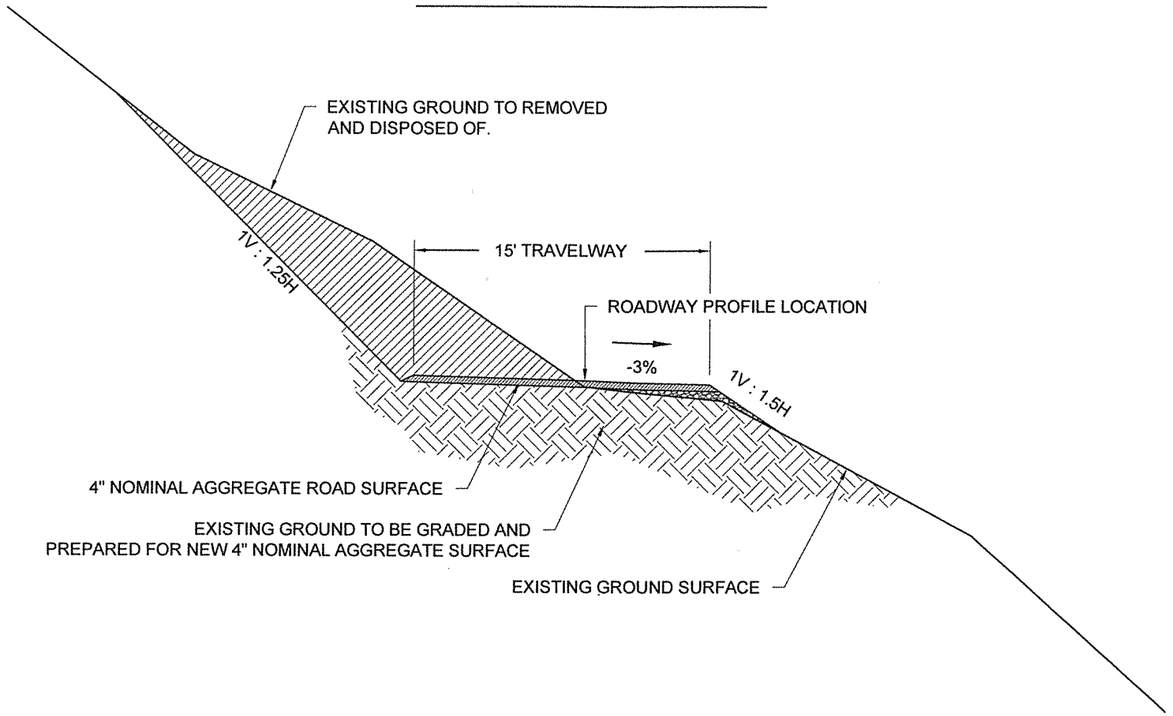
UNIT / REGION:	NATIONAL FOREST:	DISTRICT:	CONTRACT NAME:	SHEET NAME:	SHEET NUMBER:
USDA - FOREST SERVICE - R6	OLYMPIC	PACIFIC	CARCASS TIMBER SALE	EXISTING SITE PLAN	11 OF 22

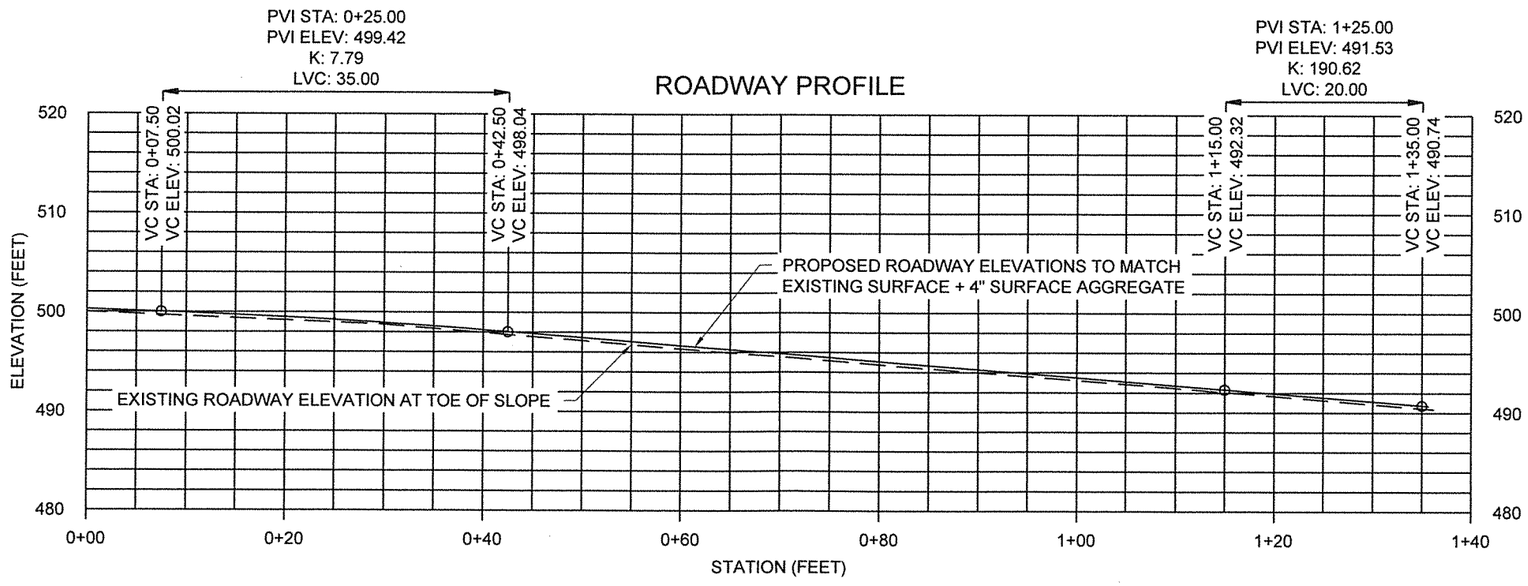
ROAD 2140090 M.P. 0.30



UNIT / REGION:	NATIONAL FOREST:	DISTRICT:	CONTRACT NAME:	SHEET NAME:	SHEET NUMBER:
USDA - FOREST SERVICE - R6	**OLYMPIC**	**PACIFIC**	**CARCASS TIMBER SALE**	**PROPOSED SITE PLAN**	**12 OF 22**

ROAD 2140090 M.P. 0.30

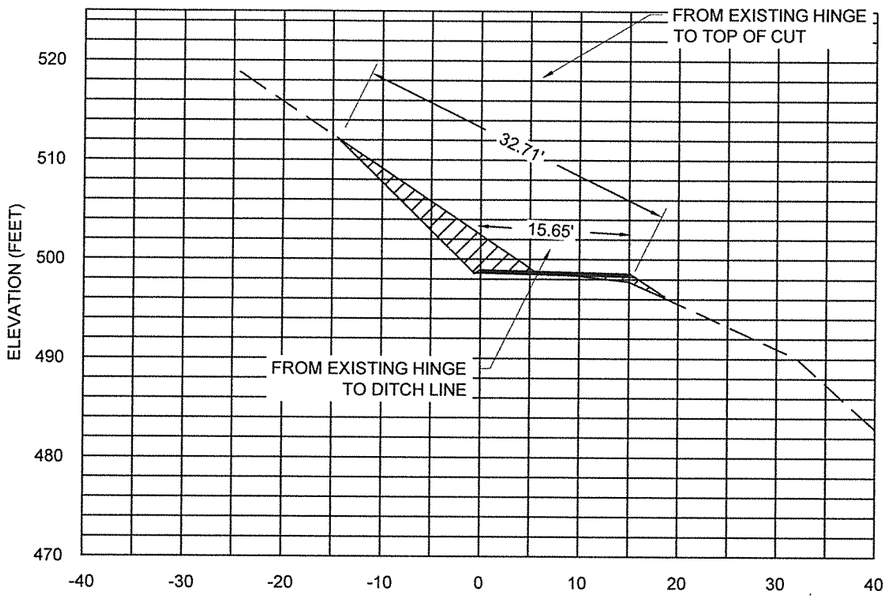




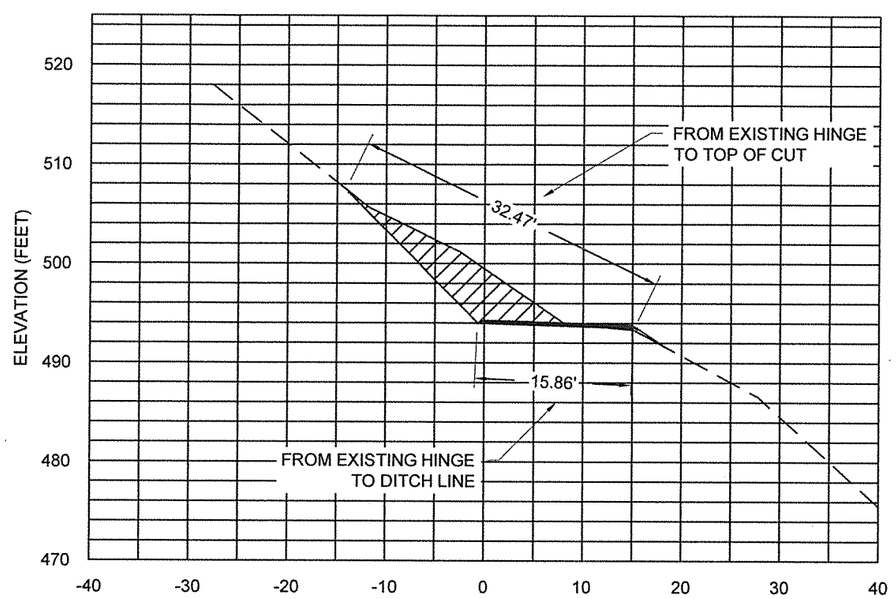
UNIT / REGION:	NATIONAL FOREST:	DISTRICT:	CONTRACT NAME:	SHEET NAME:	SHEET NUMBER:
USDA - FOREST SERVICE - R6	**OLYMPIC**	**PACIFIC**	**CARCASS TIMBER SALE**	**PROFILES AND SECTIONS**	**13 OF 22**

