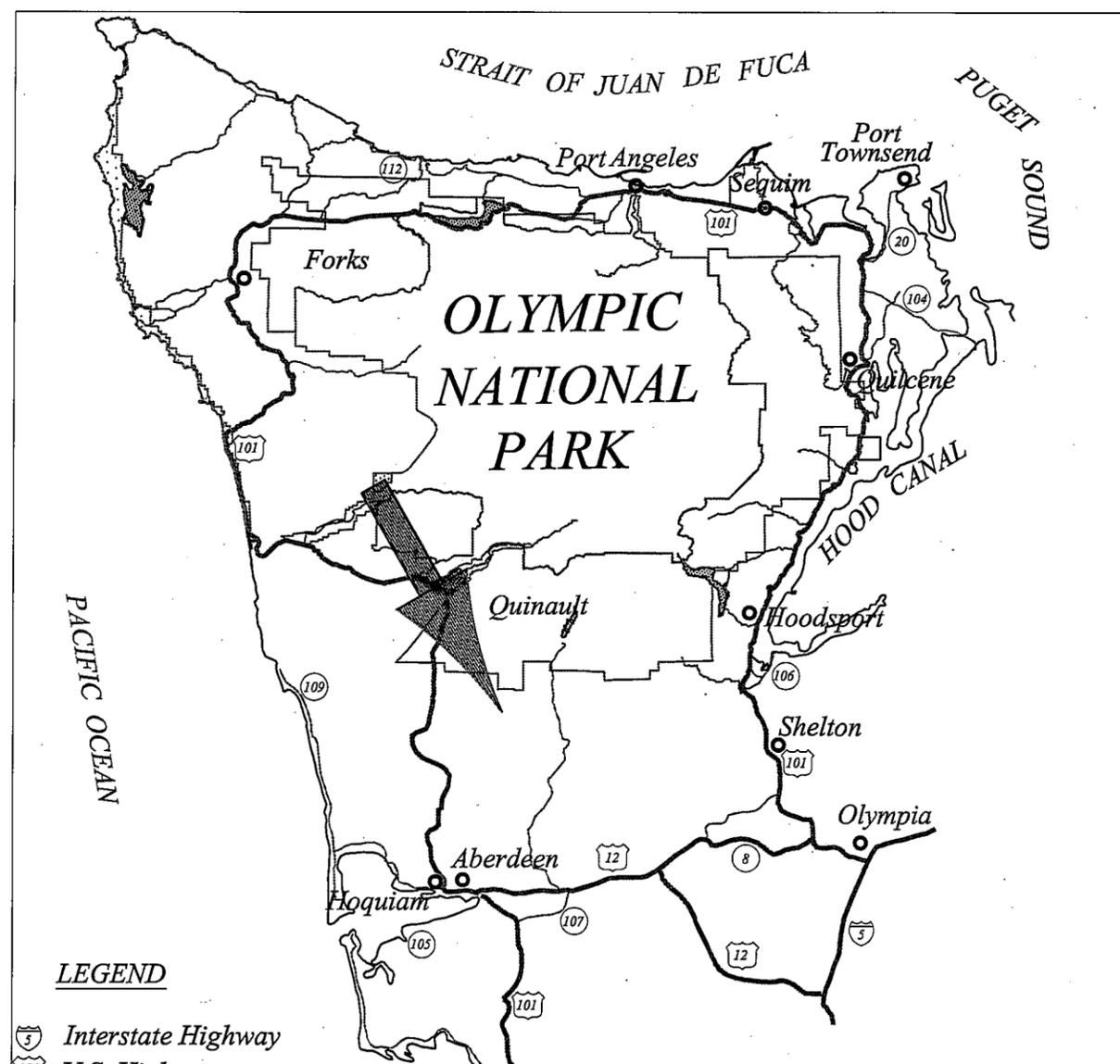


**USDA-Forest Service Region 6  
Olympic National Forest  
RECONSTRUCTION PLANS FOR:  
CHESTER TIMBER SALE**

**INDEX TO SHEETS**

Road List			
Road No.	M.P.	Type of work	Units
2204070	0.00 - 2.68	Road Reconstruction	US Customary
2204072	0.00 - 0.95	Road Reconstruction	US Customary
2204076	0.00 - 0.23	Road Reconstruction	US Customary
2280050	0.00 - 0.27	Road Reconstruction	US Customary
2280070	0.00 - 0.57	Road Reconstruction	US Customary

SHEET NO.	SHEET TITLE
1 Of 21	Title Sheet
2 Of 21	Vicinity Map & Traffic Control Plan
3 Of 21	Estimate of Quantities FSR 2204070
4 Of 21	Estimate of Quantities FSR 2204072
5 Of 21	Estimate of Quantities FSR 2280050, 2280070, & 2204076
6 Of 21	Drainage Listing
7 Of 21	Culvert Construction Details
8 Of 21	General Notes & Temporary Erosion Control Details
9 Of 21	Typical Dewatering & Sediment Control Plan
10 Of 21	Road Reconstruction Details
11 Of 21	Armored Grade Dip, Rubber Razor Bar & Check Dam Details
12 Of 21	FSR 2204070 Sta. 41+50 Site Plan & Profile
13 Of 21	FSR 2204070 Sta. 41+50 Pipe Cross Section Riprap Detail
14 Of 21	Work List FSR 2280050 & 2280070
15 Of 21	Work List FSR 2204076
16 Of 21	Work List FSR 2204072 - 1 of 2
17 Of 21	Work List FSR 2204072 - 2 of 2
18 Of 21	Work List FSR 2204070 - 1 of 4
19 Of 21	Work List FSR 2204070 - 2 of 4
20 Of 21	Work List FSR 2204070 - 3 of 4
21 Of 21	Work List FSR 2204070 - 4 of 4

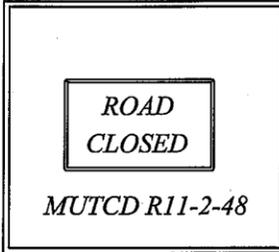
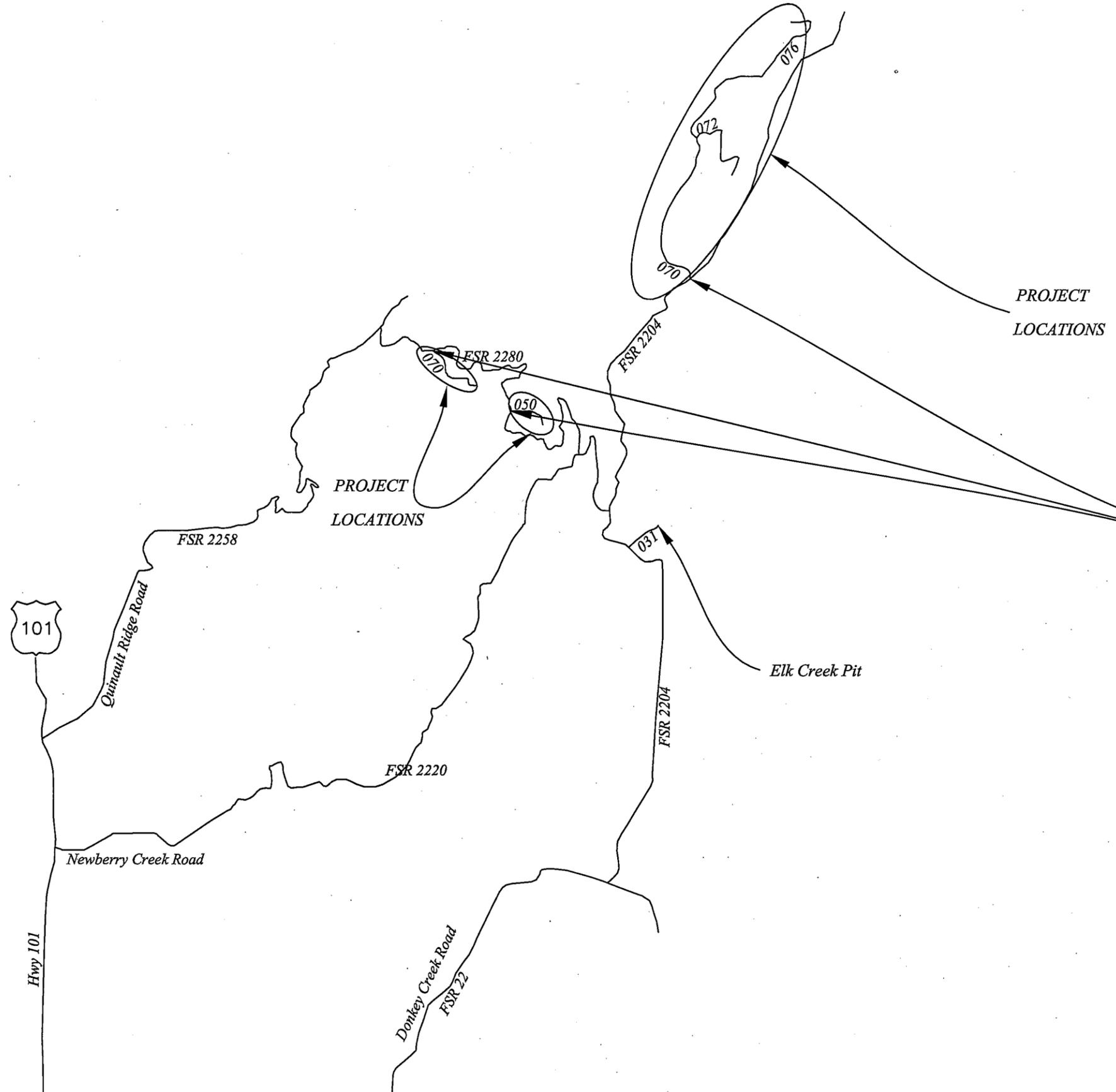


DESIGNED BY:  
*[Signature]* EIT 06/25/13  
 NAME TITLE DATE

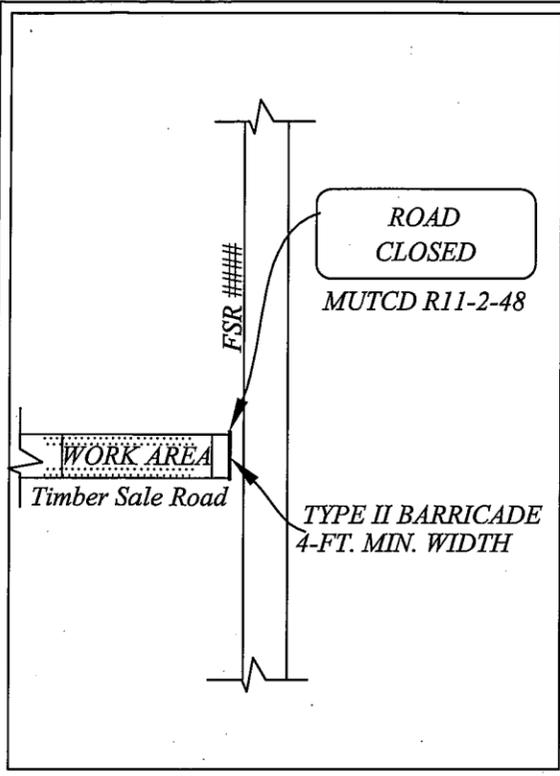
RECOMMENDED BY:  
*[Signature]* 6/28/13  
 NAME TITLE DATE

APPROVED FOR TECHNICAL ADEQUACY:  
*[Signature]* 6/28/13  
 NAME TITLE DATE

APPROVED BY:  
*[Signature]*  
 NAME TITLE DATE 7/2/13



**NOTE:**  
Signs, locations, and installation details per MUTCD (2009 Edition)



**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, 6B-1, and 6B-2 of the 2009 Edition.
- 4) Post and maintain R11-2-48 sign on road 2280050, 2280070, & 2204070 at the beginning of the project.



Unit / Region :  
**USDA - Forest Service - R6**

National Forest :  
**Olympic**

District :  
**Pacific**

Project Name :  
**Chester Timber Sale Road Reconstruction**

Sheet Name :  
**Vicinity Map & Traffic Control Plan**

Sheet Number :  
**2 Of 21**

<b><i>ESTIMATE of QUANTITIES</i></b>				<i>Refer to the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects / FP-03 US Customary Units</i>
<i>Project Name: Chester Timber Sale. FSR 2204070</i>		<i>MP-BOP</i>	<i>0.00</i>	
		<i>MP-EOP</i>	<i>2.68</i>	
<i>Item No.</i>	<i>Description</i>	<i>Pay Unit</i>	<i>Quantities</i>	<i>Remarks</i>
15101	Mobilization	Lump Sum	1	Includes all work needed to access sites. Cleaning of all equipment is required prior to entering National Forest Land.
15201	Construction Survey and Staking, Method I, Tolerance B	Lump Sum	1	Survey staking for washout site @ Sta. 41+50
15401	Contractor Testing	Lump Sum	1	Testing required on all pipe installations.
15708	Check Dams	Each	17	See dwg for details
15713	Soil Erosion & Pollution Control	Lump Sum	1	Maintenance for erosion control devices is an indirect cost to this pay item.
20105	Clearing & Grubbing, Disposal of Tops & Limbs F, Logs F, Stumps F	Lump Sum	1	Brushing roads.
20401	Roadway Excavation, Compaction Method A, Finishing Method A	Cubic Yard	630	Excavation for pipe installation at station 41+50. Use suitable native material for backfill. Compaction as specified in subsection 204.11. Material used for pipe backfill shall follow compaction specifications in subsection 209.11 (C)
20404	Unclassified Borrow, Compaction Method A, Finishing Method A	Cubic Yard	200	Source, Elk Creek Pit FSR - 2204031. Pipe backfill only. Compaction as specified in subsection 204.11 & 209.11(c).
20426	Grade Dips, Armored	Each	5	Class I riprap for armoring is an indirect cost to this pay item. Riprap shall be commercial source and weed free unless otherwise approved by the C.O.
25101	Placed Rip Rap, Class IV	Cubic Yard	240	Riprap shall be commercial source, weed free unless otherwise approved by the C.O. Geotextile fabric is an indirect cost to this item. Volume includes all riprap for pipe installation at Sta. 1+49.4
30322	Road Reconditioning, Compaction Method C	Mile	2.68	Opening road, removing road closure are an indirect cost to this pay item. Equipment compaction as specified in subsection 204.11.
32203	Aggregate Base, Grading D, Compaction Method B	Cubic Yard	50	Source, Elk Creek Pit FSR - 2204031. Grading and shaping are indirect costs of this item 32203. Roller compaction as specified in subsection 322.05 [refers to 204.11].
32222	Pit Run Maximum size 3", Compaction Method A	Cubic Yard	240	Source, Elk Creek Pit FSR - 2204031. Grading and shaping are indirect costs of this item 32222. Equipment compaction as specified in subsection 322.05. Road repairs require the use of compaction equipment (ie. roller), see work list.
60201A	18 In. Pipe Culvert	Foot	264	Pipe material can be either galvanized CMP or smooth bore Plastic. Bands and bedding are indirect to this pay item. Compaction & Testing required. Riprap for headwall & apron is indirect to this pay item.
60201B	24 In. Pipe Culvert	Foot	32	Pipe material can be either galvanized CMP or smooth bore Plastic. Downpipe shall have turner elbow for CMP, full elbow for Plastic. Bands and bedding are indirect to this pay item. Compaction & Testing required. Riprap for headwall & apron is indirect to this pay item.
60201C	48 In. Pipe Culvert	Foot	68	Galvanized CMP. Bands and bedding are indirect to this pay item. Compaction & Testing required.
60708	Cleaning Culverts In Place	Each	21	Clean pipe inlet and outlet as specified in the work list.
62530	Seeding & Mulching, Dry Method	Lump Sum	1	Seeds will be government furnished @ 15 lbs/Ac. Notify F.S. 7 days prior to use.