ROAD 2140090 M.P. 0.30

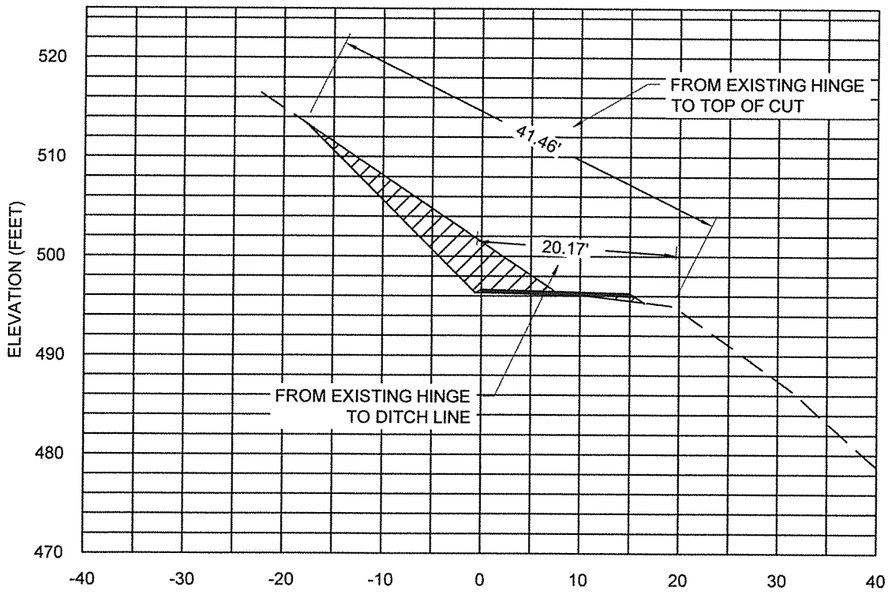
0+30.00



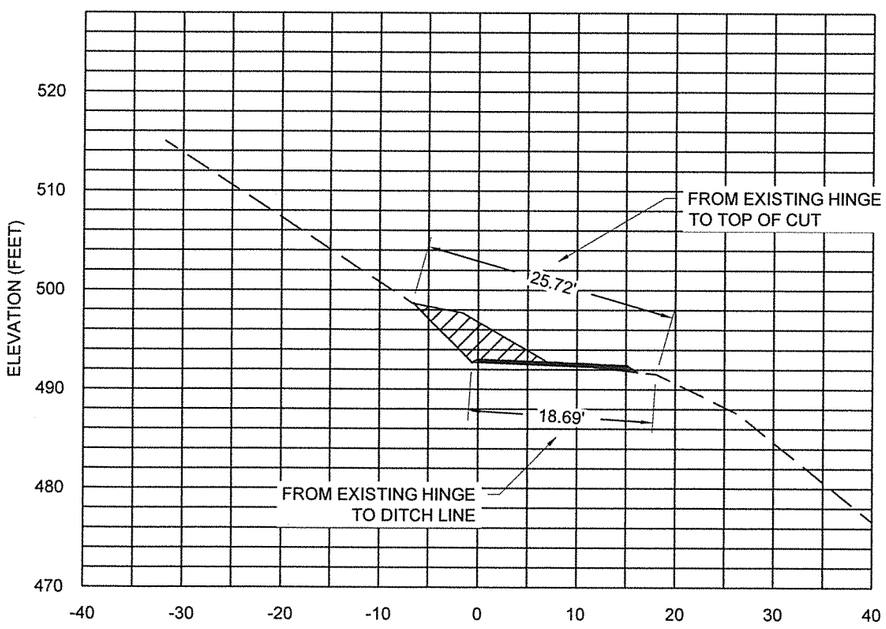
0+90.00



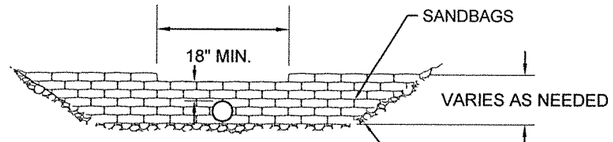
0+60.00



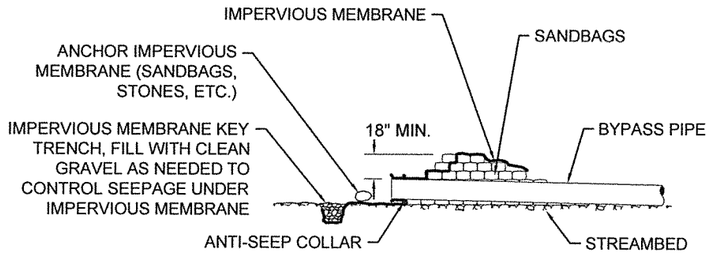
1+05.87



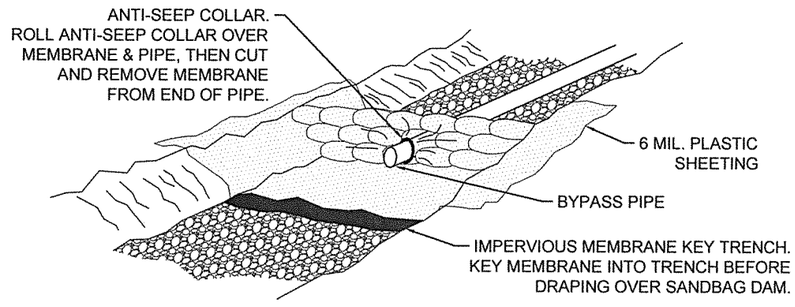
UNIT / REGION:	NATIONAL FOREST:	DISTRICT:	CONTRACT NAME:	SHEET NAME:	SHEET NUMBER:
USDA - FOREST SERVICE - R6	OLYMPIC	PACIFIC	CARCASS TIMBER SALE	EXCAVATION STAKING NOTES	14 OF 22



ELEVATION VIEW
(NOT TO SCALE)

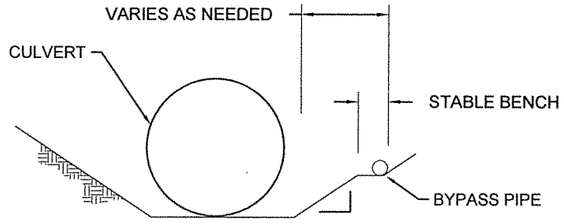


PROFIILE VIEW
(NOT TO SCALE)

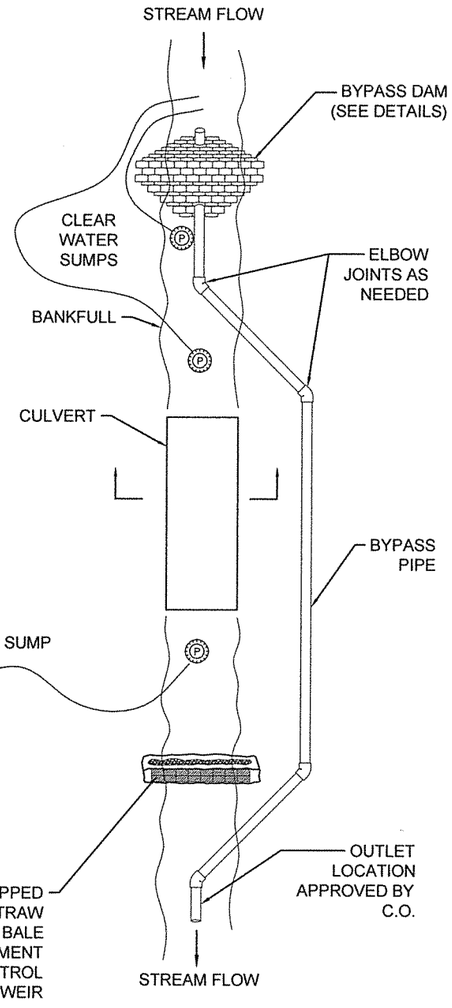


SANDBAG BYPASS DAM DETAILS
(NOT TO SCALE)

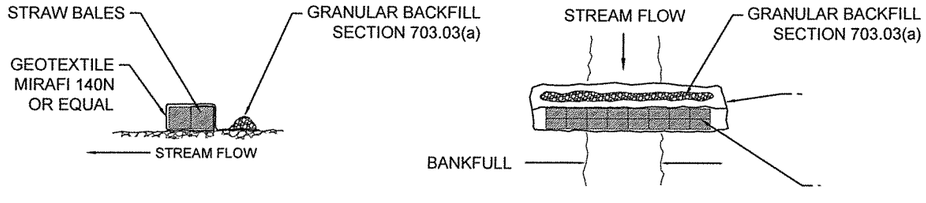
NOTE:
THE DEWATERING & SEDIMENT CONTROL PLAN SHOWS THE MINIMUM ACCEPTABLE CRITERIA. MAINTAINING CLEAN WATER DOWNSTREAM OF THE PROJECT IS THE RESPONSIBILITY OF THE CONTRACTOR THROUGHOUT THE DURATION OF THE PROJECT, 24 HRS./DAY



TYPICAL SECTION A-A
(NOT TO SCALE)



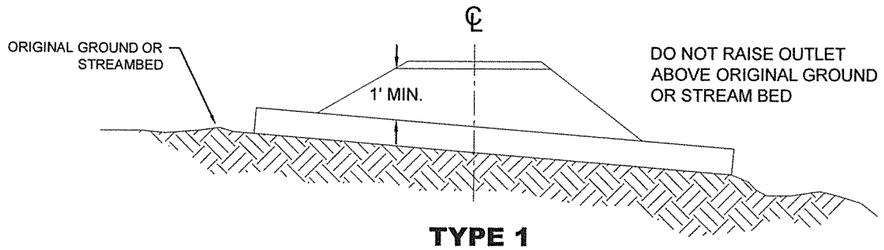
BYPASS TYPICAL PLAN VIEW
(NOT TO SCALE)



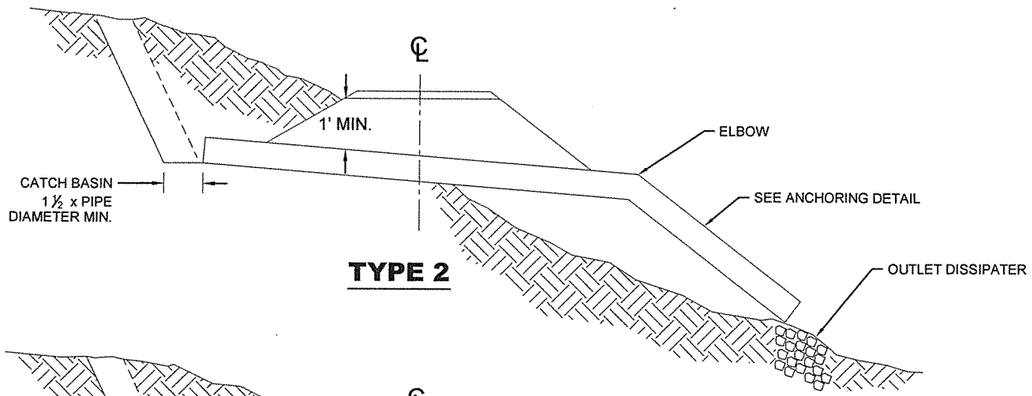
GEOTEXTILE-WRAPPED STRAW BALE SEDIMENT CONTROL WEIR
(NOT TO SCALE)

UNIT / REGION:	NATIONAL FOREST:	DISTRICT:	CONTRACT NAME:	SHEET NAME:	SHEET NUMBER:
USDA - FOREST SERVICE - R6	**OLYMPIC**	**PACIFIC**	**CARCASS TIMBER SALE**	**DEWATERING TYPICAL**	**15 OF 22**

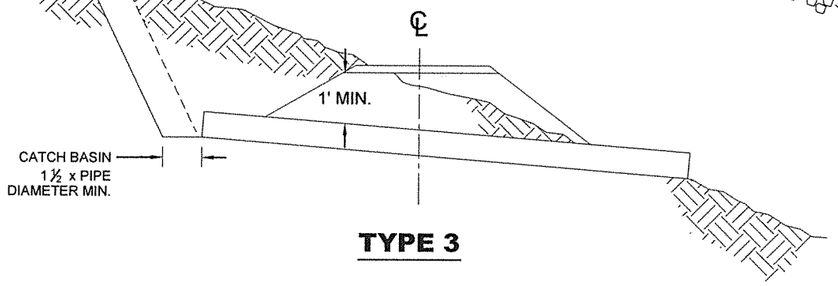
CULVERT INSTALLATION TYPES



TYPE 1



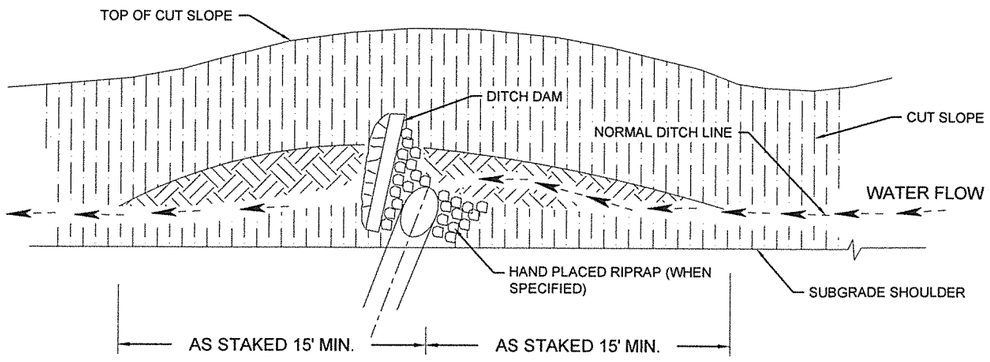
TYPE 2



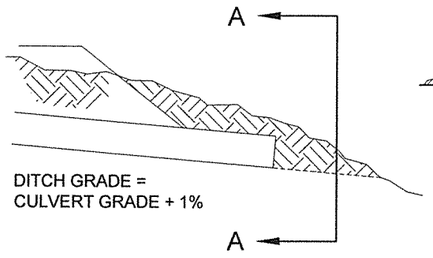
TYPE 3

DITCH DAM PLAN VIEW

TYPE 2 & 3 CULVERT INSTALLATION

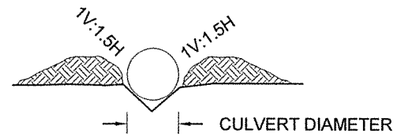


OUTLET DITCH



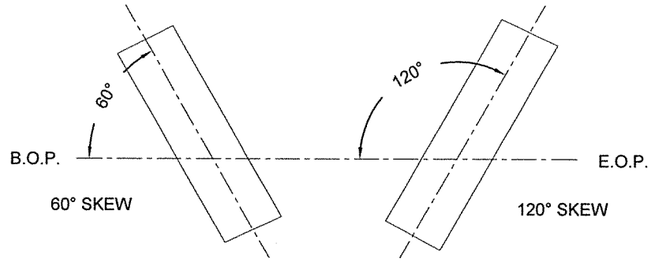
DITCH GRADE =
CULVERT GRADE + 1%

SECTION A-A

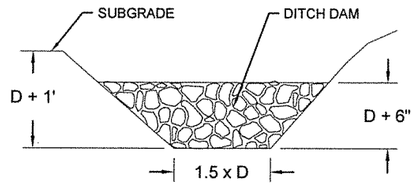


MATERIAL TO BE DEPOSITED ON BOTH SIDES OF DITCH

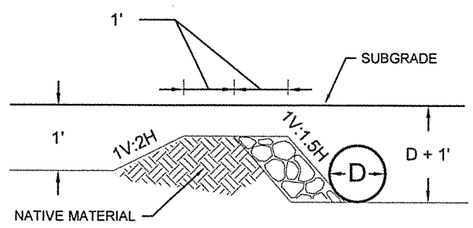
SKEW DIAGRAM



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



CATCH BASIN ELEVATION

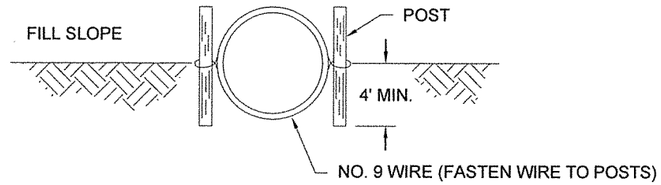


X-SECTION OF DITCH DAM

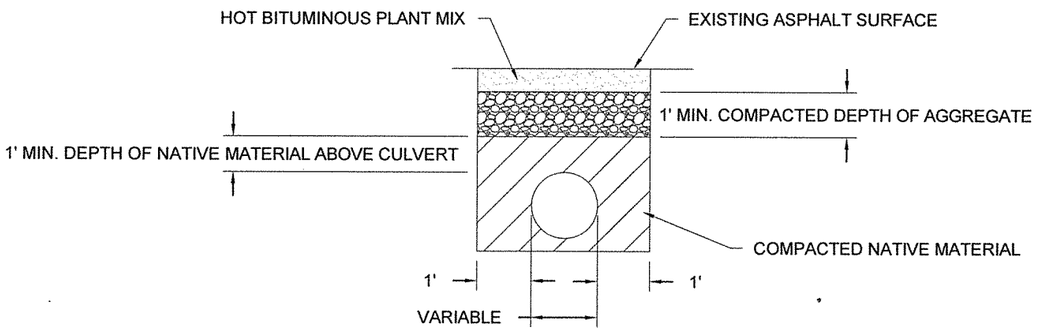
UNIT / REGION:	NATIONAL FOREST:	DISTRICT:	CONTRACT NAME:	SHEET NAME:	SHEET NUMBER:
USDA - FOREST SERVICE - R6	**OLYMPIC**	**PACIFIC**	**CARCASS TIMBER SALE**	**DRAINAGE CONST. TYPICAL**	**16 OF 22**

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.