Unit / Region :

USDA - Forest Service - R6

National Forest :

Olympic

District :

Pacific

Project Name :

Chester Timber Sale  
Road Reconstruction

Sheet Name :

Estimate of Quantities  
FSR 2204070

Sheet Number :

3 Of 21

<b><i>ESTIMATE of QUANTITIES</i></b>				<i>Refer to the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects / FP-03 US Customary Units</i>
<i>Project Name: Chester Timber Sale.</i>		<i>FSR</i>	<i>2204072</i>	
<i>2204072 &amp; 2204073</i>				
		<i>MP-BOP</i>	<i>0.00</i>	
		<i>MP-EOP</i>	<i>0.95</i>	
<i>Item No.</i>	<i>Description</i>	<i>Pay Unit</i>	<i>Quantities</i>	<i>Remarks</i>
<i>15101</i>	<i>Mobilization</i>	<i>Lump Sum</i>	<i>1</i>	<i>Includes all work needed to access sites. Cleaning of all equipment is required prior to entering National Forest Land.</i>
<i>15401</i>	<i>Contractor Testing</i>	<i>Lump Sum</i>	<i>1</i>	<i>Testing required on all pipe installations.</i>
<i>15713</i>	<i>Soil Erosion &amp; Pollution Control</i>	<i>Lump Sum</i>	<i>1</i>	<i>Maintenance for erosion control devices is an indirect cost to this pay item.</i>
<i>15721</i>	<i>Temporary Water Bars</i>	<i>Each</i>	<i>6</i>	<i>Install rubber razor bars, see sheet 11 of 20 for detail.</i>
<i>20105</i>	<i>Clearing &amp; Grubbing, Disposal of Tops &amp; Limbs F, Logs F, Stumps F</i>	<i>Lump Sum</i>	<i>1</i>	<i>Brushing roads.</i>
<i>20404</i>	<i>Unclassified Borrow, Compaction Method A, Finishing Method A</i>	<i>Cubic Yard</i>	<i>70</i>	<i>Source, Elk Creek Pit FSR - 2204031. Pipe backfill only. Compaction as specified in subsection 204.11 &amp; 209.11(c).</i>
<i>20426</i>	<i>Grade Dips, Armored</i>	<i>Each</i>	<i>6</i>	<i>Class I riprap for armoring is an indirect cost to this pay item. Riprap shall be commercial source and weed free unless otherwise approved by the C.O.</i>
<i>25101</i>	<i>Placed Rip Rap, Class IV</i>	<i>Cubic Yard</i>	<i>10</i>	<i>Riprap shall be commercial source, weed free unless otherwise approved by the C.O. Geotextile fabric is an indirect cost to this item.</i>
<i>30322</i>	<i>Road Reconditioning, Compaction Method B</i>	<i>Mile</i>	<i>0.95</i>	<i>Opening road, removing road closure are an indirect cost to this pay item. Roller compaction as specified in subsection 204.11.</i>
<i>32203</i>	<i>Aggregate Base, Grading D, Compaction Method B</i>	<i>Cubic Yard</i>	<i>385</i>	<i>Source, Elk Creek Pit FSR - 2204031. Grading and shaping are indirect costs of this item 32203. Roller compaction as specified in subsection 322.05 [refers to 204.11].</i>
<i>32222</i>	<i>Pit Run Maximum size 3", Compaction Method B</i>	<i>Cubic Yard</i>	<i>75</i>	<i>Source, Elk Creek Pit FSR - 2204031. Grading and shaping are indirect costs of this item 32222. Roller compaction as specified in subsection 322.05 [refers to 204.11].</i>
<i>60201A</i>	<i>18 In. Pipe Culvert</i>	<i>Foot</i>	<i>164</i>	<i>Pipe material can be either galvanized CMP or smooth bore Plastic. Bands and bedding are indirect to this pay item. Compaction &amp; Testing required. Riprap for headwall &amp; apron is indirect to this pay item.</i>
<i>60201B</i>	<i>24 In. Pipe Culvert</i>	<i>Foot</i>	<i>40</i>	<i>Pipe material can be either galvanized CMP or smooth bore Plastic. Bands and bedding are indirect to this pay item. Compaction &amp; Testing required. Riprap for headwall &amp; apron is indirect to this pay item.</i>
<i>60708</i>	<i>Cleaning Culverts In Place</i>	<i>Each</i>	<i>5</i>	<i>Clean pipe inlet and outlet as specified in the work list.</i>
<i>62530</i>	<i>Seeding &amp; Mulching, Dry Method</i>	<i>Lump Sum</i>	<i>1</i>	<i>Seeds will be government furnished @ 15 lbs/Ac. Notify F.S. 7 days prior to use.</i>



Unit / Region :

USDA - Forest Service - R6

National Forest :

Olympic

District :

Pacific

Project Name :

Chester Timber Sale  
Road Reconstruction

Sheet Name :

Estimate of Quantities  
FSR 2204072

Sheet Number :

4 Of 21

## ESTIMATE of QUANTITIES

*Refer to the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects / FP-03 US Customary Units*

<i>Project Name: Chester Timber Sale. FSR 2280050, 2280070, &amp; 2204076</i>			2280050	2280070	2204076	
		<i>MP-BOP</i>	0.00	0.00	0.00	
		<i>MP-EOP</i>	0.27	0.57	0.23	
<i>Item No.</i>	<i>Description</i>	<i>Pay Unit</i>	<i>Quantities</i>	<i>Quantities</i>	<i>Quantities</i>	<i>Remarks</i>
15101	<i>Mobilization</i>	<i>Lump Sum</i>	1	1	1	<i>Includes all work needed to access sites. Cleaning of all equipment is required prior to entering National Forest Land.</i>
15401	<i>Contractor Testing</i>	<i>Lump Sum</i>			1	<i>Testing required on all pipe installations.</i>
15713	<i>Soil Erosion &amp; Pollution Control</i>	<i>Lump Sum</i>	1	1	1	<i>Maintenance for erosion control devices is an indirect cost to this pay item.</i>
20105	<i>Clearing &amp; Grubbing, Disposal of Tops &amp; Limbs F, Logs F, Stumps F</i>	<i>Lump Sum</i>	1	1	1	<i>Brushing roads.</i>
20404	<i>Unclassified Borrow, Compaction Method A, Finishing Method A</i>	<i>Cubic Yard</i>			28	<i>Source, Elk Creek Pit FSR - 2204031. Pipe backfill only. Compaction as specified in subsection 204.11 &amp; 209.11(c).</i>
30322	<i>Road Reconditioning, Compaction Method C</i>	<i>Mile</i>	0.27	0.57	0.23	<i>Opening road, removing road closure are an indirect cost to this pay item. Equipment compaction as specified in subsection 204.11.</i>
32203	<i>Aggregate Base, Grading D, Compaction A</i>	<i>Cubic Yard</i>	70	50		<i>Source, Elk Creek Pit FSR - 2204031. Grading and shaping are indirect costs of this item 32203. Equipment compaction as specified in subsection 322.05.</i>
32222	<i>Pit Run Maximum size 3", Compaction Method A</i>	<i>Cubic Yard</i>	30	15	15	<i>Source, Elk Creek Pit FSR - 2204031. Grading and shaping are indirect costs of this item 32222. Equipment compaction as specified in subsection 322.05. Tension crack repairs require the use of compaction equipment (ie. roller), see work list.</i>
60201A	<i>18 In. Pipe Culvert</i>	<i>Foot</i>			36	<i>Pipe material can be either galvanized CMP or smooth bore Plastic. Bands and bedding are indirect to this pay item. Compaction &amp; Testing required. Riprap for headwall &amp; apron is indirect to this pay item.</i>
60708	<i>Cleaning Culverts In Place</i>	<i>Each</i>		3	2	<i>Clean pipe inlet and outlet as specified in the work list.</i>
62530	<i>Seeding &amp; Mulching, Dry Method</i>	<i>Lump Sum</i>	1	1	1	<i>Seeds will be government furnished @ 15 lbs/Ac. Notify F.S. 7 days prior to use.</i>



Unit / Region :  
**USDA - Forest Service - R6**

National Forest :  
**Olympic**

District :  
**Pacific**

Project Name :  
**Chester Timber Sale  
Road Reconstruction**

Sheet Name :  
**Estimate of Quantities  
FSR 2280050, 2280070, & 2204076**

Sheet Number :  
**5 Of 21**

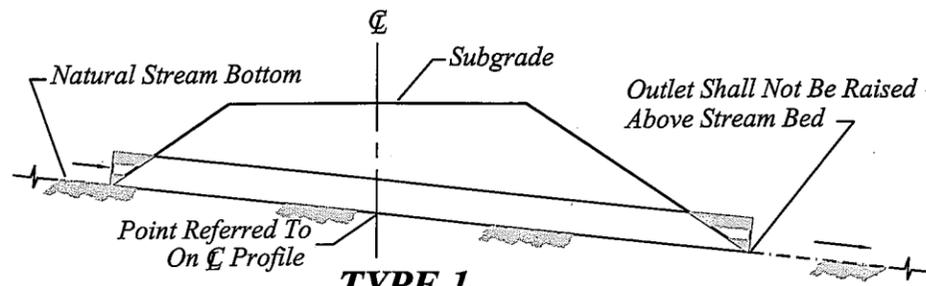


# CULVERT CONSTRUCTION DETAILS

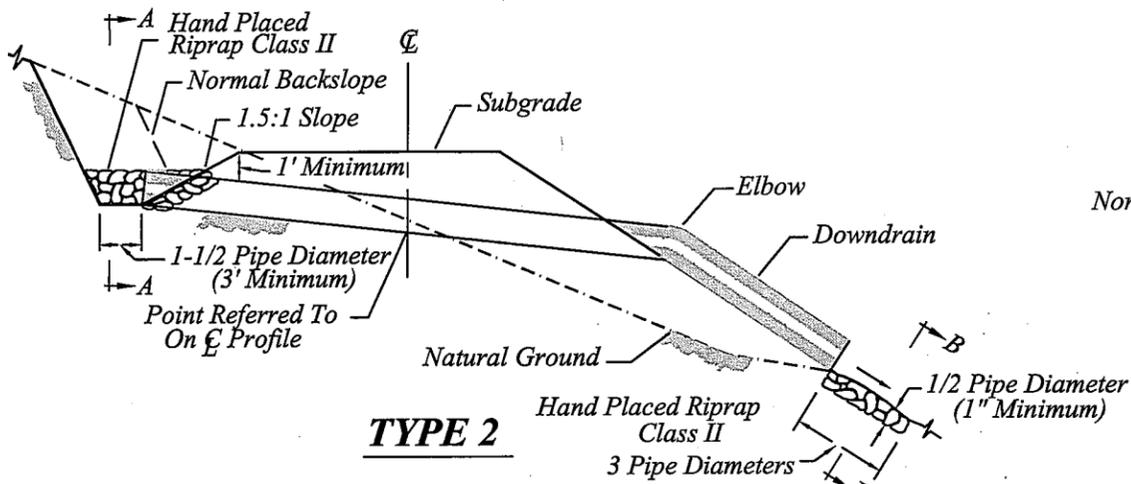
NOT TO SCALE

## GENERAL NOTES

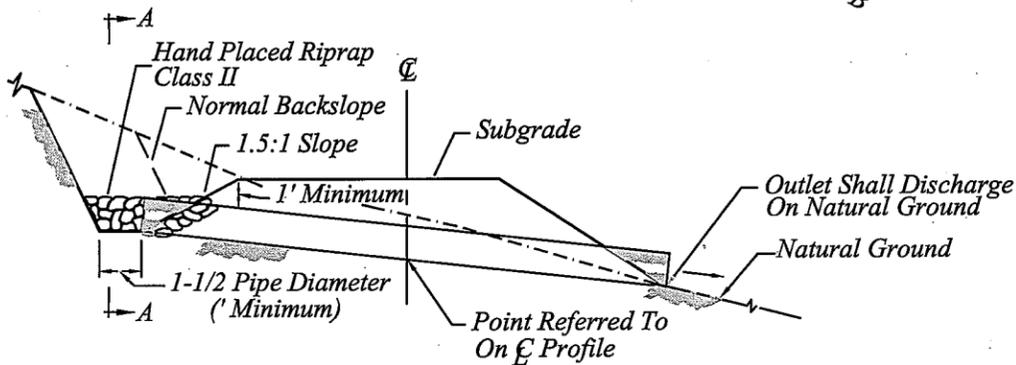
- 1) All downdrains 36" and larger shall be half buried.
- 2) All bands shall be 12" minimum width.
- 3) Dimple bands shall not be used on elbows or down drains.
- 4) All steel culverts shall be galvanized coated.
- 5) Riprap quantities shall be incidental to pipe installation unless a pay item is designated in the Schedule of Items.
- 6) A copy of the M.O.U. / H.P.A. will be onsite during all construction activities



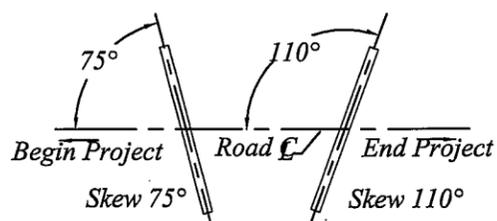
**TYPE 1**



**TYPE 2**



**TYPE 3**

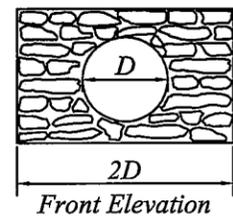


**SKEW DIAGRAM**

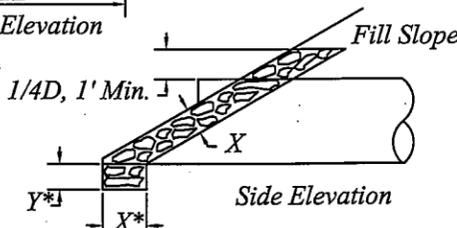
Note: In narrow channels, adjust riprap to stream

\*Varies w/ Pipe D

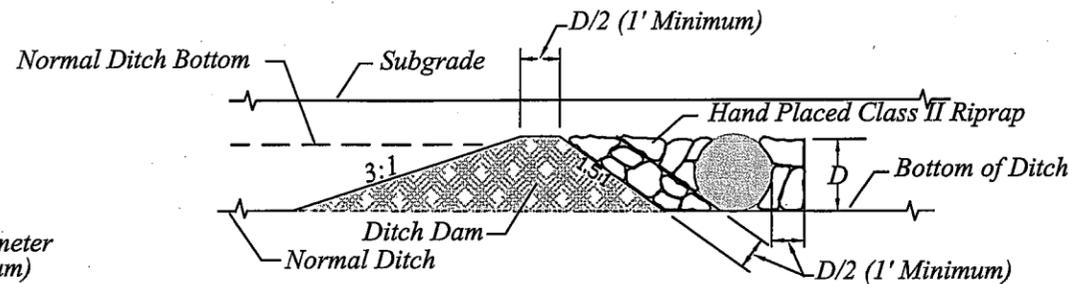
D	X	Y
18" - 24"	12"	0
30" - 60"	12"	12"
60" - 96"	18"	18"
MORE THAN 96"	24"	24"



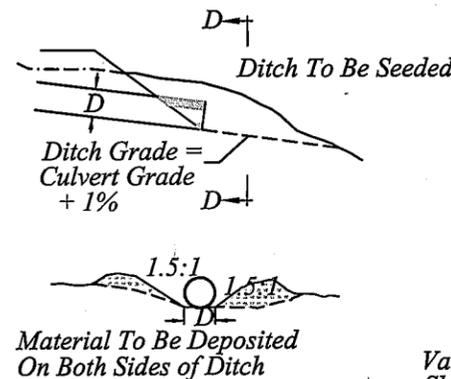
**SECTION D-D**  
Outlet Ditch Details



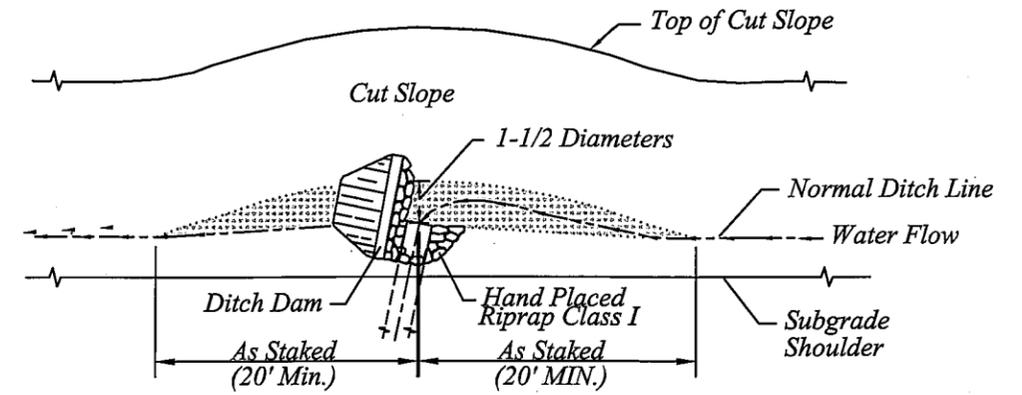
## HAND-PLACED RIPRAP HEADWALLS



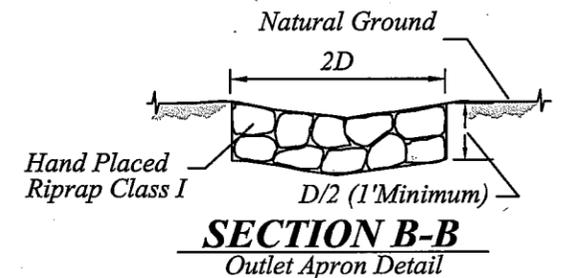
**SECTION A-A**  
Catch Basin Detail  
Type 2 & 3 Culvert Installation



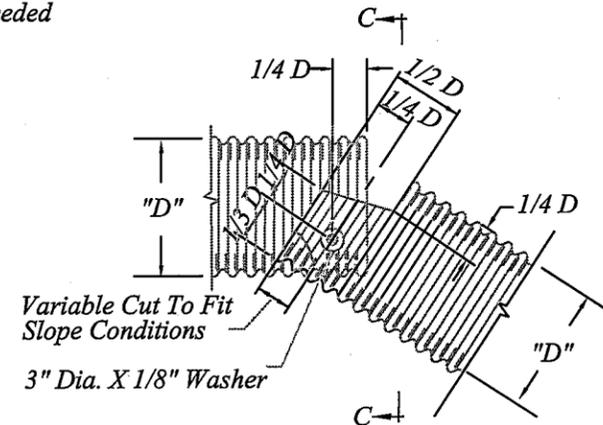
**SECTION D-D**  
Outlet Ditch Details



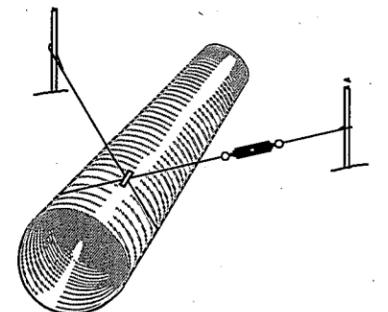
**PLAN VIEW**  
Type 2 & 3 Culvert Installations  
Catch Basin Detail



**SECTION B-B**  
Outlet Apron Detail



**SECTION C-C**  
TURNER ELBOW DETAILS



## SPECIFICATIONS FOR ANCHORS

- 1) Anchors are not required for the first 20' of down drains.
- 2) One anchor shall be required for each additional 20' or less.
- 3) Anchor posts shall be 6' galvanized steel fence posts. Posts shall be set 3' or more in the ground.
- 4) Anchor cable shall be 3/8" wire rope.
- 5) Cable clamps shall be galvanized steel.
- 6) Turnbuckles shall be 12" galvanized steel.