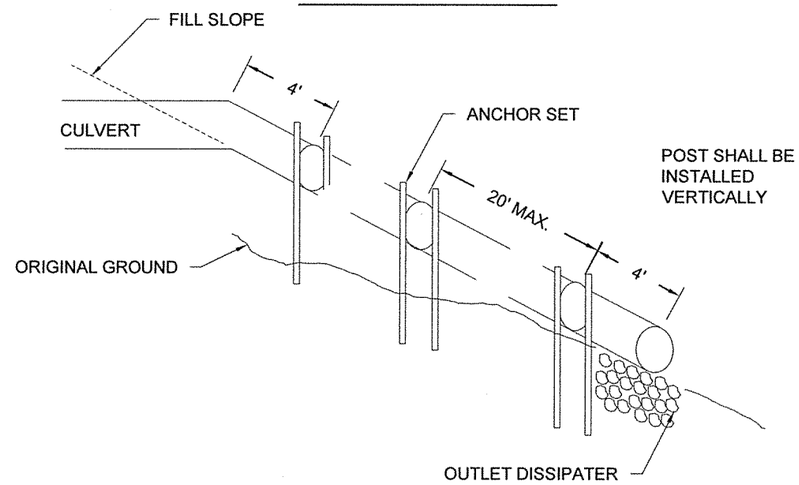
FASTEN WIRE TO POST

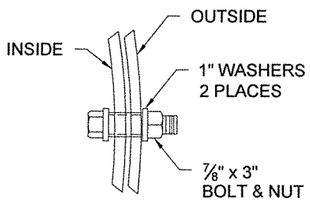


CULVERT INSTALLATION DETAIL



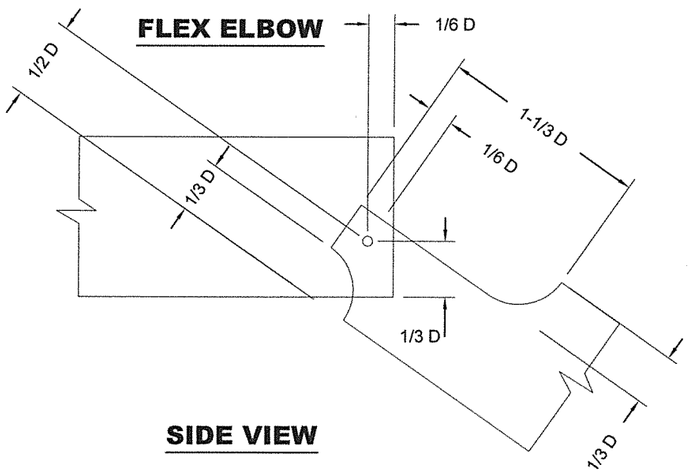
ANCHOR DETAILS





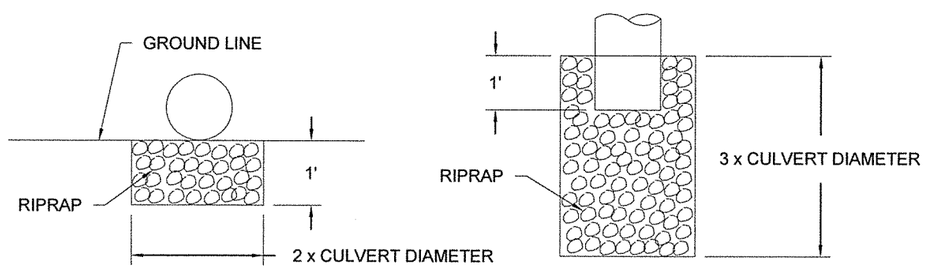
BOLT DETAIL

FLEX ELBOW



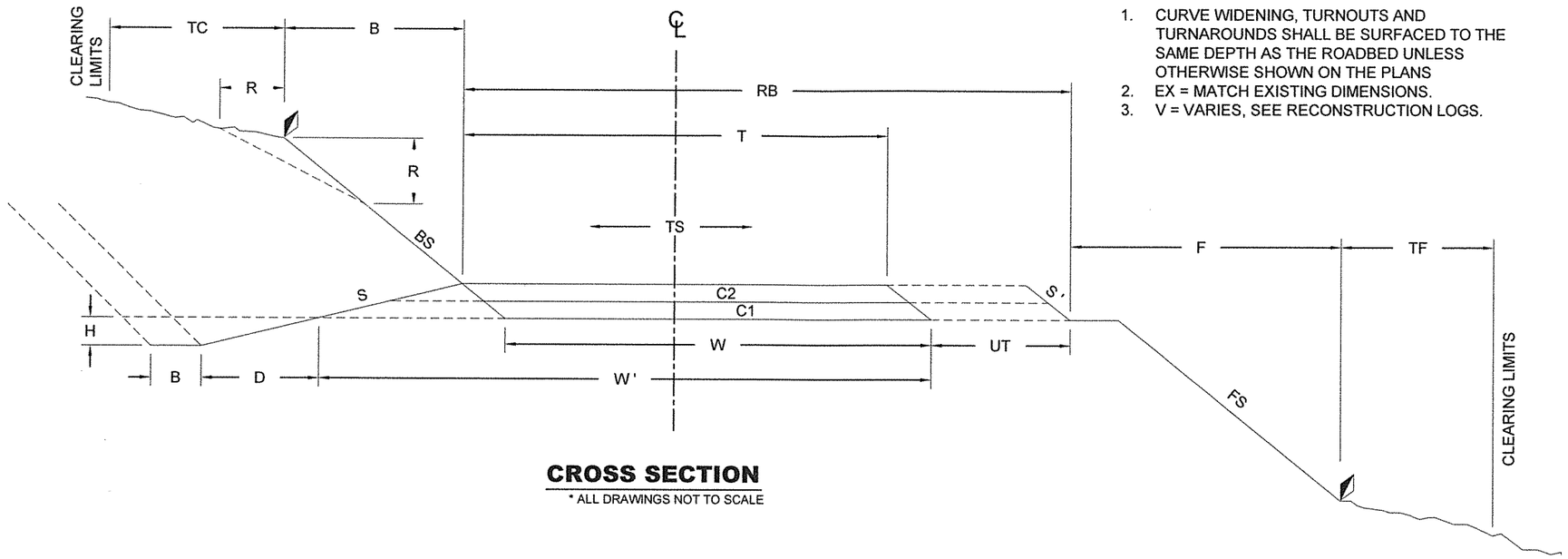
SIDE VIEW

OUTLET DISSIPATER DETAIL



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

UNIT / REGION:	NATIONAL FOREST:	DISTRICT:	CONTRACT NAME:	SHEET NAME:	SHEET NUMBER:
USDA - FOREST SERVICE - R6	**OLYMPIC**	**PACIFIC**	**CARCASS TIMBER SALE**	**DRAINAGE CONST. TYPICAL**	**17 OF 22**



CROSS SECTION

* ALL DRAWINGS NOT TO SCALE

GENERAL NOTES

1. CURVE WIDENING, TURNOUTS AND TURNAROUNDS SHALL BE SURFACED TO THE SAME DEPTH AS THE ROADBED UNLESS OTHERWISE SHOWN ON THE PLANS
2. EX = MATCH EXISTING DIMENSIONS.
3. V = VARIES, SEE RECONSTRUCTION LOGS.

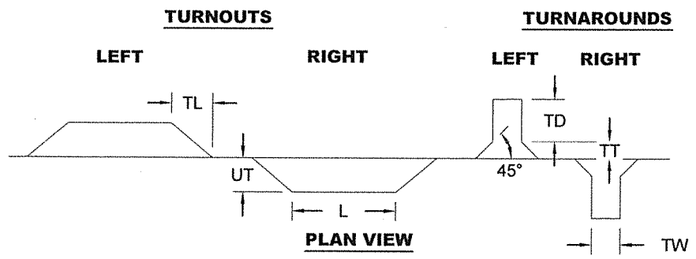
ROAD STRUCTURE

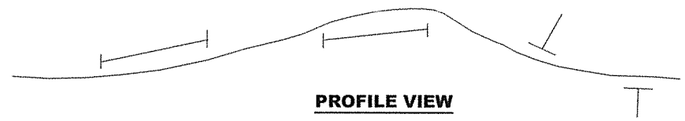
ROAD NUMBER	SEGMENT	STATION OR MILEPOST TO STATION OR MILEPOST		TRAVELWAY WIDTH (FT)	CLEARING			GRADING													SURFACE STRUCTURE						SHOULDER ROCK			
					WHICHEVER IS GREATER (FT)			CONSTRUCTION TOLERANCE	OUTSLOPE (O) INSLOPE (I) CROWN (C) (%)	ROADBED WIDTH (FT)		DITCH DIMENSIONS (FT)			TURNOUT			TURN AROUND			GRADATION		COMPACTED DEPTH (INCHES)		SLOPE RATIO		DEPTH (INCHES)	SLOPE RATIO	WIDTH (INCHES)	GRADATION
					MINIMUM BEYOND SHOULDER	BEYOND SLOPE STAKE									WIDTH (FT)	TRANSITION LENGTH (FT)	LENGTH (FT)	TAPER (FT)	WIDTH (FT)	LENGTH (FT)					AGG	ASP				
				T		TC	TF		TS	W	W'	B	D	H									C1	C2	C1	C2	S	S'				
NFSR 2140000	1	0.00	1.42	EX	5	3	3	D	EX	EX	EX	EX	EX	EX	EX	EX	EX	EX	EX	EX	PR	D	V	V	2H:1V	N/A	V	V	V	F
	2	1.40	1.44	21.0	5	3	3	D	EX	22	22	EX	EX	EX	EX	EX	EX	EX	EX	EX	PR	D	V	4"	2H:1V	N/A	V	V	V	F
	3	1.44	6.91	EX	5	3	3	D	EX	EX	EX	EX	EX	EX	EX	EX	EX	EX	EX	EX	PR	D	V	V	2H:1V	N/A	V	V	V	F
NFSR 2140090	1	0.00	0.23	EX	5	3	3	D	EX	EX	EX	EX	EX	EX	EX	EX	EX	EX	EX	EX	PR	D	V	V	2H:1V	N/A	V	V	V	F
	2	0.23	0.25	15.0	5	3	3	D	(O) 3	16	16	EX	EX	EX	EX	EX	EX	EX	EX	EX	PR	D	V	4	2H:1V	N/A	V	V	V	F
	3	0.25	0.50	EX	5	3	3	D	EX	EX	EX	EX	EX	EX	EX	EX	EX	EX	EX	EX	PR	D	V	V	2H:1V	N/A	V	V	V	F

UNIT / REGION:	NATIONAL FOREST:	DISTRICT:	CONTRACT NAME:	SHEET NAME:	SHEET NUMBER:
USDA - FOREST SERVICE - R6	OLYMPIC	PACIFIC	CARCASS TIMBER SALE	ROAD RECONSTRUCTION TYP.	18 OF 22

TURNOUT AND TURNAROUND SYMBOLS

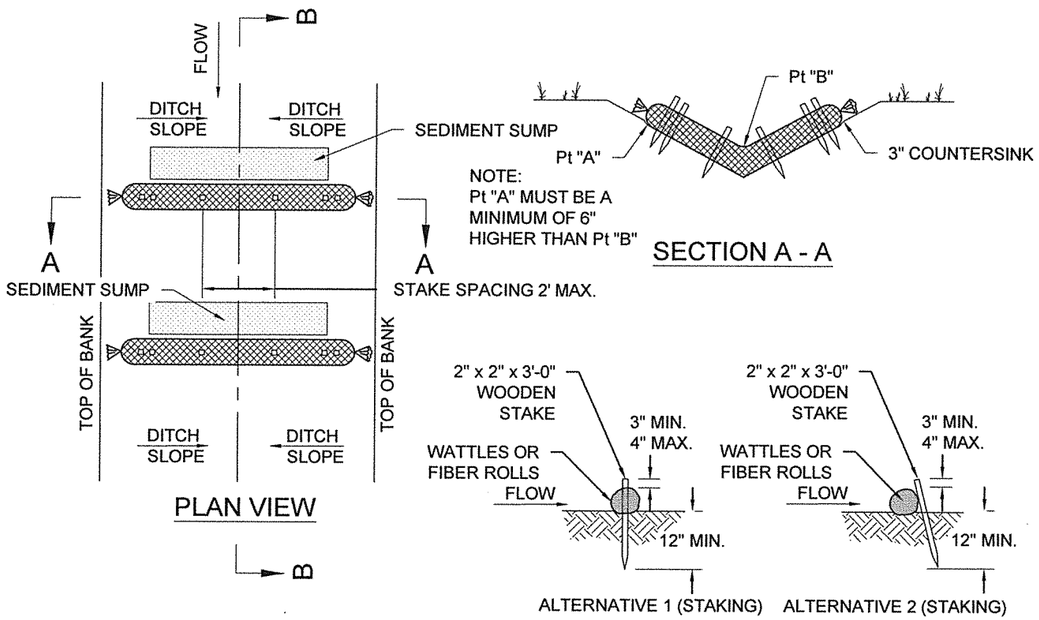
* ALL DRAWINGS NOT TO SCALE





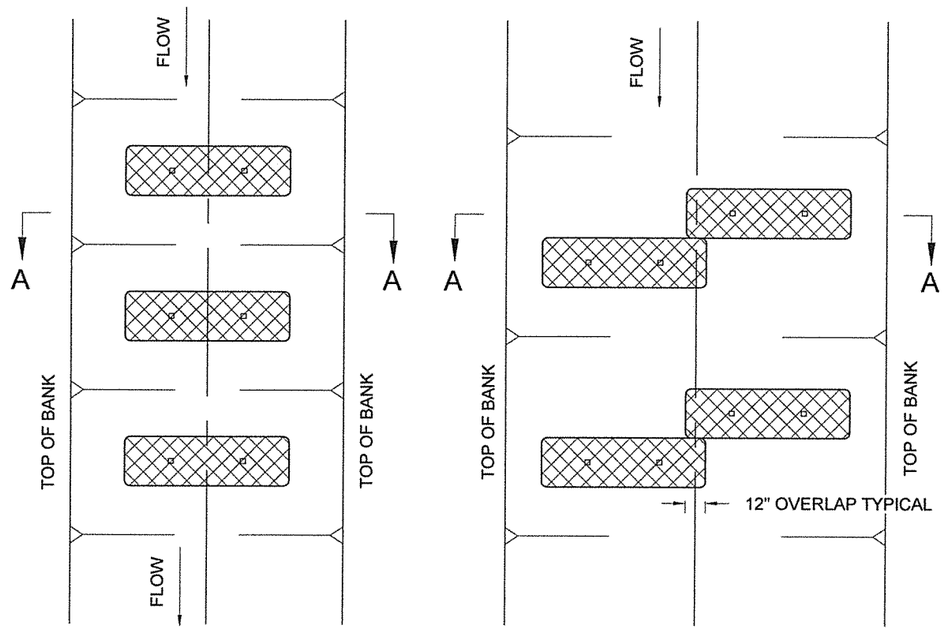
TAPER LENGTHS	
AGGREGATE DEPTHS	LENGTH OF TAPERS
3"	20'
4"	20'
5"	25'
6"	25'
7"	25'
8"	30'
9"	30'
10"	30'
11"	30'
12"	30'

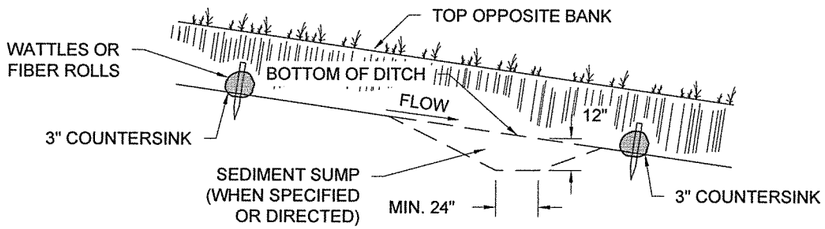
COMPOSITE FILTER SOCK CHECK DAM TYPICAL



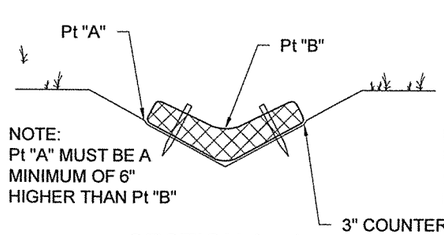
FIBER ROLL STAKING

BIOFILTER BAG CHECK DAM - TYPE 3

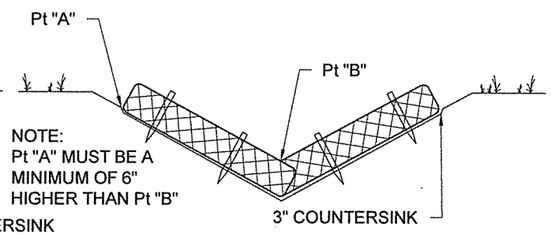




SECTION B - B



SECTION A - A

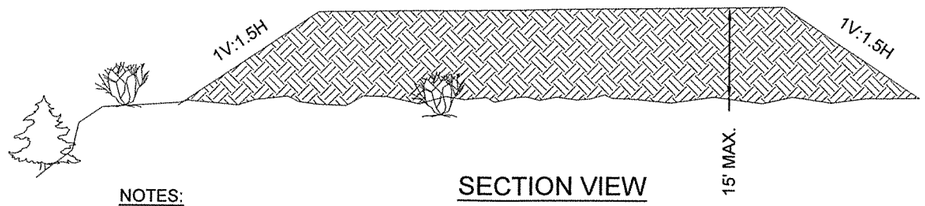


SECTION A - A

UNIT / REGION:	NATIONAL FOREST:	DISTRICT:	CONTRACT NAME:	SHEET NAME:	SHEET NUMBER:
USDA - FOREST SERVICE - R6	**OLYMPIC**	**PACIFIC**	**CARCASS TIMBER SALE**	**CHECK DAM TYPICALS**	**20 OF 22**

DISPOSAL AREA TYPICAL

OUTSLOPE - 5% MIN. AWAY FROM ROADWAY



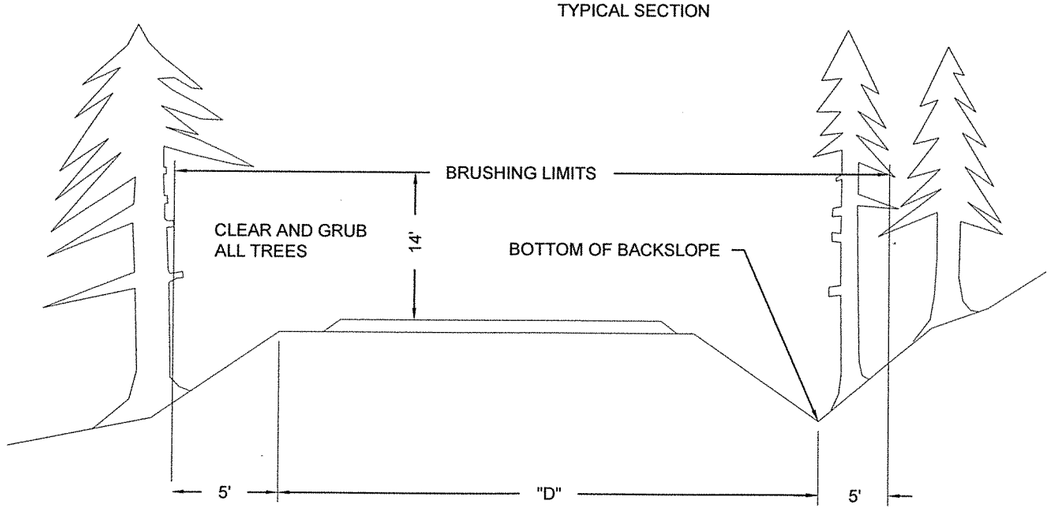
SECTION VIEW

NOTES:

1. SCATTER MULCH OVER MATERIAL AND ENSURE WATER WILL DRAIN AWAY.
2. DISPOSAL AREA LIMITS TO BE FLAGGED BY THE CO.
3. MAINTAIN MINIMUM 5' DISTANCE FROM DOWNHILL SLOPES ON ALL SIDES
4. DISPOSAL MATERIAL MAY ALSO BE PLACED AGAINST CUT BANKS AS APPROVED BY CO.

ROADSIDE BRUSHING DETAILS

TYPICAL SECTION



NOTES:

1. LEAVE TREES OVER 8 INCHES IN DIAMETER AS MEASURED AT 4½' ABOVE THE GROUND THAT ARE WITHIN THE BRUSHING LIMITS BUT NOT BEYOND THE BOTTOM OF DITCH AND NOT BEYOND HINGE POINT ON THE FILL SLOPE SIDE. LIMB TO 14 FEET ABOVE THE TRAVELED WAY SURFACE.
2. GRUB STUMPS WITHIN "D" ABOVE AND HAUL TO DESIGNATED DISPOSAL AREAS OR AS NOTED ON THE WORK DESCRIPTIONS.
3. CUT ALL VEGETATION TO A MAXIMUM HEIGHT OF 6 INCHES ABOVE THE GROUND SURFACE.
4. ROADS MECHANICALLY BRUSHED MAY REQUIRE MANUAL SCATTERING OF CUT MATERIAL BEYOND THE BRUSHING LIMITS.
5. ALL 23051 BRUSHING/CLEARING AND GRUBBING SHALL BE SCATTERED OFF OF THE FILLSLOPE ON FOREST SERVICE LANDS.

UNIT / REGION:	NATIONAL FOREST:	DISTRICT:	CONTRACT NAME:	SHEET NAME:	SHEET NUMBER:
USDA - FOREST SERVICE - R6	**OLYMPIC**	**PACIFIC**	**CARCASS TIMBER SALE**	**DISPOSAL AREA & BRUSHING TYPICAL**	**21 OF 22**

Refer To The Standard Specifications For Construction Of Roads And Bridges On Federal Highway Projects / FS-03 US Customary Units

EROSION CONTROL NOTES:

1) Should weather conditions during project operations generate and transport substantial sediment to the stream channel, cease operations until the weather conditions improve.

2) An erosion control plan shall be submitted by the Purchaser per Specification 15713. The erosion control plan shall include all necessary drawings and documentation to describe the Purchaser's ability to prevent sediment from reaching a live stream.

3) Item 62530, seed shall be applied prior to straw mulch. Seed will be furnished by the government and applied at a rate of 15 lbs/Acre. Mulching must also be certified weed free straw or mulch. Mulch at the rate of 4000 lbs per acre. Seed and mulch in accordance with Specification 625 all areas disturbed by construction activities.

4) Utilize rock found on site during excavation if it meets specification.

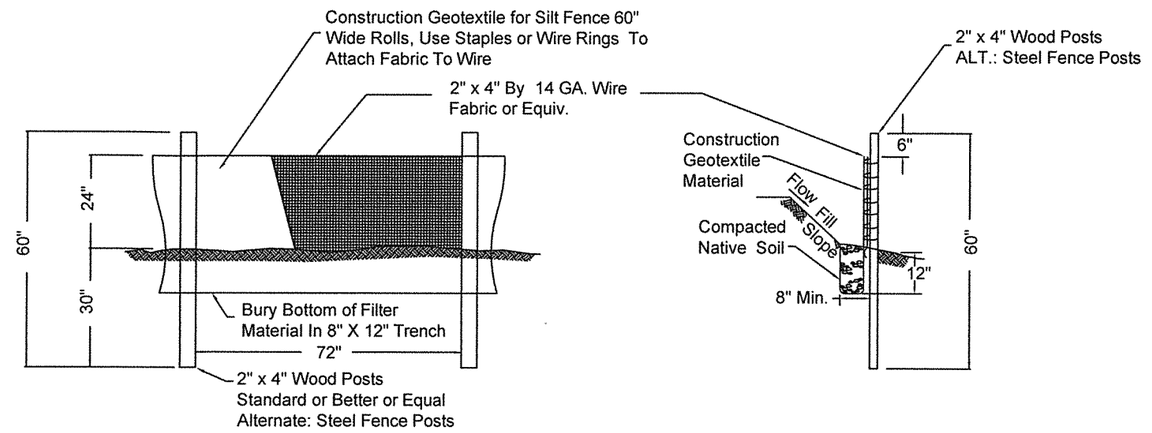
5) All excavated areas and disposal sites shall be sloped to drain, seeded and mulched.

6) Have a hazardous spill clean-up kit on site available during equipment operation.

7) Merchantable timber removed during approved roadway clearing operations shall be decked adjacent to roadway, decking areas shall be located by the CO. Utilizations standards are: all Douglas Fir, Hemlock, other coniferous species and Red Alder that are 12 feet long and a minimum 6 inch diameter inside the bark at the small end.

8) Clearing and Brushing - Trim tree branches that extent over the road surface and shoulders to attain a clear height of 15 feet from top of cut to toe of fill.

TEMPORARY EROSION CONTROL DETAILS



SILT FENCE STAKING DETAIL

NOT TO SCALE

NOTE:

1) Silt fence shall be installed at the locations where necessary to prevent silt runoff.

2) Minor grading may be utilized in lieu of silt fences at some locations to prevent silt runoff from leaving the project site. Work shall be an indirect cost to other items.

3) Silt fence joints shall be minimized. When neccessary, silt fence shall be spliced together only at a support post, with a minimum of 24" overlap.

4) Repair of damaged silt fence and removal of silts against fence shall be an indirect cost to soil erosion and pollution control.