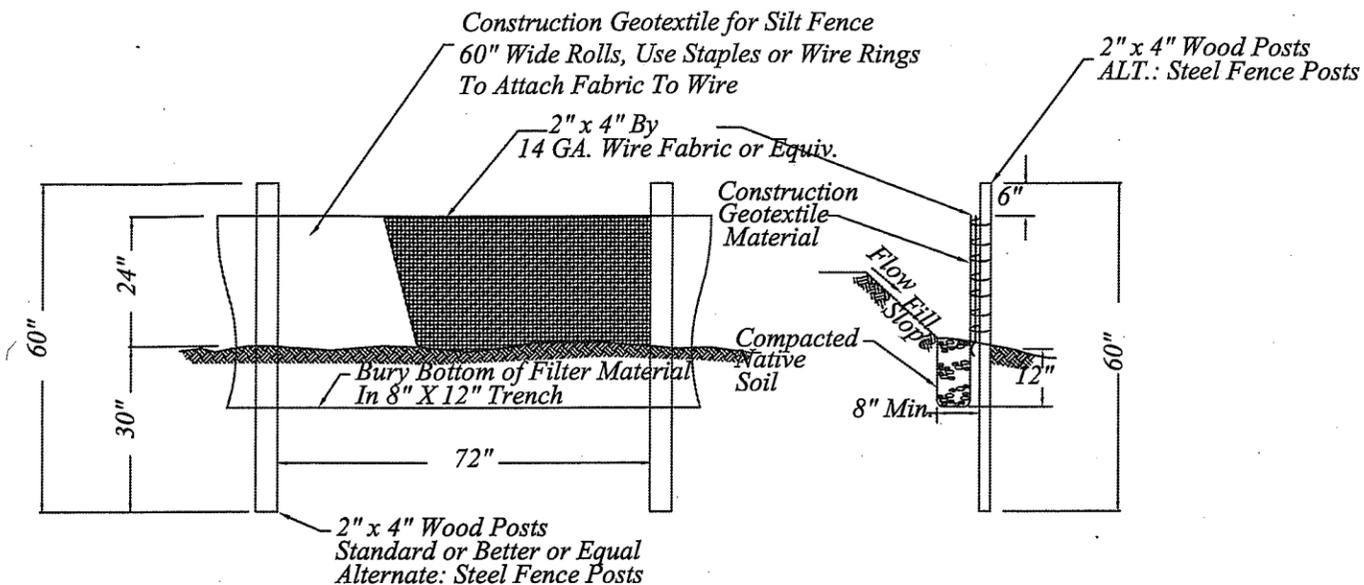
## CULVERT ANCHOR DETAILS

**TEMPORARY EROSION CONTROL**

DETAILS

**GENERAL 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) 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 roadway cleaning 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 20 feet from top of cut to toe of fill.
- 9) A COPY OF THE M.O.U. / H.P.A. WILL BE ONSITE DURING ALL CONSTRUCTION ACTIVITIES.



**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 necessary, 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



Unit / Region :  
**USDA - Forest Service - R6**

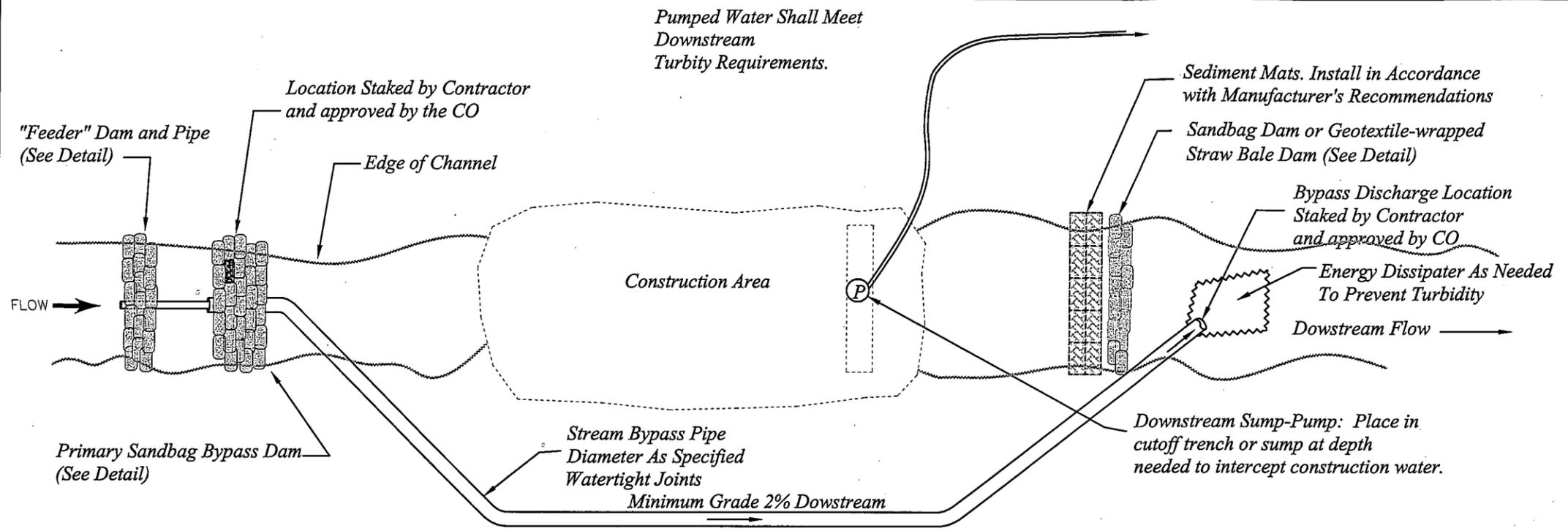
National Forest :  
**Olympic**

District :  
**Pacific**

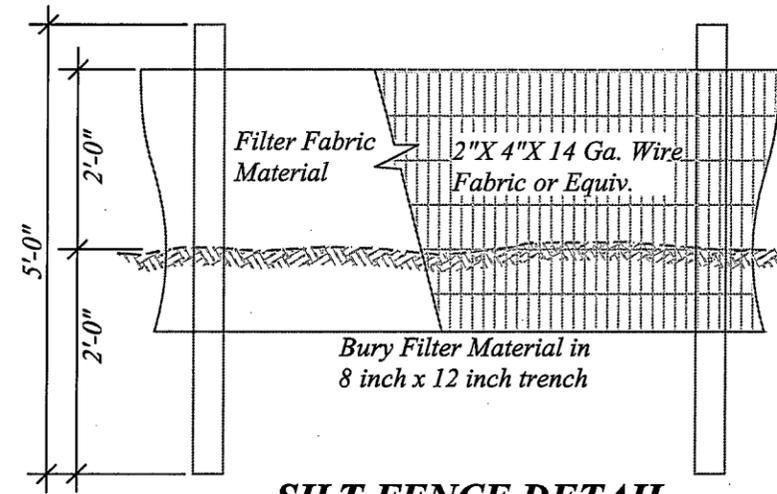
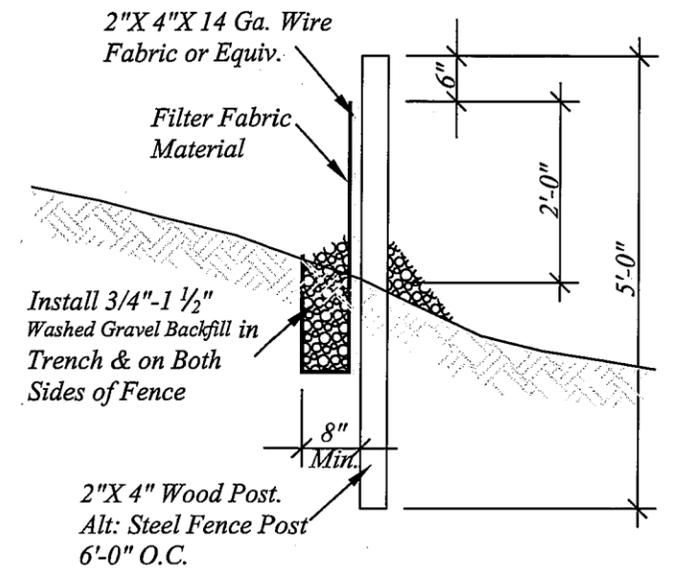
Project Name :  
**Chester Timber Sale  
Road Reconstruction**

Sheet Name :  
**General Notes & Temporary Erosion  
Control Details**

Sheet Number :  
**8 Of 21**

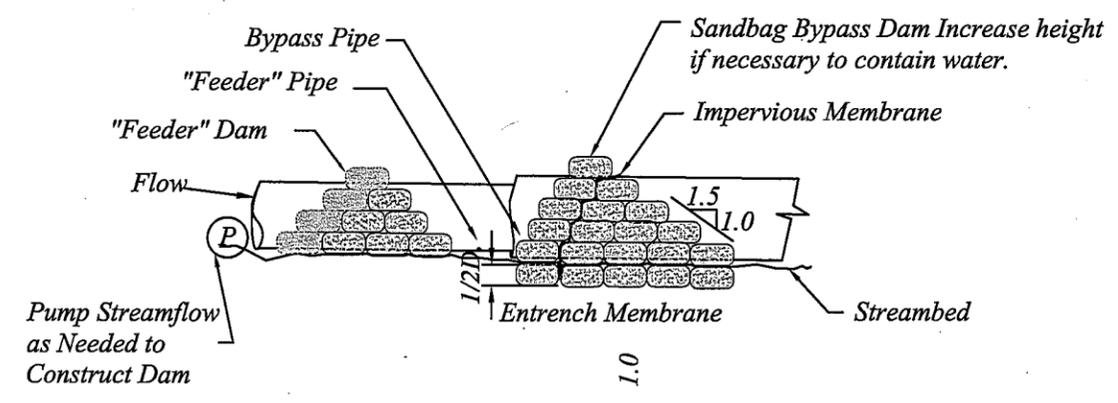


**PLAN VIEW**  
**TYPICAL DEWATERING & SEDIMENT CONTROL PLAN**  
 NOT TO SCALE



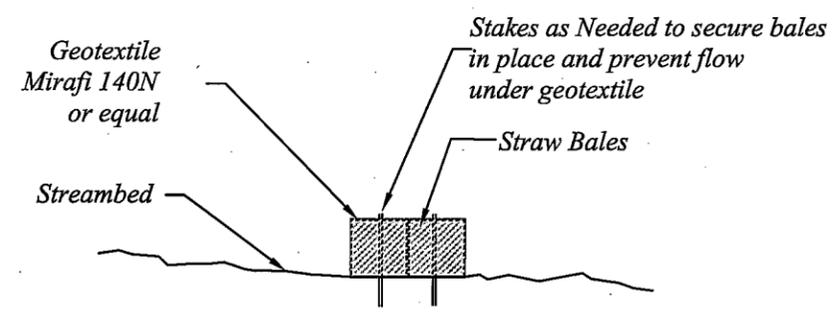
**SILT FENCE DETAIL**  
 NOT TO SCALE

- NOTE:**
1. Silt fences will be installed wherever necessary to prevent silt from leaving the construction site.
  2. Minor grading may be utilized in lieu of silt fences at some locations if approved by the COR.
  3. Silt fence joints shall be minimized. When necessary splices shall be made at posts only with a minimum 20" overlap.
  4. Maintenance of silt fences shall be done as necessary to maintain the integrity of the system.



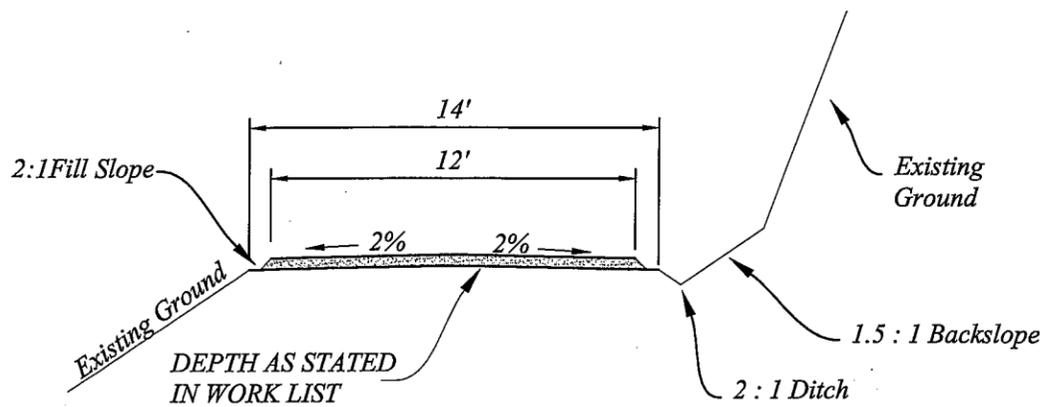
**ELEVATION VIEW AT STREAMBED INVERT**  
**SANDBAG BYPASS DAM**  
 NOT TO SCALE

The volume of water expected at the dam is unknown. Size pipe or use a combination of siphoning and pumping to divert water around excavation and pumping to divert water around excavation to a suitable treatment area or directly back into stream if approved by the COR.

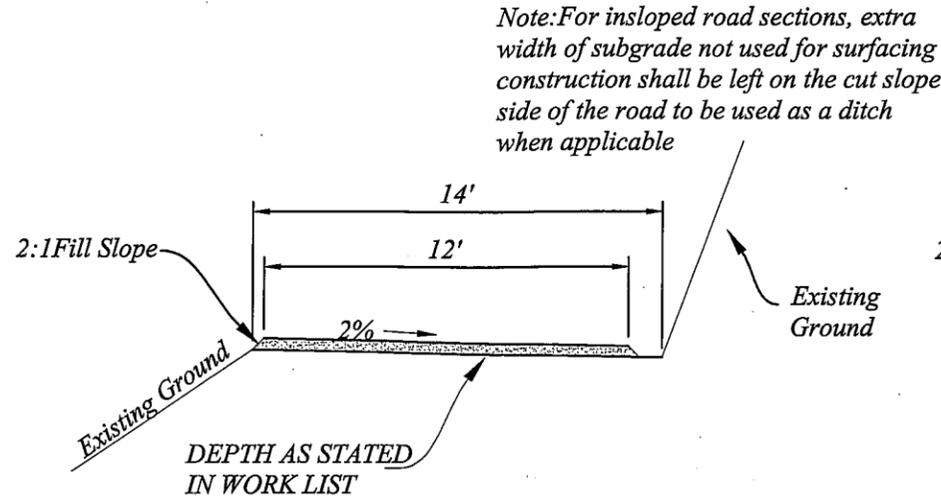


**ELEVATION VIEW**  
**GEOTEXTILE-WRAPPED STRAW BALE DAM**  
 NOT TO SCALE

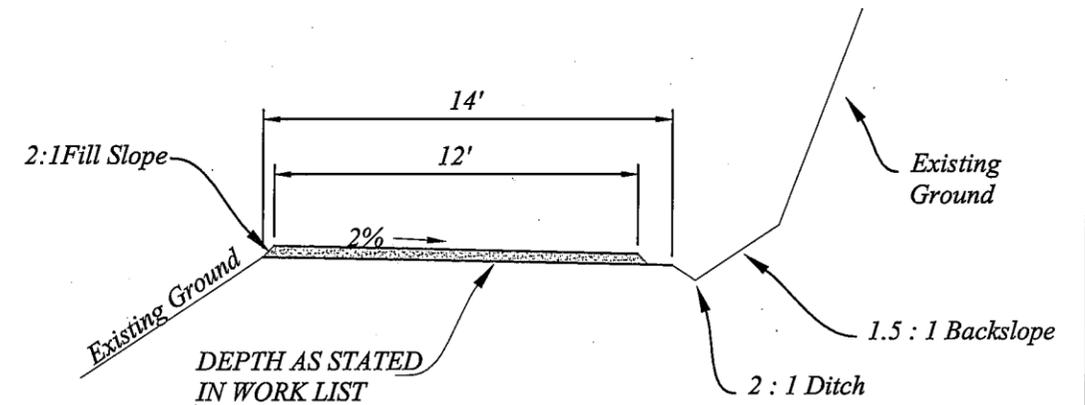
\*\* THIS TYPICAL IS PROVIDED TO THE PURCHASER AS A REFERENCE. PURCHASER SHALL DESIGN A SITE SPECIFIC DEWATERING PLAN IF REQUIRED AND SUBMITTED TO THE C.O. FOR APPROVAL WITHIN THE TIME REQUIREMENT STATED IN THE CONTRACT.