5) Silt fence shall be installed concurrently with clearing and grubbing.

6) Work shall be done under dry conditions. A contingency plan will be submitted prior to beginning construction activities, along with an erosion control plan.

7) Contractor shall protect existing vegetation and shall confine excavation to within the clearing limits.

MATERIALS:

1) Construction geotextile for silt fence shall be Type V - C

PART I - SCHEDULE OF ITEMS

SECTION B – SERVICES AND PRICES

Carcass Timber Sale

Pacific Ranger District
Olympic National Forest
Jefferson County

National Forest Service Road 2140000 – 6.91 Mile

ITEM NUMBER	DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE	COST
15101	Mobilization	Lump Sum	All	$10,148.00	$10,148.00
15755	Soil erosion & pollution control	Each	18	$23.00	$414.00
15755A	Dewatering Structure	Each	8	$362.00	$2,896.00
20105	Clearing and grubbing, disposal of tops and limbs F, logs I, stumps F	Lump Sum	All	$936.00	$936.00
20253A	Removal of individual trees, miscellaneous; disposal of tops limbs F & logs I	Each	16	$77.00	$1,232.00
20253B	Removal of individual trees, miscellaneous; disposal of tops limbs F & logs I	Each	7	$39.00	$273.00
20301	Removal, down drain pipe	Each	1	$261.00	$261.00
20358	Removal of culverts, disposal method A	Each	7	$90.00	$630.00
20419A	Drainage excavation type ditch reconstruction	Foot	1136	$4.00	$4,544.00
20419B	Drainage excavation type lead off ditch	Foot	20	$7.00	$140.00
20457	Roadway excavation, compaction method B	Cubic Yard*	470	$10.00	$4,700.00
20477	Drainage excavation, type existing inlet	Lump Sum	All	$442.00	$442.00
20950	Pipe bedding	Cubic Yard*	30	$75.00	$2,250.00
21201	Linear grading	Mile	0.04	$19,180.00	$767.20
23051	Roadside brushing, disposal method F	Mile	6.91	$780.00	$5,389.80
25101	Placed riprap, class 3 (Commercial Source)	Cubic Yard*	4	$86.00	$344.00
30359	Roadway reconditioning, compaction B	Mile	6.91	$1,400.00	$9,674.00
32211	Aggregate surface course grading D, compaction method B (Commercial Source)	Cubic Yard*	598	$67.00	$40,066.00
32222	Pit run maximum size 4-in, compaction method B (Commercial Source)	Cubic Yard*	85	$51.00	$4,335.00
60276B	24 -inch aluminized corrugated steel pipe, 0.109-inch thickness, method B	Foot	58	$57.00	$3,306.00
60276B	36 -inch aluminized corrugated steel pipe, 0.138-inch thickness, method B"	Foot	64	$57.00	$3,648.00
60278A	18-inch corrugated polyethylene pipe, type S, method B	Foot	98	$19.00	$1,862.00
60278B	24-inch corrugated polyethylene pipe, type S, method B	Foot	166	$33.00	$5,478.00
60278C	30-inch corrugated polyethylene pipe, type S, method B	Foot	38	$42.00	$1,596.00
60655A	24-in full circle aluminized steel outlet pipe	Foot	80	$47.00	$3,760.00
60655B	36-in full circle aluminized steel outlet pipe	Foot	80	$60.11	$4809.00
60708	Cleaning culverts in place	Each	5	$60.00	$300.00
60710	Reconditioning drainage structures, down grade pipe	Each	3	$42.00	$126.00
63307	Delineators, type 2 Carsonite	Each	3	$85.00	$255.00
63501	Temporary traffic control	Lump Sum	All	$400.00	$400.00

Total: $114,982.00

*Denotes Contract Quantity
Payment will be made on actual work performed as described in FP-03 109.01 unless otherwise noted.

PART I - SCHEDULE OF ITEMS

SECTION B –SERVICES AND

PRICES

Carcass Timber Sale

Pacific Ranger District
Olympic National Forest
Jefferson County

National Forest Service Road 2140090 – 0.50 Miles

ITEM NUMBER	DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE	COST
15101	Mobilization	Lump Sum	All	$2,896.00	$2,896.00
15755	Erosion control & pollution prevention	Each	6	$29.00	$174.00
20105	Clearing and grubbing, disposal of tops and limbs F, logs I, stumps F	Lump Sum	All	$922.00	$922.00
20427	Earth berm	Each	1	$530.00	$530.00
20453A	Roadway excavation, compaction method B	Each	7	$313.00	$2191.00
20453B	Excavation, compaction method B	Each	5	$403.00	$2,015.00
20457	Roadway excavation, compaction method B	Cubic Yard*	207	$11.30	$2,339.00
20950	Pipe bedding	Cubic Yard*	15	$75.00	$1,125.00
21201	Linear grading	Mile	0.02	$32,000.00	$640.00
23051	Roadside brushing, disposal method F	Mile	0.50	$3,180.00	$1,590.00
30359	Roadway reconditioning, compaction B	Mile	0.50	$4,710.00	$2,355.00
32211	Aggregate surface course grading D, compaction method B (Commercial Source)	Cubic Yard*	174	$67.00	$11,658.00
32222	Pit run maximum size 4-in, compaction method B (Commercial Source)	Cubic Yard*	17	$51.00	$867.00
60278A	18-inch corrugated polyethylene pipe, type S, method B	Foot	212	$20.00	$4,240.00
63501	Temporary Traffic Control	Lump Sum	All	$400.00	$400.00

Total: $33,942.00

* Denotes contract quantity
Payment will be made on actual work performed as described in FP-03 109.01 unless otherwise noted.

Standard and Supplemental Specification List for Carcass Timber Sale Specified Roads

Road Number			2140000	2140090
Termini (Miles)			6.91	0.50
Construction				
Reconstruction			X	X
Standard Specifications	**Date**	**Title**	**Specifications not included in the specification listing, but referenced by listed**	
101-109	2003			
151	2006	Mobilization	X	X
153	2003	Contractor Quality Control	X	X
156	2003	Public Traffic	X	X
157	2003	Soil Erosion Control	X	X
201	2003	Clearing and Grubbing	X	X
202	2003	Additional Clearing and Grubbing	X	X
203	2003	Removal of Structures and Obstructions	X	X
209	2003	Structural Ecavation and Backfill	X	X
251	2003	Riprap	X	X
303	2003	Road Reconditioning	X	X
602	2003	Culverts and Drains	X	X
606	2003	Corrugated Metal Spillways	X	
625	2003	Turf Establishment	X	X
633	2003	Permanent Traffic Control	X	
703	2003	Aggregate	X	X
704	2003	Soil	X	X
Supplemental Specifications	**Date**	**Title**		
Preface	03/15/04	Preface	X	X
101.01	01/22/09	Meaning of Terms	X	X
101.03	06/16/06	Abbreviations	X	X
101.04	03/29/07	Definitions	X	X
101.04	11/06/07	Definitions	X	X
102.00	02/16/05	Bid, Award, and Execution of Contract	X	X
103.00	02/16/05	Deletions	X	X
104.00	06/16/06	Deletions	X	X
104.03	01/22/09	Specifications and Drawings	X	X
104.06	02/17/05	Use of Roads by Contractor	X	X
104.07	02/17/05	Other Contracts	X	X
105.02	01/18/07	Material Sources	X	X
105.02	03/08/07	Contractor Provided Material Sources	X	X
105.05	05/12/04	Use of Material Found in the Work	X	X
106.01	07/31/07	Conformity with Contract Requirements	X	X
106.07	05/11/04	Delete	X	X
107.02	02/17/05	Protection and Restoration of Property and Landscape	X	X
107.05	05/11/04	Responsibility for Damage Claims	X	X
107.06	06/16/06	Contractor's Responsibility for Work	X	X
107.08	03/29/05	Sanitation, Health, and Safety	X	X
107.09	06/16/06	Legal Relationship of the Parties	X	X
107.10	06/16/06	Environmental Protection	X	X
108.00	02/16/05	Delete	X	X
109.00	02/17/05	Deletions	X	X
109.02	06/16/06	Measurement Terms and Definitions	X	X

Standard and Supplemental Specification List for Carcass Timber Sale Specified Roads

Road Number			2140000	2140090
Termini (Miles)			6.91	0.50
Construction				
Reconstruction			X	X
Supplemental Specifications	**Date**	**Title**		
152.00	08/05/05	Construction Survey and Staking	X	X
153.04	10/24/07	Records	X	X
155.00	05/11/05	Delete	X	X
156.00	04/17/07	Public Traffic	X	X
157.03	02/24/05	General	X	X
170.00	03/26/07	Develop Water Supply and Watering	X	X
201.01	02/18/05	Description	X	X
201.02	08/05/09	Material	X	X
201.04	03/03/05	Clearing	X	X
201.04	02/18/05	Clearing	X	X
201.04	02/22/05	Clearing	X	X
201.06	02/18/05	Disposal	X	X
201.06	11/04/04	Disposal	X	X
201.06	02/12/10	Disposal	X	X
202.04	08/01/05	Selective Clearing	X	X
202.09	02/22/05	Measurement	X	X
203.01	02/25/05	Description	X	X
203.04	02/18/05	Removing Material	X	X
203.05	3/262005	Disposing of Material	X	X
204.00	03/26/09	Excavation and Embankment	X	X
209.00	10/11/06	Dewatering	X	
212.00	02/13/08	Linear grading	X	X
230.00	08/04/05	Roadside Brushing	X	X
251.03	08/05/09	Construction Requirements	X	
303.01	03/02/05	Road Reconditioning	X	X
303.05	08/21/08	Roadbed Requirements	X	X
303.10	03/26/07	Measurement	X	X
322.00	10/14/11	Minor Aggregate Courses	X	X
602.03	09/06/05	General	X	X
602.03	10/02/08	General	X	X
602.03	03/17/10	General	X	X
602.06	08/05/09	Laying Plastic Pipe	X	X
607.04	05/01/13	Cleaning Culverts in Place	X	
625.08	01/29/09	Mulching	X	X
633.03	03/03/05	General	X	
635.03	05/13/09	General	X	X
703.05	08/14/09	Subbase, Base, Surface Course and Screened Aggregates	X	X
704.02	03/02/05	Bedding Material	X	X
718.00	08/05/09	Traffic Signing and Marking Material		

Carcass Timber Sale Specified Roads FSSS

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

101.01_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.

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.

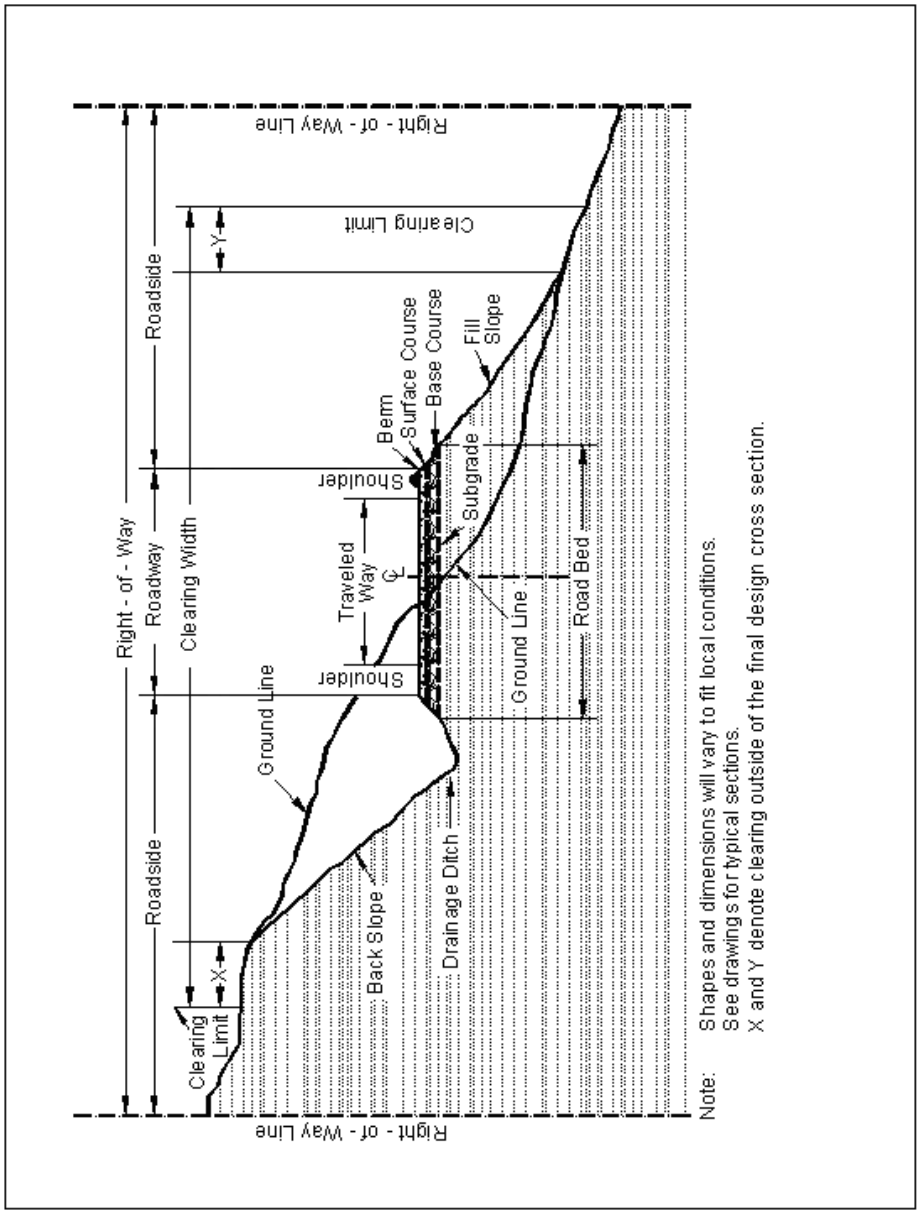
Road Order--An order affecting and controlling traffic on roads under Forest Service jurisdiction. Road Orders are issued by a designated Forest Officer under the authorities of 36 CFR, part 260.

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.



101.04_nat_us_11_06_2007

101.04 Definitions.

Delete the following definitions:

Contract Modification

Day

Notice to Proceed

Solicitation

102.00_nat_us_02_16_2005

102 Bid, Award, and Execution of Contract

Delete Section 102 in its entirety.

103 - Scope of Work

103.00_nat_us_02_16_2005

Deletions

Delete all but subsection 103.01 Intent of Contract.

104 - Control of Work

104.00_nat_us_06_16_2006

Deletions

Delete Sections 104.01, 104.02, and 104.04.

104.03_nat_us_01_22_2009

104.03 Specifications and Drawings.

Delete 104.03.

104.06_nat_us_02_17_2005

Add the following subsection:

104.06 Use of Roads by Contractor

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

104.07_nat_us_02_17_2005

Add Subsection.

104.07 Other Contracts.

The Forest Service is administering multiple timber sale contracts using NFSRs 16 and 1610 beyond mile post 7.23 (adjacent to this contract).

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:

A Forest Service weed specialist will inspect proposed sources to determine weed-free status. Provide the Contracting Officer written notification of proposed material sources 10 days prior to use. Written approval of the specific source will be provided to the contractor. If weed species are present in the proposed source, appropriate mitigation measures may allow conditional use of the source as required by the Contracting Officer.

105.05_nat_us_05_12_2004

105.05 Use of Material Found in the Work.

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

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

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.

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

106.07_nat_us_05_11_2004

106.07 Delete

Delete subsection 106.07.

107 - Legal Relations and Responsibility to the Public

107.02_nat_us_02_17_2005

107.02 Protection and Restoration of Property and Landscape.

Add the following:

a. No water shall be withdrawn from any occupied Listed Fish Habitat (LFH) stream except in an emergency (e.g., wild fire) situation.
b. The Purchaser shall limit water withdrawals for road maintenance or other purposes in LFH and within 1,500 feet of LFH to 10 percent or less of stream flow at the point of withdrawal (visually estimated).
c. The Purchaser shall limit water withdrawals for road maintenance or other purposes in non-LFH streams greater than 1,500 feet from LFH limit withdrawal by 50 percent or less of the stream flow (visually estimated).
d. Regardless of water withdrawal location, use of screen material with either of the following maximum openings is required: 1.75 mm opening for woven wire or 3/32 inch opening for perforated plate.

107.05_nat_us_05_11_2004

107.05 Responsibility for Damage Claims.

Delete the entire subsection.

107.06_nat_us_06_16_2006

107.06 Contractor's Responsibility for Work.

Delete the following from the first paragraph.

"except as provided in Subsection 106.07".

107.08_nat_us_03_29_2005

107.08 Sanitation, Health, and Safety

Delete the entire subsection.

107.09_nat_us_06_16_2006

107.09 Legal Relationship of the Parties.

Delete the entire subsection.

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.

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 that 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]

a. Accuracy of offset measurement.

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

c. Use greater value.

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 10 minutes at any one time followed by an open period of no less than 30 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:

Furnish and install traffic control devices before the start of construction operations.

(a) All detours outside of clearing limits will be approved in writing by the Contracting Officer as part of the traffic control plan.
(b) Install only those traffic control devices needed for each stage or phase.
(c) Relocate temporary traffic control devices as necessary.
(d) Remove devices that no longer apply to the existing conditions.
(e) Immediately replace any device that is lost, stolen, destroyed, or inoperative.
(f) Keep temporary traffic control devices clean.
(g) Remove all temporary traffic control devices upon contract completion or when approved.
(h) 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
2140000*	0.00	6.91	5	2
2140090*				

*Road to be closed during reconstruction operations.

Road to remain open and safe to pass public traffic on all weekends and Federal Holidays.

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.

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

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

170.07 Measure the Section 170 items listed in the bid schedule according to Subsection 109.02.

Payment

170.08 The accepted quantities will be paid at the contract price per unit of measurement for the Section 170 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

201 - Clearing and Grubbing

201.01_nat_us_02_18_2005

201.01 Description

Replace with the following

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

201.00_nat_us_08_05_2009

201.02 Material:

Delete Tree wound dressing material reference.

201.03 General.

Delete the last sentence.

201.04 Clearing.

Delete the last sentence of (d).

201.04_nat_us_03_03_2005

Construction Requirements

201.04 Clearing.

Add the following:

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

Minimum Utilization Standards

Length	Diameter (Inside Bark) at Small End	40 % Net Scale in % for Saw Timber.
8 feet	6 inches	

201.04_nat_us_02_18_2005

201.04 Clearing.

Add the following:

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

201.04_nat_us_02_22_2005

201.04 Clearing. (c)

Delete paragraph (c) and replace with the following:

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

201.04 Clearing.

Delete subsection (d) and replace with the following:

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

Add the following:

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

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

201.06_nat_us_02_18_2005

201.06 Disposal.

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

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

201.06_nat_us_11_04_2004

201.06 Disposal.

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

Merchantable timber removed from Forest Service land is subject to the Forest Resources Conservation and Shortage Relief Act of 1990 (PL 101-382; 104 Stat. 714-726; 16 USC 620 et. seq.). Do not export timber from the United States or use in direct or indirect substitution for unprocessed timber exported from the United States, from private lands by Purchaser, or any person as defined in Section 493 (16 USC 620e) of the Act.

Unless Forest Service determines that circumstances warrant a written waiver or adjustment, (1) hammer brand all products on both ends with an assigned contract brand before removal from the project site, (2) hammer brand each product exempt from domestic processing on both ends with an exempt brand registered for use on exempt logs from National Forest, and (3) paint all domestic processing products on both ends with 2 inch circle of yellow paint according to Interim Specification 2400-400 (available upon request). Paint or brand products before removing them from project site unless approved by the CO. Brands and yellow paint must remain on logs until they are processed.

Contractor may remanufacture logs into different log lengths as approved. Repaint or rebrand all remanufactured pieces. Pay all surveillance costs except that Forest Service may waive such payment if such costs are minor and part of normal remanufacturing operations.

201.06_0203_us_02_12_2010

201.06 Disposal.

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

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

Unless otherwise agreed to in writing, all merchantable timber cleared under the requirements of this section shall be removed prior to final acceptance.

Merchantable timber on private land within the clearing limits belongs to the landowner. Deck merchantable timber according to 201.04(f) on the landowner's property adjacent to the road in approved locations.

202 - Additional Clearing and Grubbing

202.04_1005_us_08_01_2005

202.04 Selective Clearing.

Add the following:

Dead trees over 6 inches in diameter measured at 12 inches above the ground that lean toward the road and are tall enough to reach the roadbed are designated for cutting.

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

202.09_0503_us_02_22_2005

202.09 Measurement.

Delete the second paragraph of this subsection and substitute the following:

Individual removal of trees is the number of trees of the various size designations removed. Measure tree diameters at a height of 12 inches above ground. Do not count trees less than 6 inches in diameter. Size designations are shown in Table 202-1.

Table 202-1. - Size designations for trees removed.

Pay Item Designation	Size of Least Diameter at Height of 12 inches	
	Greater Than	**Less Than**
Small	6 inches	24 inches
Medium	24 inches	40 inches
Large	40 inches	-

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_03_26_2007

203.04 Removing Material.

Replace the fourth and fifth paragraphs with the following:

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

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

203.05_0618_us_03_26_2007

203.05 Disposing of Material

(a) Remove from project.