**TYPICAL GRADING DETAIL - CROWNED**  
NOT TO SCALE

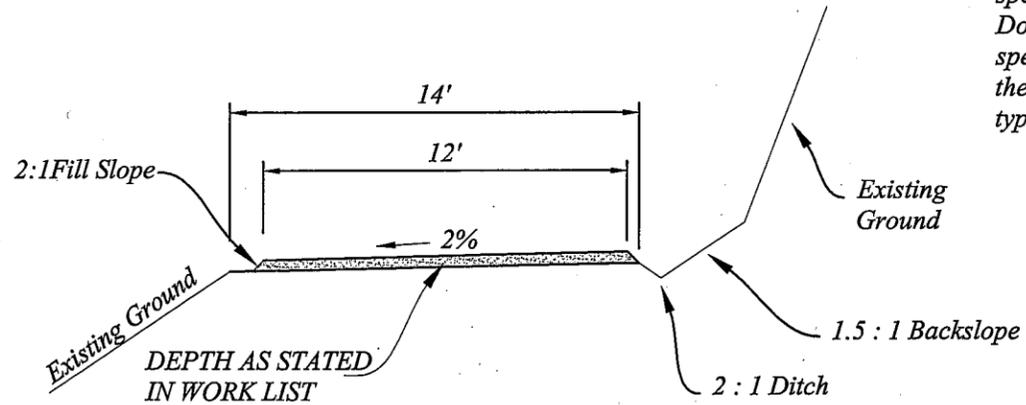


**TYPICAL GRADING DETAIL - INSLOPE**  
NOT TO SCALE

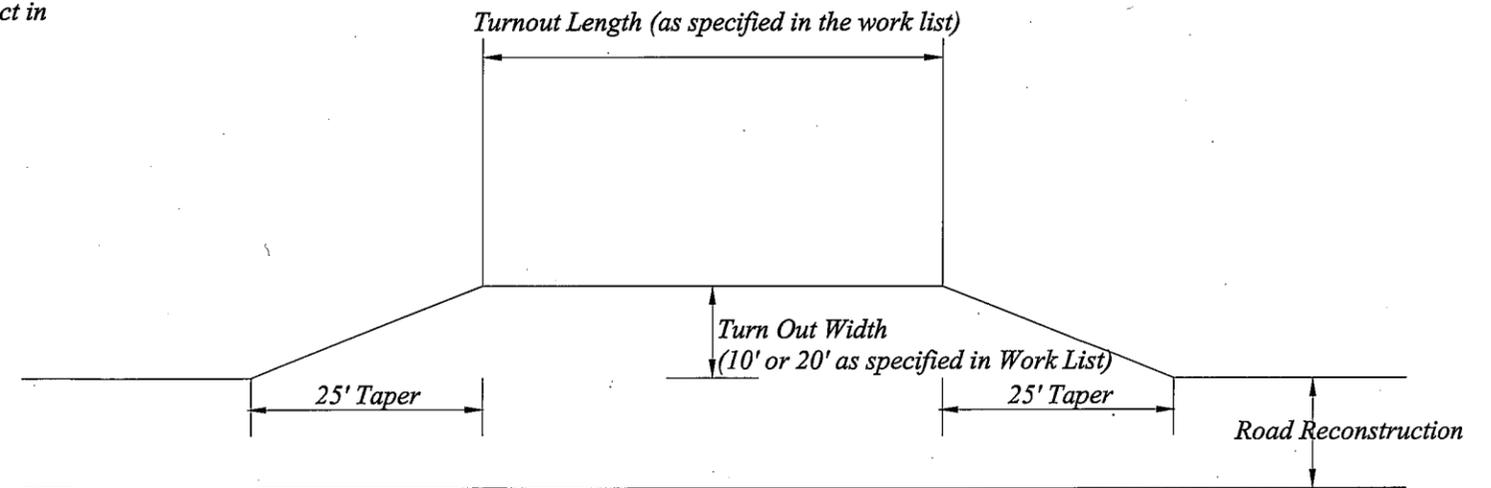


**TYPICAL GRADING DETAIL - INSLOPE W/DITCH**  
NOT TO SCALE

Note:  
Road typical shall be used unless otherwise specified in the plans or work list.  
Double lane road or other roadway width specified in the work list shall be construct in the same manor as ones shown in the typicals.

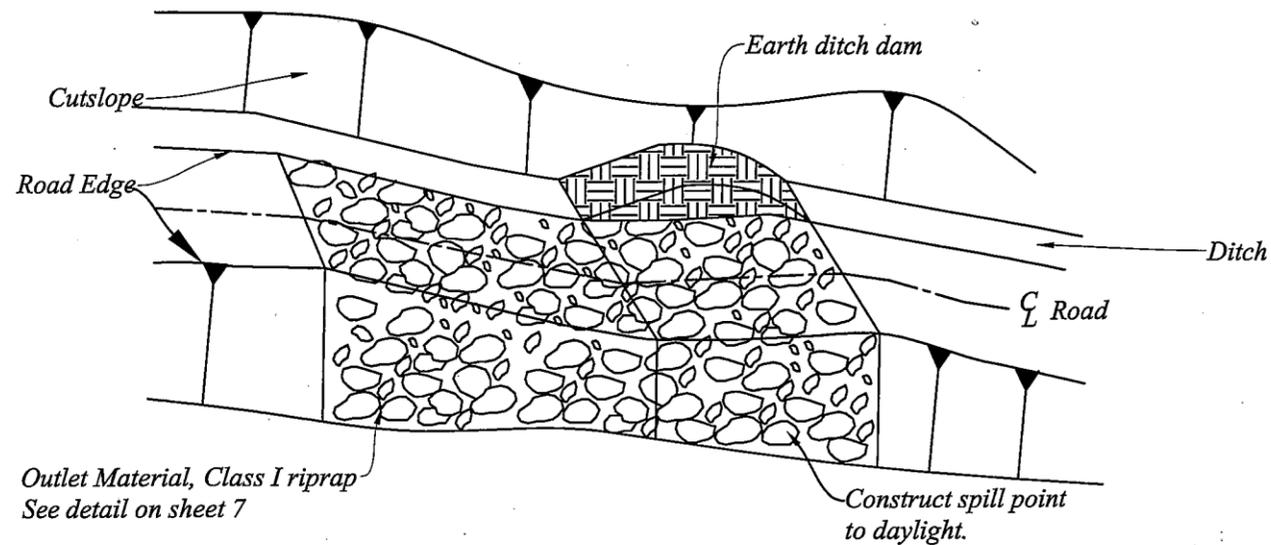


**TYPICAL GRADING DETAIL - OUTSLOPE**  
NOT TO SCALE

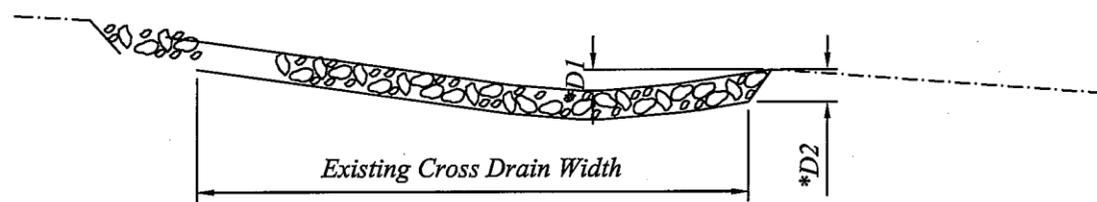


**ROAD TURN OUT DETAIL**  
NOT TO SCALE





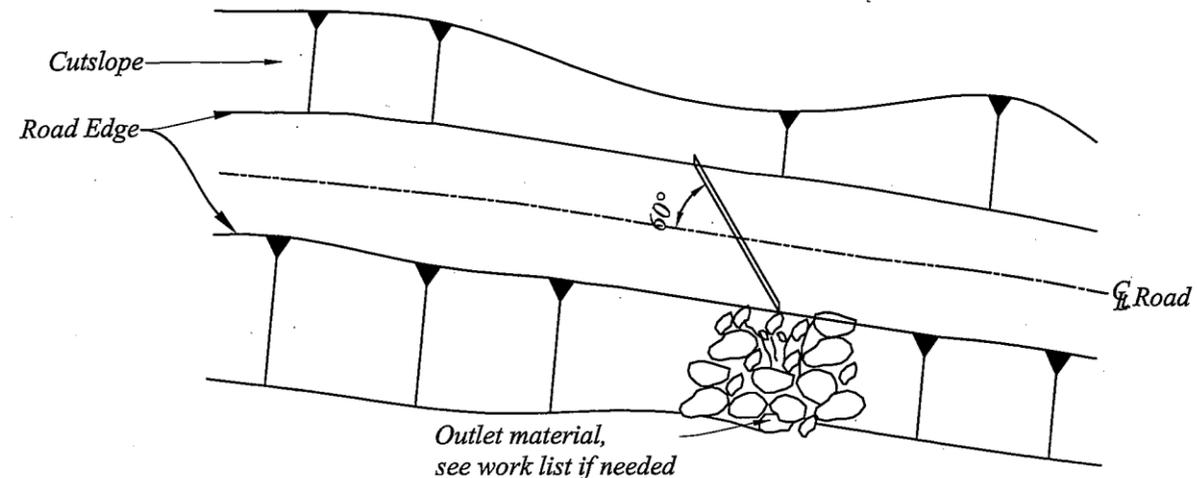
**PLAN VIEW  
ARMORED GRADE DIP**



\*D1 - 6", maybe adjusted to provide adequate vertical clearance for traffic if specified in the contract.  
\*D2 - varies, depends on the depth of existing cross drains

**SECTION VIEW  
ARMORED GRADE DIP**

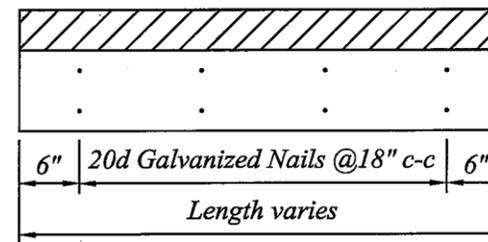
NOT TO SCALE



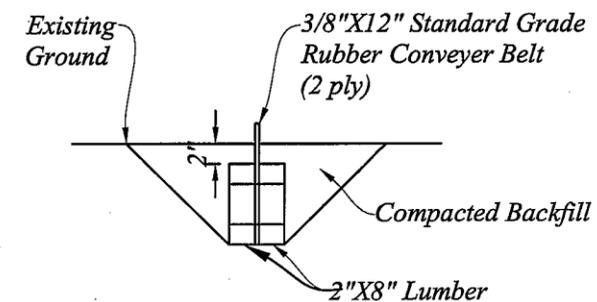
**PLAN VIEW  
RUBBER RAZOR BAR**



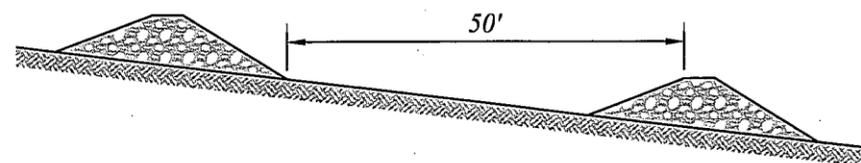
**PLAN VIEW**



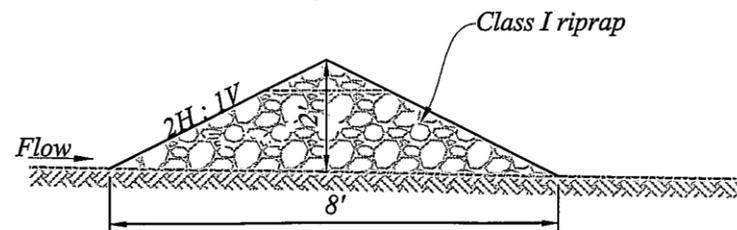
**ELEVATION VIEW**



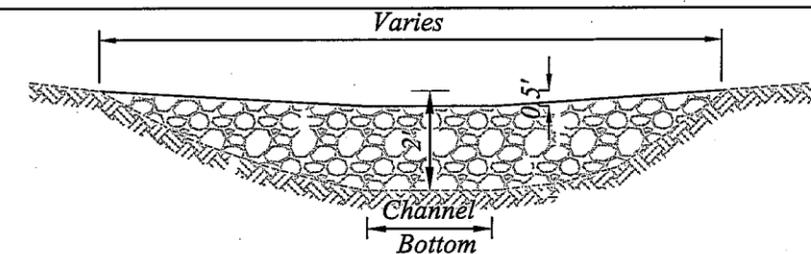
**SYNTHETIC WATER BAR SECTION**



**DAM SPACING  
NOT TO SCALE**



**PROFILE VIEW  
NOT TO SCALE**



**CROSS SECTION  
NOT TO SCALE**



Unit / Region :

USDA - Forest Service - R6

National Forest :

Olympic

District :

Pacific

Project Name :

Chester Timber Sale  
Road Reconstruction

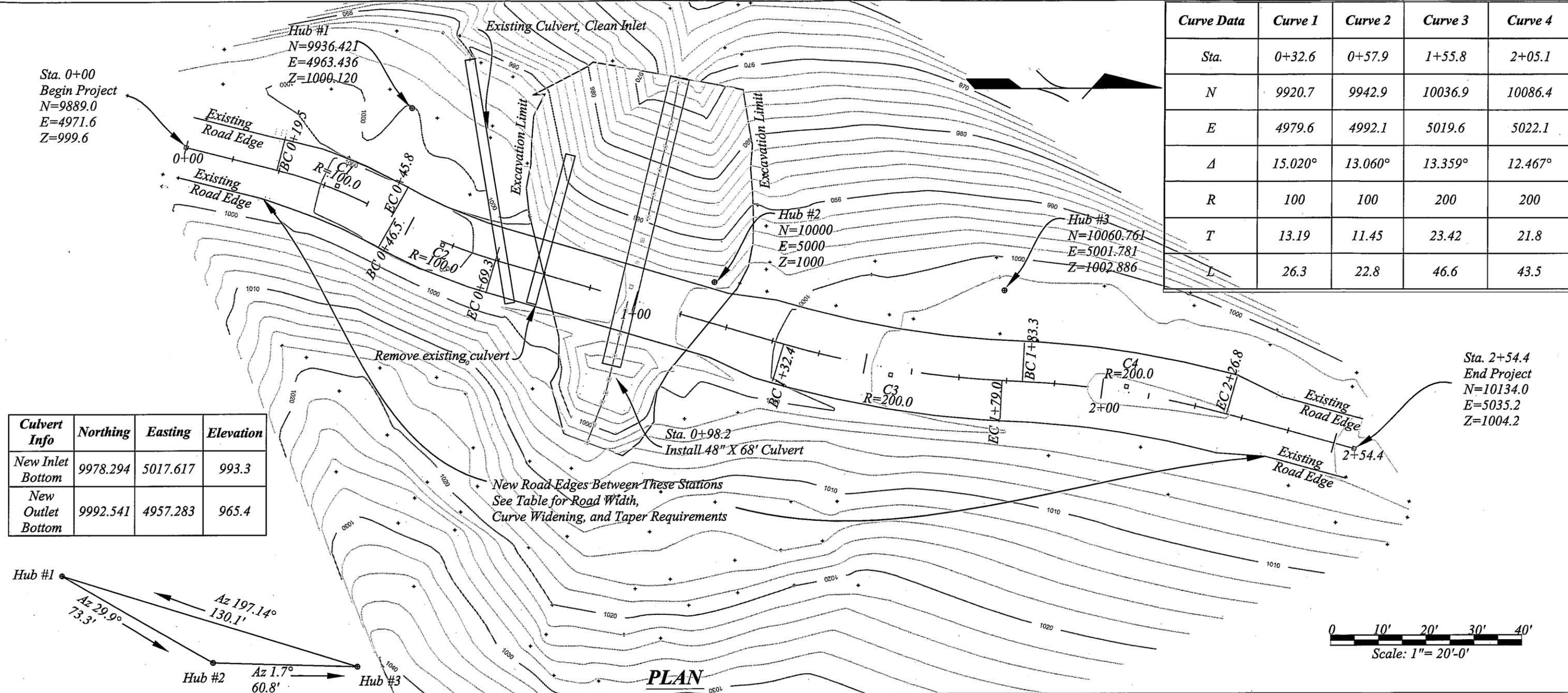
Sheet Name :

Armored Grade Dip, Rubber Razor Bar &  
Check Dam Details

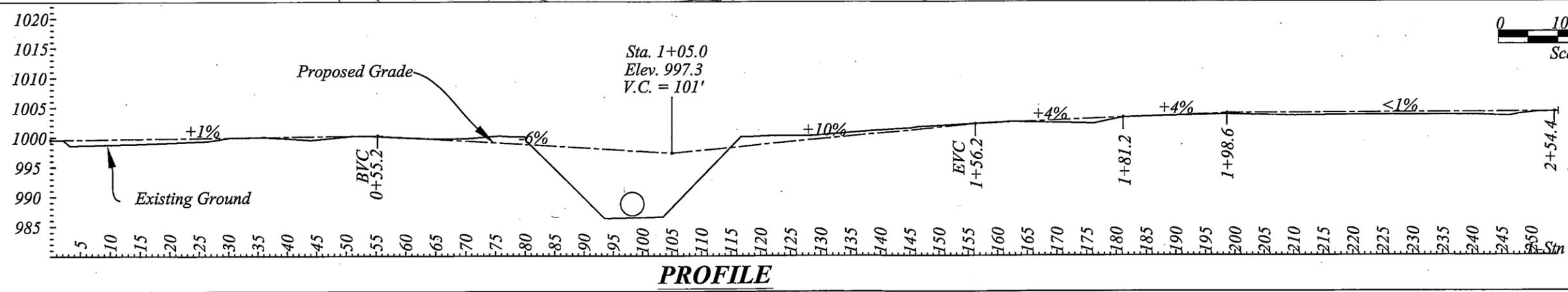
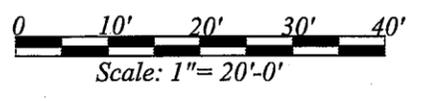
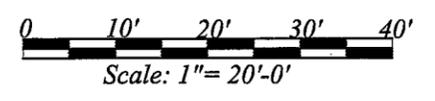
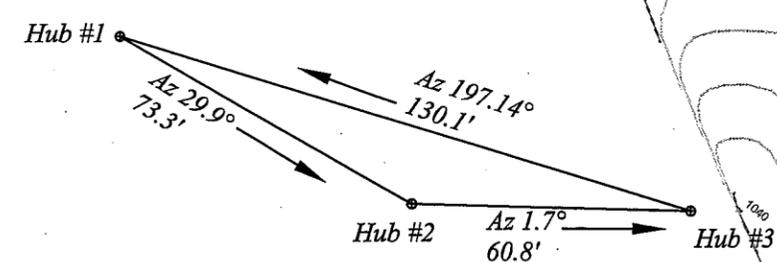
Sheet Number :

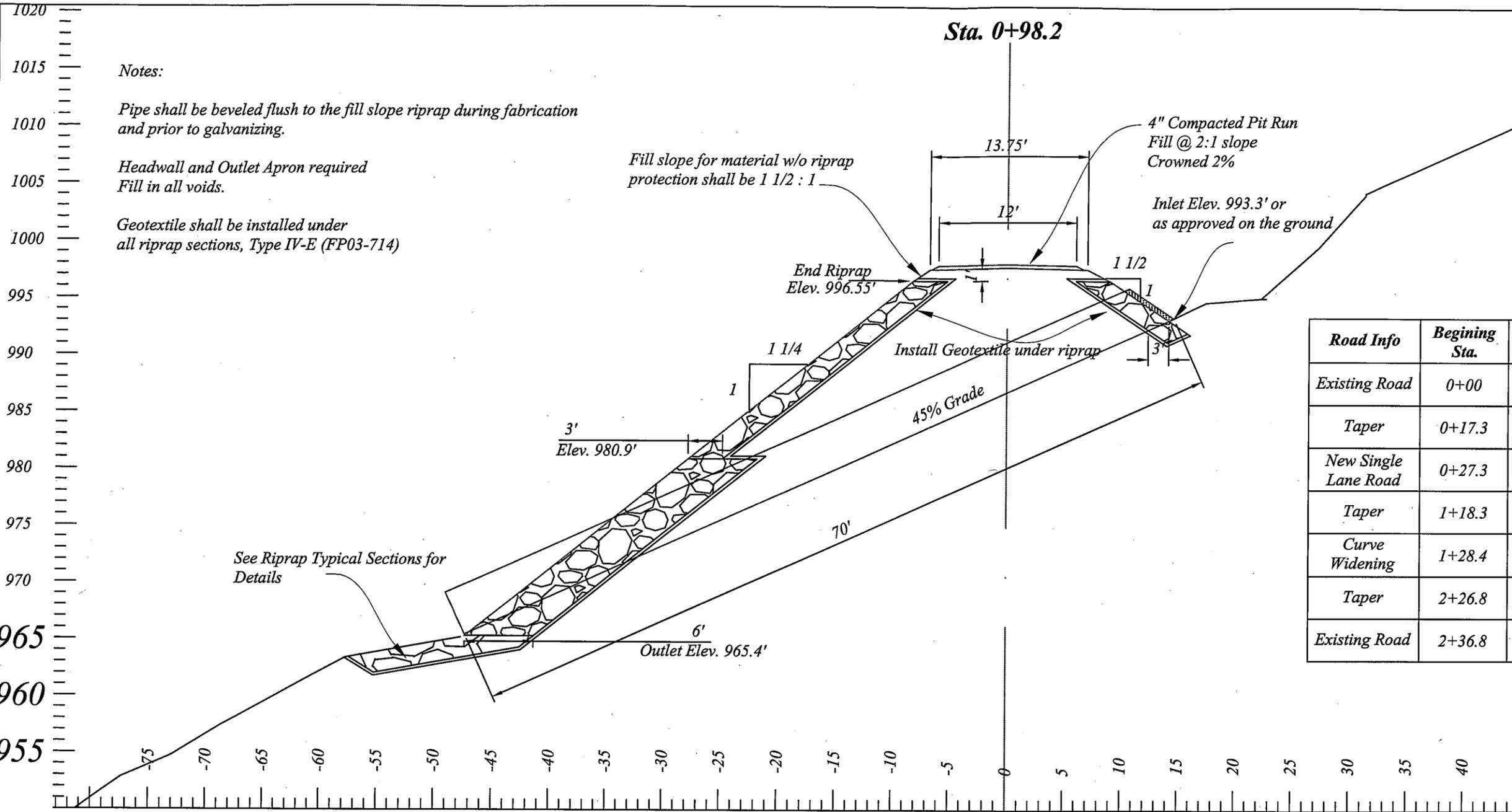
11 Of 21

Curve Data	Curve 1	Curve 2	Curve 3	Curve 4
Sta.	0+32.6	0+57.9	1+55.8	2+05.1
N	9920.7	9942.9	10036.9	10086.4
E	4979.6	4992.1	5019.6	5022.1
$\Delta$	15.020°	13.060°	13.359°	12.467°
R	100	100	200	200
T	13.19	11.45	23.42	21.8
L	26.3	22.8	46.6	43.5



Culvert Info	Northing	Easting	Elevation
New Inlet Bottom	9978.294	5017.617	993.3
New Outlet Bottom	9992.541	4957.283	965.4





**Notes:**

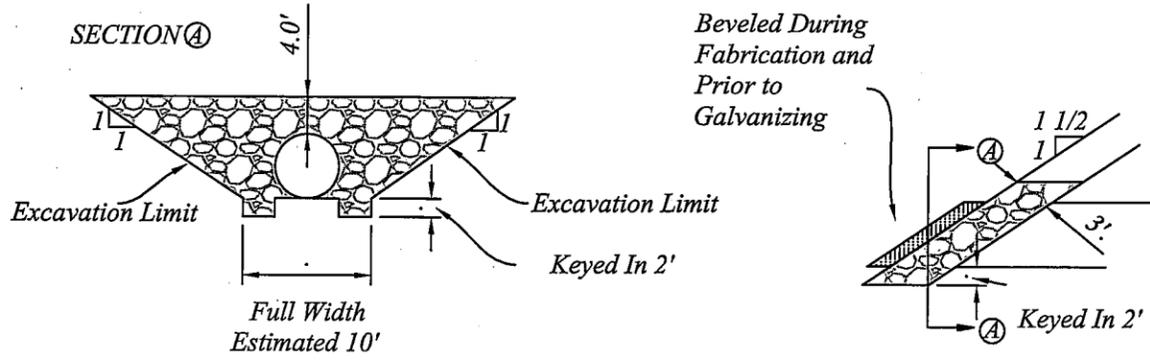
Pipe shall be beveled flush to the fill slope riprap during fabrication and prior to galvanizing.

Headwall and Outlet Apron required  
Fill in all voids.

Geotextile shall be installed under all riprap sections, Type IV-E (FP03-714)

Road Info	Beginning Sta.	Ending Sta.	Subgrade Width	Surface Width
Existing Road	0+00	0+17.3	Existing	Existing
Taper	0+17.3	0+27.3	Transition	Transition
New Single Lane Road	0+27.3	1+18.3	13.75'	12'
Taper	1+18.3	1+28.4	Transition	Transition
Curve Widening	1+28.4	2+26.8	17'	15'
Taper	2+26.8	2+36.8	Transition	Transition
Existing Road	2+36.8	2+54.5	Existing	Existing

**PIPE CROSS SECTION**

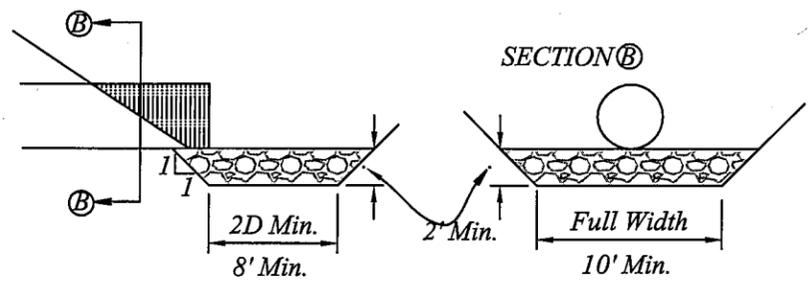


Beveled During Fabrication and Prior to Galvanizing

**Notes:**

Channel excavation volume was estimated with the bottom width as the Pipe Diameter (4') and 3' each side of the pipe for work space.

Use Class IV Riprap w/ Type IV-E Geotextile.  
Fill in all voids.



**Outlet Apron**

**Headwall**

**FSR 2280050**

**List 1 of 1**

STATION	REQUIREMENT	Rock Quan. (C.Y.)		CULVERT INSTALLATION / IMPROVEMENTS		
		Pit Run	Agg. Surf.	Culvert Size	Add'l Borrow (C.Y.)	Riprap In/Out (C.Y.)
	Project Begins at approximately FSR 2280 M.P. 1.9					
0+00	BOP, Begin reconstruction of FSR 2280050 Begin brushing and clearing, grading and shaping, road reconditioning. Subgrade compaction method C (204.11). Spot Rocking (4" of pit run or surfacing) as shown in work list, Compaction Method A (322.05) Begin crowning roadway and ditch maintenance required only for slide/debris removal. 12' Traveled Way, 14' Subgrade.					
2+00	Remove slide, re-establish ditch					
3+00	Tension crack. Scarify and recompact (Compaction Method B-204.11). Begin placement of 4" lift of Aggregate Surfacing	5	45			
5+60	Tension crack. Scarify and recompact (Compaction Method B-204.11). End aggregate surfacing placement	10				
6+50	Existing 18" CMP, good	5		18"		
6+50 - 7+50	Construct turnout left, 10' X 50' w/25' taper each side					
7+50	End taper and ditch maintenance					
10+00	Tension crack. Scarify and recompact (Compaction Method B-204.11). Begin placement of 4" lift of Aggregate Surfacing	5	25			
11+50	Tension crack. Scarify and recompact (Compaction Method B-204.11). End aggregate surfacing placement	5				
14+00	EOP, End reconstruction of FSR 2280050					

**FSR 2280070**

**List 1 of 1**

STATION	REQUIREMENT	Rock Quan. (C.Y.)		CULVERT INSTALLATION / IMPROVEMENTS		
		Pit Run	Agg. Surf.	Culvert Size	Add'l Borrow (C.Y.)	Riprap In/Out (C.Y.)
	Project Begins at approximately FSR 2280 M.P. 3.9					
0+00	BOP, Begin reconstruction of FSR 2280070 Begin brushing and clearing, grading and shaping, road reconditioning. Subgrade compaction method C (204.11). Spot Rocking (4" of pit run or surfacing) as shown in work list, Compaction Method A (322.05). Begin insloping roadway w/ditch, ditch maintenance required only for slide/debris removal. Construct ditch out left at junction with FSR 2280. 12' Traveled Way, 14' Subgrade.					
2+80	Remove berm, re-establish ditch					
4+35	Existing 18" CMP, clean inlet	5		18"		
5+00	Begin placement of 4" lift of aggregate surfacing		50			
5+00 - 6+00	Construct turnout right, 10' X 50' w/25' taper each side					
7+00	Tension Crack, scarify and recompact (Compaction Method B-204.11)	5				
7+50	Existing 18" CMP, buried, clean inlet			18"		
8+00	End aggregate surfacing placement					
12+20	Existing 18" CMP, buried, clean inlet	5		18"		
13+60	Continue inslope, see typical drawings for inslope w/no ditch					
14+00	Junction to spur road.					
14+00 - 15+00	Construct turnout left, 10' X 50' w/25' taper each side					
23+00 - 24+00	Construct turn-around left, 50' X 50' w/25' taper each side					
26+75 - 27+75	Construct turnout left, 10' X 50' w/25' taper each side					
30+00	EOP, End reconstruction of FSR 2280070					



Unit / Region :  
**USDA - Forest Service - R6**

National Forest :  
**Olympic**

District :  
**Pacific**

Project Name :  
**Chester Timber Sale  
Road Reconstruction**

Sheet Name :  
**Work List  
FSR 2280050 & 2280070**

Sheet Number :  
**14 Of 21**

**FSR 2204076**

**List 1 of 1**

STATION	REQUIREMENT	Rock Quan. (C.Y.)	CULVERT INSTALLATION / IMPROVEMENTS		
		Pit Run	Culvert Size	Add'l Borrow (C.Y.)	Riprap In/Out (C.Y.)
	<i>Project Begins at approximately FSR 2204070 Sta. 141+40</i>				
0+00	<i>BOP, Begin reconstruction of FSR 2280076. Begin brushing and clearing, grading and shaping, road reconditioning. Subgrade compaction method C (204.11). Spot Rocking (4") as shown in work list, Compaction Method A (322.05). Begin crowning roadway, ditch maintenance required only for slide/debris removal. 12' Traveled Way, 14' Subgrade.</i>				
0+40	<i>Existing 18" CMP, clean inlet &amp; outlet</i>	5	18"		
1+30	<i>Fill in existing cross drain, re-establish ditch</i>				
2+95	<i>Construct Grade Dip, Armored. (Class I rip rap, approximately 5.5 C.Y.)</i>				1/0.5 *
5+00	<i>Construct Grade Dip, Armored. (Class I rip rap, approximately 5.5 C.Y.)</i>				1/0.5 *
6+37	<i>Fill in existing cross drain, re-establish ditch</i>				
6+88	<i>Existing 18" CMP, clean inlet</i>	5	18"		
8+45	<i>Construct Grade Dip, Armored. (Class I rip rap, approximately 5.5 C.Y.)</i>				1/0.5 *
10+10	<i>Install 18" X 36' ditch relief pipe, construct catch basin, ditch dam, 120° skew</i>	5	18"	28	1/0.5 *
12+00	<i>EOP, End reconstruction of FSR 2204076</i>				

*Additional borrow needed for pipe installations, existing stockpiles at each site may be used if suitable.  
\* Volumes are indirect and covered under the pay item.*



Unit / Region :  
**USDA - Forest Service - R6**

National Forest :  
**Olympic**

District :  
**Pacific**

Project Name :  
**Chester Timber Sale  
Road Reconstruction**

Sheet Name :  
**Work List  
FSR 2204076**

Sheet Number :  
**15 Of 21**

STATION	REQUIREMENT	Rock Quan. (C.Y.)		CULVERT INSTALLATION / IMPROVEMENTS		
		Pit Run	Agg. Surf.	Culvert Size	Add'l Borrow (C.Y.)	Riprap In/Out (C.Y.)
	Project Begins at approximately FSR 2204070 Sta. 84+35					
0+00	BOP, Begin reconstruction of FSR 2204072. Begin brushing and clearing, grading and shaping, road reconditioning. Subgrade compaction method B (204.11). Spot Rocking (4" of pit run or surfacing) as shown in work list, Compaction Method B (322.05, Roller). Begin insloping roadway, ditch maintenance required only for slide/debris removal.					
0+00	Begin placement of 4" lift of aggregate surfacing		100			
1+20	Install 18" X 26' ditch relief pipe, construct catch basin, ditch dam, 70° skew, ditch out to daylight			18"	5	1/0.5*
2+50	Fill in existing cross drain, re-establish ditch					
4+00	Fill in existing cross drain, re-establish ditch					
4+60	End ditch maintenanc					
4+60 - 5+60	Construct turnout left, 10' X 50' w/25' taper each side					
5+63	Existing 18" CMP, good			18"		
6+00	End placement of aggregate surfacing. Begin inslope					
7+30 - 8+30	Fill in existing cross drain, re-establish ditch. Construct turnout right, 10' X 50' w/25' taper each side					
8+50	End inslope, begin crown, continue ditch maintenance					
	Existing 18" CMP, clean outlet		5	18"		
11+00	Fill in existing cross drain, re-establish ditch					
11+55	Existing 18" CMP, clean inlet and outlet		5	18"		
12+00	Remove berm, re-establish ditch. Junction to spur road					
12+70	Install 18" X 26' ditch relief pipe, construct catch basin, ditch dam, 120° skew, ditch out to daylight		5	18"	5	1/0.5*
14+00	Remove berm, fill in existing cross drain, and re-establish ditch line					
14+30	Do not disturb pipe. Install 10 C.Y. Class IV riprap for fill protection, estimated 6'H X 10'L X 3'W					
14+30 - 15+44	Re-establish/construct ditch. Scarify and reconstruct roadbed, estimated at 115'L		40			
15+45	Existing 18" CMP, buried. Replace with 24" X 40' ditch relief pipe, existing skew, construct catch basin and ditch dam		5	24"	40	2/1*
15+75	Remove berm, fill in existing cross drain, and re-establish ditch					
16+20	Existing 18" CMP, clean inlet		5	18"		
17+70	Construct Grade Dip, Armored (Class I riprap, approximately 5.5 C.Y.)					1/0.5*
19+21	Remove berm, continue ditch maintenance					
19+80	Existing 16" CMP, clean inlet		5	16"		
20+32	Remove berm and re-establish ditch					
21+70	Remove berm and re-establish ditch					
22+00	Begin placement of 4" lift of aggregate surfacing		170			
22+15	Existing 18" CMP, clean inlet			18"		
22+25 - 23+25	Construct turnout right, 10' X 50' w/25' taper each side					
23+28	Fill in existing cross drain, re-establish ditch					
24+20	Existing 18" CMP. Replace with 18" X 26' ditch relief pipe, construct catch basin, ditch dam, 120° skew			18"	5	1/0.5*
25+00	Construct Grade Dip, Armored. (Class I rip rap, approximately 5.5 C.Y.)					1/0.5*
26+31	Install 18" X 26' ditch relief pipe, construct catch basin, ditch dam, 120° skew			18"	5	1/0.5*
27+66	Remove berm, re-establish ditch.					
28+83	Install 18" X 30' ditch relief pipe, construct catch basin, ditch dam, 120° skew			18"	5	1/0.5*
30+15	Construct Grade Dip, Armored. (Class I rip rap, approximately 5.5 C.Y.)					1/0.5*
31+00	Construct ditch out right					
31+00 - 32+00	Construct turnout right, 10' X 50' w/25' taper each side					
32+80	End placement of aggregate surfacing					

Additional borrow needed for pipe installations, existing stockpiles at each site may be used if suitable.  
\* Volumes are indirect and covered under the pay item.