Delete the last two sentences

203.05_0618_us_03_26_2007

203.05 Disposing of Material.

Add the following:

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

(f(1)) Scattering method outside clearing limits. Scatter construction slash outside the clearing limits without damaging trees. Limb all logs. Place logs and stumps away from trees, positioned so they will not roll, and are not on top of one another. Limb and scatter other construction slash to reduce slash concentrations.

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

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

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

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

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

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

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

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

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

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

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) <u>Compaction A.</u> 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 6feet 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 though M roads.

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

(b) Stepped slopes. Where required by the contract, construct steps on slopes of 1⅓V: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.

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.

209.07 Dewatering

Delete the subsection and add the following:

Submit a Dewatering Plan 5 days prior to beginning excavation.

Construct diversion prior to performing any excavation. Construct diversions using water tight, non-eroding methods. Employ settling basins or other methods so that muddy water is not returned to stream. Install, operate, and remove diversions in a manner that minimizes erosion and sedimentation.

209.10 Backfill.

(a) General.

Add the following:

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

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

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

(b) Pipe Culverts.

(1) Pipe culverts with compacted backfill.

Add the following:

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

209.11 Compacting.

Delete the subsection and add the following:

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

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

Method B. Adjust the moisture content of the backfill material to a moisture content suitable for compaction. Compact each layer 6 inch layer with a minimum of three complete passes or until visual displacement ceases using a mechanical tamper, (wacker-packer type or approved equal). For compaction under sections 252, 254, 255, 257, 258 and 262 compact with a vibratory steel wheeled roller with a mass of at least 8 tons.

Method C. Compact each layer of backfill with a minimum of two passes with mechanical tamper, (wacker-packer type, or approved equal).

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

212 - Linear Grading

212.00_10_us_02_13_2008

Linear Grading

Delete the entire specification and replace it with the following:

Description

212.01 This work consists of reference staking drainage structures and control points, marking clearing limits outside units**,** clearing and grubbing, slash treatment, excavation and embankment, including haul and end haul**,** erosion control, material source development, turf establishment, to construct roadways and associated features within the specified alignment and grade tolerances**.**

Stake according to sections 152 and FSS 152.

Develop material sources according to section(s) 105, FSS 651, and the approved plan of operations for Pit Development.

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. Do not damage vegetation not designated for treatment.

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 stumps outside grubbing limits with 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 ____40___ 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

12 feet in Length

6 inches in Diameter (Inside Bark) at Small End

40% Net Scale of Gross Scale for Sawtimber (Timber Sale Contract, A2, page 2)

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

201.06 Disposal.

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

Unmerchantable Timber and Large Construction Slash

203.05 Disposing of Material.

(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.

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

212.04 Grubbing. Within the **roadway** limits remove stumps with less than **12** inches of cover.

212.05 Roadway Excavation & Embankment. Construct the roadbeds according to the applicable requirements of Section 204 except as modified herein. Construct the roadway to the required template. Protect backslopes from being undercut. Deposit material inside the roadbed limits or designated locations. Do not restrict drainage.

Blast rock according to Section 205 and FSS 205.06 and 205.08 Rock Blasting.

Areas requiring end haul and end haul disposal areas will be identified on ground and approved in advance and will be done according to FSS R10 204.14.

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. Maximum particle cannot exceed half the depth of embankment layer**.**

Place material by side casting and end dumping to a minimum depth needed for operation of spreading and hauling equipment and minimum depths as shown on typical cross- sections. Minimum embankment depth in areas where prepared ground surfaces are solid rock is 12 inches. Construct solid embankments with adequate compaction by working smaller rock and fines in with larger rocks to fill the voids.

Produce and use borrow material from **approved sources**, and remove and treat unsuitable or excess material.

Operate loaded hauling and spreading equipment uniformly over full width of each layer.

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 20 feet slope distance left or right of the planned centerline. Proposed realignments greater than 20' slope distance must be approved in writing prior to start of construction. Do not construct curves with radii less than 80 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 criteria.

212.06 Drainage. Install culverts and other drainage structures according to Section 602, 571**,** 572 and Section 209.

212.07 Erosion Control. Install erosion control measures and seeding according to the drawings and Sections 157 and 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.

230 - Roadside Brushing

230.00_0114_us_08_04_2005

Description

230.01 Work. This work consists of removing all vegetative material including limbs, residual slash, live roadside brush, and small trees within the brushing limits designated on the plans.

Construction

230.02 Brushing. Cut all brush and small trees (6 inches diameter, or less, at the point of cut) inside the brushing limits and outside the roadbed no higher than 4 inches above ground level (6 inches for machine brushing). If rocks or other obstructions are encountered, cut no higher than 6 inches above the obstruction. Limb live trees with a diameter larger than 6 inches to provide a clear height of 14 feet above the road surface.

Cut all brush and trees located on the roadbed as nearly flush to the road surface as possible so stumps will not become a hazard to vehicle tires.

230.03 Windfalls. Limb windfalls lying within or across the brushing limits, cut off at the top of the existing cut slope or 5 feet from the shoulder on the fill slope. Dispose of windfall material as slash.

230.04 Road Junctions. Do not deposit brushing debris on the roadway of adjoining roads.

230.05 Slash Treatment. Scatter slash outside the brushing limits without damaging residual trees. Slash is defined as any material that has a length greater than 36 inches or a diameter greater than 2 inches at any point. Do not deposit material in streams, streambeds, culvert inlets or outlets, drainage ways, or cattle guards.

230.06 Acceptance. Roadside brushing will be evaluated under Subsection 106.02.

Measurement

230.07 Method. Measure the Section 230 items listed in the bid schedule according to Subsection 109.02 and the following.

Linear measurements will be horizontal along the road centerline.

Quantities will be the number of miles (or stations) and fractions thereof along the road centerline.

Payment

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

251 - Riprap

251.03_nat_us_08_05_2009

Construction Requirements

251.03 General.

Add the following:

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

251.08 Measurement.

Add the following:

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

303 - Road Reconditioning

303.01_nat_us_03_02_2005

303.01 Work.

Delete and add the following:

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

303 - Road Reconditioning

303.05_06_us_08_21_2008

Replace with the following:

303.05 Roadbed Reconditioning. Repair soft and unstable areas according to Subsection 204.07. Remove all organic and deleterious material larger than 4 inches from the scarification depth specified. Dispose of waste according to Subsection 204.14. Scarify to the width and depth shown on the drawings, remove surface irregularities, and shape to provide a uniform surface. Finish earth surfaces to within 0.2 feet and rock surfaces to within 0.10 feet of the required line, cross-section, and grade.

Dispose of rock larger than 4 inches brought to the surface during scarification in areas designated on the plans.

For portions of roads not requiring scarification, the roadbed may contain rocks larger than 4 inches provided they do not extend above the finished roadbed surface. Reduce in place or remove rock extending above the finished roadbed surface. Dispose of removed rock in areas designated on the plans.

303.11_nat_us_03_29_2005

303.10 Measurement

Modify the second paragraph as follows:

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

322 - Minor Aggregate Courses

322.00_nat_us_10_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 ½ inch.

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

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

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

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

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

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

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

Measurement

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

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

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

Measure thickness perpendicular to the grade of the travelway.

Measure width perpendicular to the centerline.

Payment

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

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

(1) Minimum of 5 points per proctor.

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

602 - Culverts and Drains

602.03_nat_us_09_06_2005

602.03 General.

Add the following:

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

602.03_nat_us_10_02_2008

602.03 General.

Delete second paragraph and add the following:

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

602.03_06_us_03_17_2010

602.03 General

Add the following:

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

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.

607 - Cleaning, Reconditioning, and Repairing Existing Drainage Structures

607.04_nat_us_05_01_2013

607.04 Cleaning Culverts in Place.

Add the following:

If approved by the CO, all or part of the pipe designated to be cleaned in-place may be removed, cleaned, and re-laid in accordance with Section 602. In these cases, furnish all material required to replace damaged pipe and joints and relay the pipe.

625 - Turf Establishment

625.08_06_us_08_20_2009

625.08 (a) Dry Method

Delete this subsection and replace with the following:

Spread all mulch material, except wood and grass cellulose fibers and wood strand, by a mulch spreader utilizing forced air to blow the mulch material onto the seeded area. Apply straw mulch at a rate of 3200 pounds per acre. Anchor the mulch material, except wood strand and straw, with an approved stabilizing emulsion tackifier or approved mechanical method. Do not mark or deface structures, pavements, utilities, or plant growth with tackifier.

633 - Permanent Traffic Control

633.02_nat_us_03_03_2005

633.02 Material.

Add the following subsections

Protective Overlay Film	718.02
Edge Film	718.02

633.03_nat_us_03_03_2005

633.03 General.

Delete the subsection and add the following:

Furnish traffic control devices and guide signs according to the MUTCD, approved USDA-FS and state supplements, the current edition of USDA-FS EM-7100-15 Sign and Poster Guidelines for the Forest Service, and Standard Highway Signs published by FHWA. Submit the sign list for approval before ordering.

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.

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

Sieve Size	Percent by Mass Passing Designated Sieve (AASHTO T 27 and T 11)				
	Grading Designation				
	A (Subbase)	B (Subbase)	C (Base)	D (Base)	E (Base)
2½ inch	100				
2 inch	97 – 100	100	100		
1½ inch		97 – 100			
1 inch	65 – 79 (6)		80 – 100 (6)	100	
3/4 inch			64 – 94 (6)	86 – 100 (6)	100
1/2 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

Sieve Size	Percent by Mass Passing Designated Sieve (AASHTO T 27 and T 11)					
	Grading Designation					
	F	G	H	S	T	U
1 1/2 inch	100			100		
1 inch	97-100	100		72 – 92 (6)	100	
3/4 inch	76-89 (6)	97 - 100	97 - 100			100
1/2 inch					71 – 91 (6)	
3/8 inch	56-68 (6)	70 – 80 (6)	80 – 92 (6)	51 – 71 (6)		71 – 90 (6)
No. 4	43-53 (7)	51 – 63 (7)	58 – 70 (7)	36 – 53 (7)	43 – 60 (7)	50 – 68 (7)
No. 8				26 – 40 (6)	30 – 46 (6)	34 – 51 (6)
No. 16	23-32 (6)	28 – 39 (6)	28 – 40 (6)			
No. 40	15-23 (5)	19 – 27 (5)	16 – 26 (5)	14 – 25 (5)	16 – 28 (5)	19 – 30 (5)
No. 200	10.0-16.0 (4)	10.0 – 16.0 (4)	9.0 – 14.0 (4)	8.0 – 15.0 (4)	8.0 – 15.0 (4)	8.0 – 15.0 (4)

( ) The value in the parentheses is the allowable deviation (±) 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	