Unit / Region :  
USDA - Forest Service - R6

National Forest :  
Olympic

District :  
Pacific

Project Name :  
Chester Timber Sale  
Road Reconstruction

Sheet Name :  
Work List  
FSR 2204072 - 1 of 2

Sheet Number :  
16 Of 21



Unit / Region :  
USDA - Forest Service - R6

National Forest :  
Olympic

District :  
Pacific

Project Name :  
Chester Timber Sale  
Road Reconstruction

Sheet Name :  
Work List  
FSR 2204072 - 2 of 2

Sheet Number :  
17 Of 21

FSR 2204072

List 2 of 2

STATION	REQUIREMENT	Rock Quan. (C.Y.)		CULVERT INSTALLATION / IMPROVEMENTS		
		Pit Run	Agg. Surf.	Culvert Size	Add'l Borrow (C.Y.)	Riprap In/Out (C.Y.)
	FSR 2204072 Work List Continues					
32+80	Install 18" X 30' ditch relief pipe, construct catch basin, ditch dam, 70° skew	5		18"	5	1/0.5*
32+80	Junction to 2204073					
33+43	Begin ditch maintenance. Construct Grade Dip, Armored. (Class I rip rap, approximately 5.5 C.Y.)					1/0.5*
34+60	Construct Grade Dip, Armored. (Class I rip rap, approximately 5.5 C.Y.)					1/0.5*
36+00	Construct Grade Dip, Armored. (Class I rip rap, approximately 5.5 C.Y.)					1/0.5*
36+50	End ditch maintenance					
39+50 - 40+50	Construct turnout left, 10' X 50' w/25' taper each side					
41+10	Maintain existing cross drain					
42+65	Remove berm, fill in existing cross drain, and re-establish ditch. construct ditch out right, 20'					
43+50	Begin placement of 4" lift of aggregate surfacing		115			
44+00	Fill in existing cross drain, re-establish ditch Install Rubber Razor Bar					
45+00	Fill in existing cross drain, re-establish ditch Install Rubber Razor Bar					
46+00	Install Rubber Razor Bar					
47+00	Install Rubber Razor Bar					
47+50	Fill in existing cross drain, re-establish ditch					
48+00	Install Rubber Razor Bar					
48+90	End crown.					
49+00	Install Rubber Razor Bar					
49+90	EOP, End aggregate surfacing placement, End reconstruction of FSR 2204072					

Additional borrow needed for pipe installations, existing stockpiles at each site may be used if suitable.  
\* Volumes are indirect and covered under the pay item.

STATION	REQUIREMENT	Rock Quan. (C.Y.)		CULVERT INSTALLATION / IMPROVEMENTS		
		Pit Run	Agg. Surf.	Culvert Size	Add'l Borrow (C.Y.)	Riprap In/Out (C.Y.)
	Project Begins at approximately FSR 2204 M.P. 6.9					
0+00	BOP, Begin reconstruction of FSR 2204070 Begin brushing and clearing, grading and shaping, road reconditioning. Subgrade compaction method C (204.11). Spot Rocking (4" of pit run) as shown in work list, Compaction Method A (322.05). Ditch maintenance required only for slide/debris removal. 12' Traveled Way, 14' Subgrade.					
0+00	Install 18" X 36" ditch relief culvert at junction w/2204	5		18"	5	1/0.5*
1+28	Construct Grade Dip, Armored. (Class I rip rap, approximately 5.5 C.Y.)					1/0.5*
2+40	Construct Grade Dip, Armored. (Class I rip rap, approximately 5.5 C.Y.)					1/0.5*
4+33	Construct Grade Dip, Armored. (Class I rip rap, approximately 5.5 C.Y.)					1/0.5*
6+44	Construct Grade Dip, Armored. (Class I rip rap, approximately 5.5 C.Y.)					1/0.5*
9+72	Construct Grade Dip, Armored. (Class I rip rap, approximately 5.5 C.Y.)					1/0.5*
10+64	Existing 18" CMP, clean outlet	5		18"		
11+10	Maintain existing cross drain					
13+34	Maintain existing cross drain					
14+00 - 15+00	Construct turnout left, 10' X 50' w/25' taper each side					
16+40	Maintain existing cross drain					
18+45	Maintain existing cross drain					
19+84	Maintain existing cross drain					
20+12	Existing 16" CMP, active, clean inlet	5		16"		
21+58	Maintain existing cross drain					
22+55 - 23+55	Construct turnout left, 10' X 50' w/25' taper each side					
24+00	Install 18" X 26" ditch relief culvert, construct catch basin, ditch dam, 70° skew	5		18"	5	1/0.5*
25+56	Maintain existing cross drain					
26+10	Existing 16" CMP, clean inlet	5		16"		
27+85	Maintain existing cross drain					
28+25	Existing 18" CMP, clean inlet and outlet	5		18"		
30+23	Begin 4' curve widening					
30+32	Fill in existing cross drain, re-establish ditch					
30+73	Existing 24" CMP, clean inlet and outlet.	5		24"		
31+23	End curve widening					
32+25 - 33+25	Construct turnout left, 10' X 50' w/25' taper each side					
33+85	Existing 18" CMP. Replace with 18" X 30' ditch relief pipe, existing skew, construct catch basin and ditch dam	5		18"	10	1/0.5*
35+25 - 36+25	Construct turnout left, 10' X 50' w/25' taper each side					
37+10	Maintain existing cross drain					
37+32	Maintain existing cross drain					
37+76	Existing 16" CMP, active, clean inlet and outlet	5		16"		
38+34 - 39+50	Remove slide, re-establish roadway and ditch					
39+69	Existing 24" plastic pipe, good	5		24"		
40+50	Begin placement of 4" lift of aggregate surfacing (roller compaction)		50			
41+50	Washout. Install 48" X 68' culvert. 2 Existing culverts adjacent to this site, remove 1 and clean inlet for the second one. Riprap fill protection required. See plan drawing for locations and detail			48"	126	See Plan
43+00	End placement of aggregate surfacing. Maintain existing cross drain					
43+50	Existing 16" CMP. Replace with 18" X 30' ditch relief pipe, existing skew, construct catch basin and ditch dam	5		18"	11	1/0.5*
44+80	Fill in existing cross drain, re-establish ditch					
45+50	Fill in existing cross drain, re-establish ditch					
46+00	Existing 16" CMP, good	5		16"		
48+00	Maintain existing cross drain					
48+36	Existing 16" CMP, good	5		16"		

Additional borrow needed for pipe installations, existing stockpiles at each site may be used if suitable.



Unit / Region :  
USDA - Forest Service - R6

National Forest :  
Olympic

District :  
Pacific

Project Name :  
Chester Timber Sale  
Road Reconstruction

Sheet Name :  
Work List  
FSR 2204070 - 1 of 3

Sheet Number :  
18 Of 21

STATION	REQUIREMENT	Rock Quan. (C.Y.)		CULVERT INSTALLATION / IMPROVEMENTS		
		Pit Run	Agg. Surf.	Culvert Size	Add'l Borrow (C.Y.)	Riprap In/Out (C.Y.)
FSR 2204070 Work List Continues						
50+00	Maintain existing cross drain					
50+45	Existing 18" CMP, clean inlet and outlet	5		18"		
51+70	Fill in existing cross drain, re-establish ditch					
52+38	Existing 18" CMP, good	5		18"		
53+21	Fill in existing cross drain, re-establish ditch					
53+62	Existing 18" CMP, good	5		18"		
55+00	Fill in existing cross drain, re-establish ditch					
55+46	Existing 16" CMP, good	5		16"		
56+30	Existing 18" CMP, active, clean inlet and outlet	5		18"		
56+68 - 57+68	Construct turnout left, 10' X 50' w/25' taper each side					
57+30	Maintain existing cross drain					
57+83	Existing 18" CMP, clean inlet and outlet	5		18"		
59+26	Fill in existing cross drain, re-establish ditch					
59+72	Existing 24" CMP, active, good	5		24"		
61+70	Fill in existing cross drain, re-establish ditch					
62+18	Existing 18" CMP, clean inlet	5		18"		
62+52	Fill in existing cross drain, re-establish ditch. Ditch can be relocated to gain road width if needed					
63+05	Existing 18" plastic pipe, good	5		18"		
65+55 - 66+00	Shape ditch to drain to pipe at 66+00					
65+55	Fill in existing cross drain, re-establish ditch					
66+00	Existing 18" CMP, good	5		18"		
66+54	Scarify and recompact roadway, re-establish ditch					
68+00	Maintain existing cross drain					
68+55	Existing 16" CMP, good	5		16"		
68+85	Maintain existing cross drain					
69+54	Existing 60" X 38" pipe arch, active, good	5		60"X38"		
70+00 - 71+00	Construct turnout left, 10' X 50' w/25' taper each side					
70+50	Maintain existing cross drain					
72+19	Maintain existing cross drain					
72+56	Existing 18" CMP, clean inlet	5		18"		
74+00	Fill in existing cross drain, re-establish ditch					
74+50	Existing 16" CMP, clean inlet and outlet, reconstruct catch basin	5		16"		
75+65	Maintain existing cross drain Begin placement of 4" lift of pit run					
76+38	Existing 42" X 26" pipe arch, active, good	5		42"X26"		
76+88	Install rock check dams in ditch					
77+38	Install rock check dams in ditch					
78+75	Maintain existing cross drain					
79+20	Existing 60" X 44" pipe arch, active, good	5		60"X44"		
79+70	Maintain existing cross drain					
80+10	Existing 18" CMP, good.	5		18"		
80+10 - 81+10	Construct turnout left, 10' X 50' w/25' taper each side					
83+00	Existing 16" CMP, clean inlet	5		16"		
84+35	End pitrun placement. End inslope, begin crown. Junction to 2204072					

Additional borrow needed for pipe installations, existing stockpiles at each site may be used if suitable.  
\* Volumes are indirect and covered under the pay item.



Unit / Region :  
USDA - Forest Service - R6

National Forest :  
Olympic

District :  
Pacific

Project Name :  
Chester Timber Sale  
Road Reconstruction

Sheet Name :  
Work List  
FSR 2204070 - 2 of 3

Sheet Number :  
19 Of 21

STATION	REQUIREMENT	Rock Quan. (C.Y.)		CULVERT INSTALLATION / IMPROVEMENTS		
		Pit Run	Agg. Surf.	Culvert Size	Add'l Borrow (C.Y.)	Riprap In/Out (C.Y.)
	FSR 2204070 Work List Continues					
85+30	Existing 16" CMP, good	5		16"		
87+70	Maintain existing cross drain					
88+00 - 89+50	Construct turnout left, 10' X 100' w/25' taper each side					
89+34	Maintain existing cross drain					
91+00	End crown, begin inslope					
91+70	Maintain existing cross drain					
92+30	Maintain existing cross drain					
94+41	Maintain existing cross drain					
95+30	Maintain existing cross drain					
97+05	Existing 16" CMP. Replace with 18" X 30' ditch relief pipe, existing skew, construct catch basin and ditch dam	5		18"	16	1/0.5*
98+75	Maintain existing cross drain					
100+00	Maintain existing cross drain					
102+60	Maintain existing cross drain					
103+00 - 103+67	Lower road elevation to gain traveled way width. Relocate towards ditch if necessary					
103+67	Existing 18" CMP. Replace with 18" X 30' ditch relief pipe with 20' down pipe, existing skew, construct catch basin and ditch dam	5		18"	7	1/0.5*
104+00	Repair roadbed, 3' X 3' sink hole. Scarify and recompact					
105+65	Existing 18" CMP. Replace with 18" X 32' ditch relief pipe, existing skew, construct catch basin and ditch dam	5		18"	8	1/0.5*
106+30	Maintain existing cross drain					
106+90	Maintain existing cross drain					
107+25	Existing 18" CMP, clean inlet and outlet	5		18"		
107+65	Fill in existing cross drain, re-establish ditch					
108+20	Existing 18" CMP, clean inlet and outlet	5		18"		
110+80	Existing 18" CMP, clean inlet	5		18"		
111+00	End outslope, begin crown					
111+85	Existing 24" CMP, clean inlet	5		24"		
113+55	Maintain existing cross drain					
115+70	End crown, begin inslope					
115+00 - 116+00	Construct turnout left, 10' X 50' w/25' taper each side					
117+50	End inslope, begin crown					
117+80	Fill in existing cross drain, re-establish ditch					
118+05	Existing 18" CMP, clean inlet and outlet	5		18"		
120+20	Existing 18" CMP, good	5		18"		
121+30	Maintain existing cross drain					
122+00	Re-establish ditch					
122+38	Existing 24" CMP, buried. Replace with 24" X 32' ditch relief pipe, existing skew, 15' lead off ditch, construct catch basin and ditch dam	5		24"	6	2/1*
122+58 - 124+08	End crown, begin inslope					
125+00	Install rock check dams in ditch (4 @ 50' spacing), construct catch basin at lowest check dam					
125+00	End inslope, begin crown.					
126+44	Existing 24" CMP, good	5		24"		
126+64 - 129+14	Install rock check dams in ditch (6 @ 50' spacing), construct retention pond at lowest check dam					
129+00	Clean log slide, re-establish ditch					
129+45	Existing 18" CMP, clean inlet and outlet					
129+64 - 131+14	Install rock check dams in ditch (4 @ 50' spacing), construct retention pond at lowest check dam	5		18"		

Additional borrow needed for pipe installations, existing stockpiles at each site may be used if suitable.  
\* Volumes are indirect and covered under the pay item.



Unit / Region :  
USDA - Forest Service - R6

National Forest :  
Olympic

District :  
Pacific

Project Name :  
Chester Timber Sale  
Road Reconstruction

Sheet Name :  
Work List  
FSR 2204070 - 3 of 3

Sheet Number :  
20 Of 21



Unit / Region :

USDA - Forest Service - R6

National Forest :

Olympic

District :

Pacific

Project Name :

Chester Timber Sale  
Road Reconstruction

Sheet Name :

Work List  
FSR 2204070 - 3 of 3

Sheet Number :

21 Of 21

FSR 2204070

List 4 of 4

STATION	REQUIREMENT	Rock Quan. (C.Y.)		Culvert Size	CULVERT INSTALLATION / IMPROVEMENTS		
		Pit Run	Agg. Surf.		Add'l Borrow (C.Y.)	Riprap In/Out (C.Y.)	
	FSR 2204070 Work List Continues						
131+00	Maintain existing cross drain						
131+40	Existing 18" CMP, clean inlet	5		18"			
131+60 - 132+60	Install rock check dams in ditch (3 @ 50' spacing), construct retention pond at lowest check dam						
133+37	Install 18" X 30' ditch relief culvert, construct catch basin, ditch dam, 70° skew	5		18"	6	1/0.5*	
134+80	Existing 24" CMP, good	5		24"			
137+52	Existing 18" CMP, clean inlet and outlet	5		18"			
139+00	Fill in existing cross drain, re-establish ditch						
140+10	Fill in existing cross drain, re-establish ditch						
141+40	EOP, End reconstruction of FSR 2204070						

Additional borrow needed for pipe installations, existing stockpiles at each site may be used if suitable.  
\* Volumes are indirect and covered under the pay item.

**PART I - SCHEDULE OF ITEMS  
SECTION B - SERVICES AND PRICES**

Page 1 of 2

Chester Timber Sale, Road 2204070  
Olympic National Forest  
Pacific Ranger District  
Grays Harbor County, Washington

**Rd. 22204070      MP 0.00 - 2.68**

ITEM NO.	DESCRIPTION	UNIT	QUAN-TITY	UNIT PRICE	TOTAL
15101	Mobilization	LS	1	\$ 7,800.00	\$ 7,800.00
15201	Construction Survey and Staking, Method I, Tolerance B	LS	1	\$ 1,005.00	\$ 1,005.00
15401	Contractor Testing	LS	1	\$ 4,500.00	\$ 4,500
15708	Check Dams	Each	17	\$ 207.00	\$ 3,519.00
15713	Soil Erosion and Pollution Control	LS	1	\$ 2,964.00	\$ 2,964
20105	Clearing & Grubbing, disposal of tops & limbs F, logs F, stumps F	LS	1	\$ 27,675.00	\$ 27,675.00
20401	Roadway Excavation, Compaction Method A, Finishing Method A	Cubic Yard	630	\$ 13.40	\$ 8,445.00
20404	Unclassified Borrow, Compaction Method A, Finishing Method A	Cubic Yard	200	\$ 26.15	\$ 5,230.00
20426	Grade Dips, Armored	Each	5	\$ 619.00	\$ 3,095.00
25101	Place Rip Rap, Class IV	Cubic Yard	240	\$ 94.85	\$ 22,765.00
30322	Road Reconditioning, Compaction Method C	Mile	2.68	\$ 6,445.90	\$ 17,275.00
32203	Aggregate Base, Grading D, Compaction Method B	Cubic Yard	50	\$ 20.40	\$ 1,020.00
32222	Pit Run, Maximum Size 3", Compaction Method A	Cubic Yard	240	\$ 16.40	\$ 3,935.00
60201A	18 In. Pipe Culvert	Foot	264	\$ 31.00	\$ 8,184.00
60201B	24 In. Pipe Culvert	Foot	32	\$ 40.38	\$ 1,292.00
60201C	48 In. Culvert Pipe	Foot	68	\$ 79.80	\$ 5,426.40

**PART I - SCHEDULE OF ITEMS  
SECTION B - SERVICES AND PRICES**

Page 2 of 2

**Rd. 22204070      MP 0.00 - 2.68**

ITEM NO.	DESCRIPTION	UNIT	QUAN- TITY	UNIT PRICE	TOTAL
60708	Cleaning Culvert In Place	Each	21	\$ 72.00	\$ 1,512.00
62530	Seeding and Mulching, Dry Method	LS	1	\$ 1,815.00	\$ 1,815.00
	Road 2204070			Total	\$ 127,457.40

**PART I - SCHEDULE OF ITEMS  
SECTION B - SERVICES AND PRICES**

Page 1 of 1

Chester Timber Sale, Road 2204070  
Olympic National Forest  
Pacific Ranger District  
Grays Harbor County, Washington

**Rd. 22204072      MP 0.00 - 0.95**

ITEM NO.	DESCRIPTION	UNIT	QUAN-TITY	UNIT PRICE	TOTAL
15101	Mobilization	LS	1	\$ 2,900.00	\$ 2,900.00
15401	Contractor Testing	LS	1	\$ 1,500.00	\$ 1,500.00
15713	Soil Erosion and Pollution Control	LS	1	\$ 825.00	\$ 825.00
15721	Temporary Water Bars	Each	6	\$ 118.50	\$ 711.00
20105	Clearing & Grubbing, disposal of tops & limbs F, logs F, stumps F	LS	1	\$ 13,155.00	\$ 13,155.00
20404	Unclassified Borrow, Compaction Method A, Finishing Method A	Cubic Yard	70	\$ 24.60	\$ 1,722.00
20426	Grade Dips, Armored	Each	6	\$ 619.00	\$ 3,714.00
25101	Place Rip Rap, Class IV	Cubic Yard	10	\$ 95.00	\$ 950.00
30322	Road Reconditioning, Compaction Method B	Mile	0.95	\$ 7,094.74	\$ 6,740.00
32203	Aggregate Base, Grading D, Compaction Method B	Cubic Yard	385	\$ 24.60	\$ 9,471.00
32222	Pit Run, Maximum Size 3", Compaction Method A	Cubic Yard	75	\$ 18.00	\$ 1,350.00
60201A	18 In. Pipe Culvert	Foot	164	\$ 33.90	\$ 5,559.00
60201B	24 In. Pipe Culvert	Foot	40	\$ 36.80	\$ 1,472.00
60708	Cleaning Culvert In Place	Each	5	\$ 72.00	\$ 360.00
62530	Seeding and Mulching, Dry Method	LS	1	\$ 910.00	\$ 910.00
	Road 2204072			Total	\$ 51,339.00















**STANDARD SPECIFICATIONS  
FOR CONSTRUCTION OF  
ROADS AND BRIDGES  
ON FEDERAL HIGHWAY PROJECTS  
FP-03  
US CUSTOMARY UNITS**

**Project Name:** Chester TIMBER SALE ROAD RECONSTRUCTION  
**Date:** 2/19/2013

ID LABEL	1	2	3	4	5
<b>ROAD NO.</b>	<b>2204070</b>	<b>2204072</b>	<b>2204076</b>	<b>2280050</b>	<b>2280070</b>
	<b>Reconst.</b>	<b>Reconst.</b>	<b>Reconst.</b>	<b>Reconst.</b>	<b>Reconst.</b>
<b>Terminus Begin</b>	<b>MP 0.00</b>				
<b>Terminus End</b>	<b>MP 2.68</b>	<b>MP 0.95</b>	<b>MP 0.25</b>	<b>MP 0.27</b>	<b>MP 0.61</b>
<b>Construction (C) Reconstruction (R)</b>	<b>R</b>	<b>R</b>	<b>R</b>	<b>R</b>	<b>R</b>

Title		Revised Date	1	2	3	4	5
Preface		03/15/2004					
<b>100 General Requirements</b>							
<b>101 - Terms, Format, and Definitions</b>							
	FLH FP-03 Corrections	07/25/2005					
X	Meaning of Terms	01/22/2009	X	X	X	X	X
X	Meaning of Terms	01/22/2009	X	X	X	X	X
X	Abbreviations and Symbols	06/16/2006	X	X	X	X	X

	04	Symbols	03/29/2007	X	X	X	X	X
	04	Definitions	11/06/2007	X	X	X	X	X
<b>102 - Bid, Award, and Execution of Contract</b>								
	00	Delete 102 in its entirety	02/16/2005	X	X	X	X	X
<b>103 - Scope of Work</b>								
	00	Intent of Contract	02/16/2005	X	X	X	X	X
<b>104 - Control of Work</b>								
	00	Deletions to 104	06/16/2006	X	X	X	X	X
	03	Specifications and Drawings	02/22/2005					
	03	Specifications and Drawings	01/22/2009	X	X	X	X	X
	03	Specifications and Drawings	02/22/2005					
	06	Use of Roads by Contractor	02/17/2005	X	X	X	X	X
	07	Other Contracts	02/17/2005	X	X	X	X	X
<b>105 - Control of Material</b>								
	02	Material Sources	02/17/2005					
	02	Material Sources	02/17/2005					
	02	Material Sources	01/18/2007	X	X	X	X	X
	02	Material Sources	02/17/2005	X	X	X	X	X
	02	Material Sources	02/17/2005					
	02	Government-provided sources	03/29/2005					
	02	Contractor-provided material sources	03/08/2007	X	X	X	X	X
	05	Use of Material Found in the Work	05/12/2004	X	X	X	X	X
<b>106 - Acceptance of Work</b>								
	01	Conformity with contract requirements	07/31/2007					

	01	Conformity with contract requirements	07/31/2007	X	X	X	X	X
	07	Partial and Final Acceptance	05/11/2004	X	X	X	X	X
<b>107 - Legal Relations and Responsibility To the Public</b>								
	02	Protection and Restoration of Property and Landscape	02/17/2005					
	05	Responsibility for Damage Claims	05/11/2004	X	X	X	X	X
	06	Contractor Responsibility for Work	06/16/2006	X	X	X	X	X
	08	Sanitation, Health, and Safety	05/11/2004					
	08	Sanitation, Health & Safety	03/29/2005	X	X	X	X	X
	09	Legal Relationship of the Parties	06/16/2006	X	X	X	X	X
	10	Environmental Protection	06/16/2006	X	X	X	X	X
	11	Protection of Forests, Parks, and Public Lands	02/17/2005					
<b>108 - Prosecution and Progress</b>								
	00	Delete Section 108 in entirety	02/16/2005	X	X	X	X	X
<b>109 - Measurement and Payment</b>								
	00	Deletions	02/17/2005	X	X	X	X	X
	02	Measurement Terms and Definitions	06/16/2006	X	X	X	X	X
	03	Weighing Procedures and Devices	02/17/2005					
	03	Weighing Procedures and Devices	03/29/2005					
<b>150 Project Requirements</b>								
<b>151 - Mobilization</b>								
	03	Payment	08/05/2005					
<b>152 - Construction Survey and Staking</b>								
	00	Construction Survey and Staking	08/05/2005	X				
<b>153 - Contractor Quality Control</b>								

	02	Contractor Quality Control Plan	02/17/2005	X	X	X	X	X
	04	Records	10/24/2007	X	X	X	X	X
<b>154 - Contractor Sampling and Testing</b>								
	01	Description	05/24/2005	X	X	X	X	X
<b>155 - Schedules for Construction Contracts</b>								
	00	Contractor Quality Control Plan, Records	05/11/2004	X	X	X	X	X
<b>156 - Public Traffic</b>								
	00	Complete specification	04/17/2007	X	X	X	X	X
	03	Accommodating Traffic During Work	02/24/2005					
	04	Maintaining Roadways During Work	02/24/2005					
	08	Traffic and Safety Supervisor	02/24/2005					
<b>157 - Soil Erosion Control</b>								
	03	General	02/24/2005	X	X	X	X	X
<b>170 - Develop Water Supply and Watering</b>								
	00	Complete Specification	03/30/2005					
<b>171 - Weed and Disease Prevention</b>								
	00	Complete Specification	03/30/2005	X	X	X	X	X
<b>183 - P Line Survey</b>								
	00	Complete Specification	03/30/2005					
<b>185 - Low Volume Road Design</b>								
	00	Complete Specification	02/24/2005					
<b>200 Earthwork</b>								
<b>201 - Clearing and Grubbing</b>								
	00	Deletions	08/05/2009	X	X	X	X	X

	01	Description	02/18/2005	X	X	X	X	X
	04	Clearing	02/18/2005					
	04	Clearing	02/22/2005	X	X	X	X	X
	04	Clearing	03/03/2005	X	X	X	X	X
	06	Disposal	02/18/2005	X	X	X	X	X
	06	Disposal	02/23/2005					
	06	Disposal	02/23/2005					
	06	Disposal	11/04/2004	X	X	X	X	X
	06	Disposal	05/12/2004					
	06	Disposal	11/09/2005	X	X	X	X	X
<b>203 - Removal of Structures and Obstructions</b>								
	01	Description	02/25/2005	X	X	X	X	X
	02	Material	02/18/2005					
	04	Removing Material	02/18/2005	X	X	X	X	X
	05	Disposing of Material	02/24/2005					
	05	Disposing of Material	02/18/2005					
	05	Disposing of Material	02/18/2005	X	X	X	X	X
	08	Payment	02/24/2005					
<b>204 - Excavation and Embankment</b>								
	00	Complete Specification	03/26/2009	X	X	X	X	X
	05	Conservation of Topsoil	02/18/2005					
	06	Roadway Excavation	03/02/2005					
	06	Roadway Excavation	03/02/2005					
	06	Roadway Excavation	03/02/2005					

	09	Preparing Foundation for Embankment Construction	03/02/2005						
	10	Embankment Construction	03/02/2005						
	11	Compaction	04/11/2005						
	13	Sloping, Shaping, and Finishing	03/02/2005						
	13	Sloping, Shaping, and Finishing	03/02/2005						
	14	Disposal of Unsuitable or Excess Material	03/02/2005						
	15	Acceptance	02/07/2007						
<b>205 - Rock Blasting</b>									
	02	Regulations	05/13/2004						
	06	Preblast condition survey and vibration monitoring and control	05/12/2004						
	07	Test Blasting	05/12/2004						
	08	Controls	05/12/2004						
<b>209 - Structure Excavation and Backfill</b>									
	00	Complete Spec. 209A; Exc & Backfill for selected Minor Structures. NOT a Replacement for 209.	03/24/2008						
	10	Backfill	10/23/2007	X	X	X	X	X	
	11	Compacting	02/24/2005	X	X	X	X	X	
<b>211 – Roadway Obliteration</b>									
	01	Description	03/30/2005						
	01	Description	03/30/2005						
	02	Construction Requirements	02/25/2005						
<b>212 – Linear Grading</b>									
	00	Complete Specification (composite road construction)	05/19/2005						

<b>213 – Subgrade Stabilization</b>							
02	FLH FP-03 Correction metric	09/06/2005					
<b>250 Structural Embankments</b>							
<b>251 – Riprap</b>							
03	General	06/18/2007	X	X	X		
<b>252 – Special Rock Embankment and Rock Buttress</b>							
02	Material – Placing Rock	05/13/2004					
<b>255 – Mechanically Stabilized Earth Walls</b>							
02	Material – Acceptance	02/25/2005					
<b>262 – Reinforced Soil Embankment</b>							
00	Complete Specification	05/14/2004					
01	Table 262-1 Sampling & Testing Requirements	05/14/2004					
<b>300 Aggregate Courses</b>							
<b>301 – Untreated Aggregate Courses</b>							
00	Title Change	03/03/2005					
01	Work	03/03/2005					
02	Material	05/16/2005					
03	General	09/14/2005					
04	Mixing and Spreading	03/03/2005					
05	Compacting	05/17/2005					
06	Surface Tolerance	03/03/2005					
08	Acceptance	03/03/2005					
08	Acceptance	03/03/2005					
08	Acceptance	03/30/2005					

	09	Measurement	07/07/2005					
	10	Payment	03/03/2005					
<b>302 - Treated Aggregate Courses</b>								
	00	Deletes 302 in its entirety	02/16/2005					
	03	FLH FP-03 Corrections metric	08/12/2004					
<b>303 - Road Reconditioning</b>								
	01	Description	03/02/2005					
	06	Aggregate Surface Reconditioning	05/17/2005					
	07	Roadway Reconditioning	03/02/2005					
	11	Measurement	03/29/2005					
<b>306 - Dust Palliative</b>								
	03	General	03/02/2005					
	04	Preparation and Application	03/02/2005					
	06	Acceptance	03/02/2005					
	10	Table 306-1 Sampling & Testing	03/02/2005					
<b>320 - Stockpiled Aggregates</b>								
	00	Complete Specification	03/02/2005					
<b>321 - Major Aggregate Courses</b>								
	00	Complete Specification	12/19/2005					
<b>322 - Minor Aggregate Courses</b>								
	00	Complete Specification	10/14/2011	X	X	X	X	X
<b>400 Asphalt Pavements and Surface Treatments</b>								
<b>401 - Superpave Hot Asphalt Concrete Pavement</b>								
	01	FLH FP-03 Correction metric uscu	08/12/2004					

	04	FLH FP-03 Correction uscu	08/12/2004					
<b>402 - Hot Asphalt Concrete Pavement by Hveem or Marshall Mix Design Method</b>								
	03	FLH FP-03 Correction metric uscu	08/12/2004					
<b>403 - Hot Asphalt Concrete Pavement</b>								
	06	Surface Preparation	05/17/2005					
	16	Pavement Smoothness & Testing	03/02/2005					
	17	Acceptance	03/02/2005					
	17	Acceptance	03/02/2005					
<b>404 - Minor Hot Asphalt Concrete</b>								
	02	Composition of Mix (Job-Mix Formula)	03/02/2005					
	04	Weather Limitations	03/02/2005					
	06	Placing	03/02/2005					
	07	Compacting (a)	03/02/2005					
	07	Compacting (b)	03/02/2005					
	09	Acceptance	03/02/2005					
<b>409 - Asphalt Surface Treatment</b>								
	02	Material	05/12/2004					
	06	Weather, date, time	05/12/2004					
	08	Application	06/21/2005					
	10	FLH FP-03 Corrections uscu	08/12/2004					
	11	table409-2	12/18/2004					
	12	FLH FP-03 Correction uscu	08/12/2004					
	13	Acceptance & Testing	05/13/2004					

<b>411 - Asphalt Prime Coat</b>							
	06	Application	05/12/2004				
<b>414 - Asphalt Pavement Crack and Joint Sealing</b>							
	02	Material	05/12/2004				
	05	Cleaning & Sealing	05/12/2004				
<b>430 - Asphalt Pavement Patching</b>							
	00	Complete Specification	05/12/2004				
<b>550 Bridge Construction</b>							
<b>552 - Structural Concrete</b>							
	13	FLH FP-03 Correction metric uscs	08/12/2004				
<b>571 - Prefabricated Bridges</b>							
	00	Complete Specification	03/15/2005				
<b>572 - Log Stringer Bridges</b>							
	00	Complete Specification	05/12/2004				
<b>573 - Bridge Repair</b>							
	00	Complete Specification	05/12/2004				
<b>600 Incidental Construction</b>							
<b>601 - Minor Concrete</b>							
	00	Replace Specification	05/14/2004				
	02	Table 601-2 Sampling & Testing	03/02/2005				
<b>602 - Culverts and Drains</b>							
	03	General	09/06/2005	X	X	X	
	06	Laying Plastic Pipe	08/05/2009	X	X	X	
<b>603 - Structural Plate Structures</b>							

	03	General	03/02/2005					
	04	Erecting	03/02/2005					
<b>607 - Cleaning, Reconditioning, and Repairing Existing Drainage</b>								
	04	Cleaning Culverts in Place	03/02/2005	X	X	X		X
<b>625 - Turf Establishment</b>								
	03	General	02/25/2005					
	03	General	07/02/2007	X	X	X	X	X
	04	Preparing Seedbed	02/25/2005					
	05	Watering	03/30/2005					
	05	Watering	03/02/2005					
	07	Seeding	02/25/2005					
<b>633 - Permanent Traffic Control</b>								
	02	Material	03/03/2005					
	03	General	03/03/2005					
	05	Panels	03/03/2005					
<b>634 - Permanent Pavement Marking</b>								
	03	General	03/03/2005					
<b>635 - Temporary Traffic Control</b>								
	03	General	05/13/2004	X	X	X	X	X
<b>648 - Stream Simulation</b>								
	00	Complete Specification	03/15/2005					
<b>650 - Road Closure Devices</b>								
	00	Complete Specification	06/28/2007					
<b>651 - Development of Pits &amp; Quarries</b>								

	00	Complete Specification	03/02/2005						
<b>700 Material</b>									
<b>703 – Aggregate</b>									
	05	Subbase, Base, & Surface Course Aggregate	08/14/2009	X	X	X	X	X	
	06	Flakiness Index and Adherent Coatings	03/02/2005						
	07	FLH FP-03 Correction metric uscu	03/02/2005						
	10	FLH FP-03 Correction	03/02/2005						
<b>704 - Soil</b>									
	02	FLH FP-03 Correction Bedding Material	03/02/2005						
	02	FLH FP-03 Modification - Bedding Material metric uscu	03/02/2005						
<b>705 – Rock</b>									
	02	Riprap Rock	08/05/2009	X	X	X			
<b>712 - Joint Material</b>									
	01	Sealants, Fillers, Seals, and Sleeves	03/02/2005						
<b>713 - Roadside Improvement Material</b>									
	05	Mulch	03/02/2005	X	X	X	X	X	
<b>714 - Geotextile and Geocomposite Drain Material</b>									
	03	Geogrids	02/25/2005	X	X	X	X	X	
<b>718 - Traffic Signing and Marking Material</b>									
	02	Protective Overlay Film and Edge Film	03/02/2005						
	05	Aluminum Panels	02/25/2008	X	X	X	X	X	
	08	FLH FP-03 Correction metric	03/27/2007						
	14	FLH FP-03 Correction metric uscu	03/02/2005						
	15	FLH FP-03 Corrections metric	03/27/2007						

	15	FLH FP-03 Correction metric	03/27/2007					
<b>725 - Miscellaneous Material</b>								
	02	Calcium Chloride, Calcium Chloride Flakes and Magnesium Chloride	03/02/2005					

## Table of Contents

Table of Contents .....	14
Preface.....	18
101 - Terms, Format, and Definitions.....	19
101.01 Meaning of Terms.....	19
101.01 Meaning of Terms.....	19
101.03 Abbreviations.....	19
101.04 Definitions.....	19
101.04 Definitions.....	22
102 - Bid, Award, and Execution of Contract .....	23
102 Bid, Award, and Execution of Contract.....	23
103 - Scope of Work.....	24
Deletions .....	24
104 - Control of Work.....	25
Deletions .....	25
104.03.....	25
104.06 Use of Roads by Contractor.....	25
104.07 Other Contracts.....	25
105 - Control of Material .....	26
105.02 Material Sources.....	26
105.02(a) Government-provided sources.....	26
105.02(a) Government Provided Sources.....	26
105.02 Material Sources.....	26
105.02(a) Contractor-provided sources.....	26
105.05 Use of Material Found in the Work.....	26
106 - Acceptance of Work .....	28
106.01 Conformity with Contract Requirements.....	28
106.07 Delete .....	30
107 - Legal Relations and Responsibility to the Public.....	31
107.05 Responsibility for Damage Claims.....	31

107.06 Contractor’s Responsibility for Work.....	31
107.08 Sanitation, Health, and Safety.....	31
107.09 Legal Relationship of the Parties.....	31
107.10 Environmental Protection.....	31
108 - Prosecution and Progress.....	33
108 Delete.....	33
109 - Measurement and Payment.....	34
109 Deletions.....	34
109.02 Measurement Terms and Definitions.....	34
152 - Construction Survey and Staking.....	35
152.02 General.....	35
Table 152-1 Tolerances for reestablishing P-line, traverse, and elevations.....	38
Table 152-2 Cross section and slope stake tolerances.....	39
153 - Contractor Quality Control.....	40
153.02 Contractor Quality Control Plan.....	40
153.04 Records.....	40
154 - Contractor Sampling and Testing.....	41
155 - Schedules for Construction Contracts.....	42
155 Delete.....	42
156 - Public Traffic.....	43
157 - Soil Erosion Control.....	47
157.03 General.....	47
171 - Weed and Disease Prevention.....	48
201 - Clearing and Grubbing.....	50
201.02 Material:.....	50
201.01 Description.....	50
201.04 Clearing. (c).....	50
201.04 Clearing.....	51
201.06 Disposal.....	51
201.06 Disposal.....	52
203 - Removal of Structures and Obstructions.....	53

203.01 Description.....	53
203.04 Removing Material.....	53
203.05 Disposing of Material.....	53
204 - Excavation and Embankment.....	55
209 - Structure Excavation and Backfill.....	67
209.10 Backfill.....	67
209.11 Compacting.....	67
Table 209-1 Sampling and Testing Requirements.....	68
251 - Riprap.....	69
251.03 General.....	69
322 - Minor Aggregate Courses.....	70
602 - Culverts and Drains.....	77
602.03 General.....	77
602.06 Laying Plastic Pipe.....	77
607 - Cleaning, Reconditioning, and Repairing Existing Drainage.....	78
607.04 Cleaning Culverts in Place.....	78
625 - Turf Establishment.....	79
625.03 General.....	79
625.04 Preparing Seedbed.....	79
625.05 Watering.....	79
625.06 Fertilizing.....	79
625.07 Seeding.....	80
625.08 Mulching.....	81
625.09 Protecting and Caring for Seeded Areas.....	81
625.11 Measurement.....	81
635 - Temporary Traffic Control.....	82
635.03 General.....	82
703 – Aggregate.....	83
705 - Rock.....	88
705.02 Riprap Rock.....	88
713 - Roadside Improvement Material.....	90

713.05 Mulch.....	90
714 - Geotextile and Geocomposite Drain Material.....	91
Tables 714-1 and 714-4. ....	91
714.03 Geogrids.....	91
Table 714-7—Physical strength requirements for geogrids. ....	91
718 - Traffic Signing and Marking Material.....	92
718.05 Aluminum Panels.....	92

## Preface

Preface\_wo\_03\_15\_2004\_m

Delete all but the first paragraph and add the following:

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

# 101 - Terms, Format, and Definitions

101.00\_nat\_us\_07\_25\_2005

101.01\_nat\_us\_01\_22\_2009

## 101.01 Meaning of Terms

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

101.01\_nat\_us\_01\_22\_2009

## 101.01 Meaning of Terms

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

101.03\_nat\_us\_06\_16\_2006

## 101.03 Abbreviations.

Add the following to (a) Acronyms:

AFPA	American Forest and Paper Association
MSHA	Mine Safety and Health Administration
NIST	<a href="#">National Institute of Standards and Technology</a>
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.

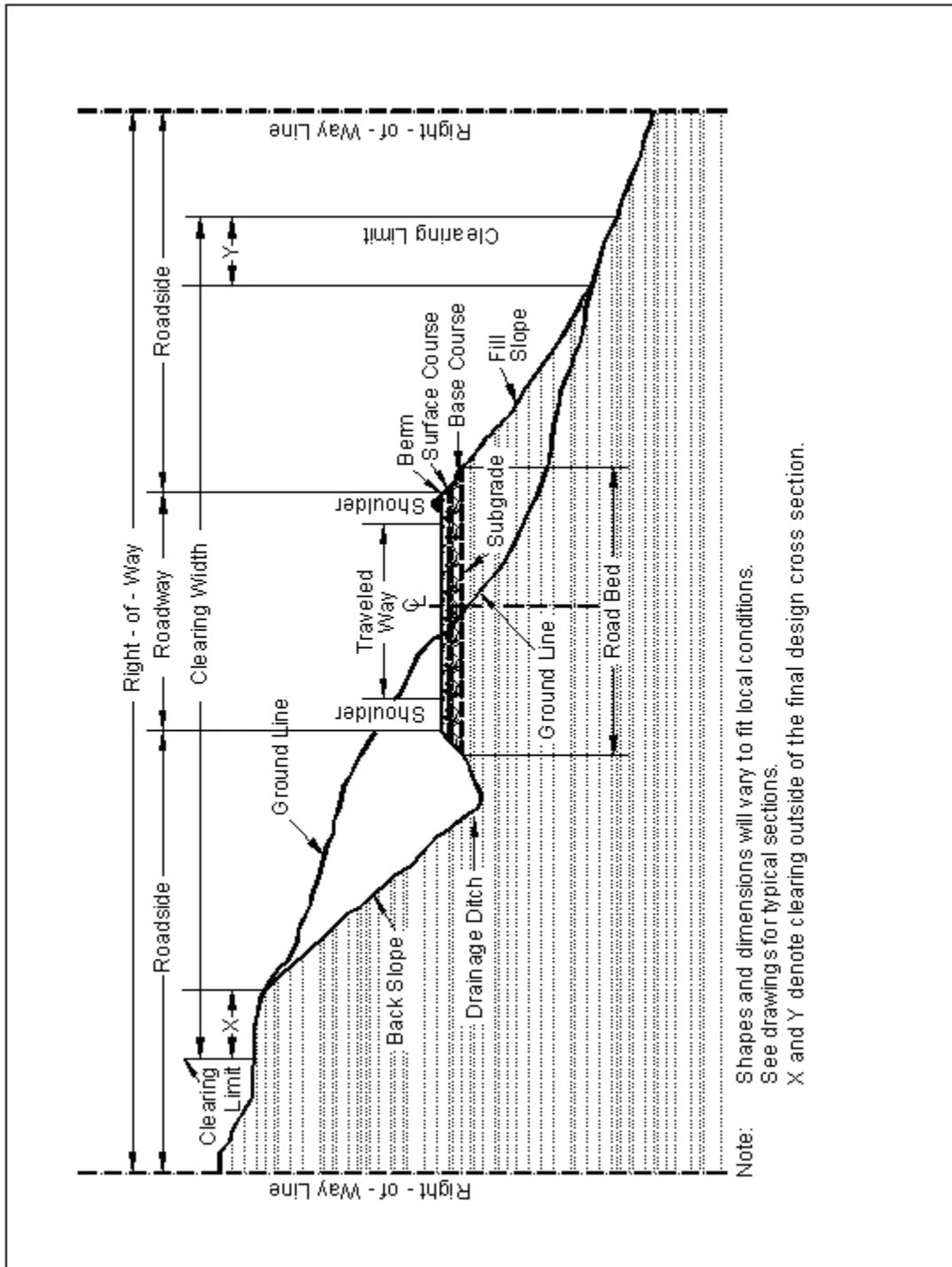
**Road Order**--An order affecting and controlling traffic on roads under Forest Service jurisdiction. Road Orders are issued by a designated Forest Officer under the authorities of 36 CFR, part 260.

**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 Definitions.**

Delete the following definitions:

Contract Modification

Day

Notice to Proceed

Solicitation

## 102 - Bid, Award, and Execution of Contract

102.00\_nat\_us\_02\_16\_2005

### 102 Bid, Award, and Execution of Contract

Delete Section 102 in its entirety.

## 103 - Scope of Work

103.00\_nat\_us\_02\_16\_2005

### Deletions

Delete all but subsection 103.01 Intent of Contract.

## 104 - Control of Work

104.00\_nat\_us\_06\_16\_2006

### Deletions

Delete Sections 104.01, 104.02, and 104.04.

104.03\_nat\_us\_01\_22\_2009

### 104.03 Specifications and Drawings.

Delete 104.03.

104.06\_nat\_us\_02\_17\_2005

Add the following subsection:

### 104.06 Use of Roads by Contractor

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

104.07\_nat\_us\_02\_17\_2005

Add Subsection.

### 104.07 Other Contracts.

**Forest Service** is administering and is intending to award other contracts within the area of this project or within the Haul Route area. Schedule activities to assure no delays or interference to the operations of the U.S. Forest Service contracts.

## 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\_02\_17\_2005

#### 105.02(a) Government Provided Sources.

There is no charge for material taken from Elk Creek Pit ( FSR-2204031).

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 14 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

107.05\_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 than 200 feet take cross-sections at a maximum centerline spacing of 80 feet.

### **c) Slope Stakes & References:**

Replace section with the following:

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

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

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

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

Use the designated method to establish the slope stake catchpoint.

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

### **(d) Clearing and grubbing limits.**

Add the following:

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

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

### **(e) Centerline reestablishment.**

Replace with the following:

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

**(g) Culverts.**

Replace subsection with the following:

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

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

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

**152.03 (I) 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.**

<b>Precision Class</b>	<b>Minimum Position Closure</b>	<b>Angular Accuracy (<math>\pm</math>)</b>	<b>L-Line Tangent Control Points<sup>a</sup> (<math>\pm</math>)</b>	<b>Vertical Closure<sup>b</sup> (<math>\pm</math>)</b>
A (Bridges)	1/10,000	2 sets, direct/reverse 10 second rejection limit	N/A	0.02 ft or 0.02ft/1000ft <sup>c</sup>
B	1/5,000	2 sets, direct/reverse 20 second rejection limit	0.1 ft	0.02 ft or 0.02ft/1000ft <sup>c</sup>
C	1/1,000	1 set, direct/reverse 1 minute rejection limit	0.2 ft	0.5ft/1000ft <sup>c</sup>
D	1/300	Foresight and backsight; 15 minute rejection limit <sup>c</sup>	0.4 ft	1.0ft/1000ft <sup>c</sup>
E	1/100	Foresight and backsight; 30 minute rejection limit <sup>c</sup>	0.8 ft	1.0ft/1000ft <sup>c</sup>
<p>a. Accuracy of offset measurement.</p> <p>b. Determine vertical closures at intervals not to exceed 2000 ft as measured along centerline.</p> <p>c. Use greater value.</p>				

**Table 152-2 Cross section and slope stake tolerances.**

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

## 153 - Contractor Quality Control

153.02\_nat\_us\_02\_17\_2005

### 153.02 Contractor Quality Control Plan.

Add the following:

Submit written proposals for approval of alternate AASHTO or State approved test methods. Alternate methods may be allowed based on documented equivalence to the specified method.

153.04\_nat\_us\_10\_24\_2007

### 153.04 Records.

Delete all but the first sentence

## 154 - Contractor Sampling and Testing

154.01\_nat\_us\_05\_24\_2005

### 154.01 Description

Delete the last sentence of the first paragraph.

## 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 \_N/A\_ minutes at any one time followed by an open period of no less than \_N/A\_ minutes.

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

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

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

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

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

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

**Table 156-1**

**Temporary Road Closures**

<b>Road Number</b>	<b>From Terminus</b>	<b>To Terminus</b>	<b>Maximum Consecutive Days of Closure</b>	<b>Minimum Consecutive Days Open</b>
2204070	0.00	2.68	Close to the Public for the length of the sale.	Close to the Public for the length of the sale.
2204072	0.00	0.95	Close to the Public for the length of the sale.	Close to the Public for the length of the sale.
2204073	0.00	0.52	Close to the Public for the length of the sale.	Close to the Public for the length of the sale.
2204076	0.00	0.25	Close to the Public for the length of the sale.	Close to the Public for the length of the sale.
2280050	0.00	0.27	Close to the Public for the length of the sale.	Close to the Public for the length of the sale.
2280070	0.00	0.61	Close to the Public for the length of the sale.	Close to the Public for the length of the sale.

**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.

## 171 - Weed and Disease Prevention

171.00\_nat\_us\_03\_30\_2005

### Description

**171.01** This work consists of washing and treating construction equipment to remove seeds, plants, and plant fragments from the equipment before the equipment is used on National Forest System lands.

### Material

**171.02** Conform to the following Subsection:

Water	725.01
-------	--------

### Construction Requirements

**171.03 General .** Notify the CO in writing at least 15 days before moving any construction equipment onto National Forest System lands. Construction equipment does not include cars, pickup trucks, and other vehicles that regularly travel between the construction site and areas outside of National Forest System lands.

Perform all work at a location designated on the plans or other locations approved in writing. Provide the CO with an opportunity to monitor the washing and inspection.

**171.04 Equipment.** Use a high pressure washing system.

For work on National Forest System lands, use a washing system that traps all wash water and either stores it for removal from National Forest System lands or recycles the water for continued

use. If the equipment recycles the water, provide adequate filters for seed removal. Dispose of the filter material and removed seeds in an approved manner. Do not mix soaps, detergents, or other chemicals with the wash water.

For work at a commercial washing facility, use an approved facility.

**171.05 Washing.** Wash the sides, tops, and undercarriages of all construction equipment. Remove all seeds, plants, plant fragments, dirt, and debris from the construction equipment.

**171.06 Inspection.** Inspect the washed construction equipment, including the undercarriage, to ensure that the washing removed the dirt, debris, and seeds from the construction equipment. Rewash the construction equipment as necessary or as directed.

**171.07 Acceptance.** Weed prevention will be evaluated under Subsection 106.02.

### **Measurement**

**171.08** Do not measure weed prevention for payment.

### **Payment**

**171.09** Include all costs associated with the Section 171-Weed Prevention in the unit price for Section 151-Mobilization.

## 201 - Clearing and Grubbing

201.00\_nat\_us\_08\_05\_2009

### 201.02 Material:

Delete Tree wound dressing material reference.

### 201.03 General.

Delete the last sentence.

### 201.04 Clearing.

Delete the last sentence of (d).

201.01\_nat\_us\_02\_18\_2005

### 201.01 Description

Replace with the following

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

201.04\_nat\_us\_02\_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.

201.04\_nat\_us\_03\_03\_2005

**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	<u>40</u> % Net Scale in
<u>12</u> feet	<u>6</u> inches	% of Gross Scale

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 Disposal

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

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

## 201.06 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.

## 203 - Removal of Structures and Obstructions

203.01\_nat\_us\_02\_25\_2005

### 203.01 Description.

Delete and replace with the following:

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

203.04\_nat\_us\_02\_18\_2005

### 203.04 Removing Material.

Replace the fourth and fifth paragraphs with the following:

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

Remove structures and obstructions in the roadbed to 12 inches below subgrade elevation.

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

203.05\_nat\_us\_02\_18\_2005

### 203.05 Disposing of Material.

Add the following:

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

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

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

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

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

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

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

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

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

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

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

## 204 - Excavation and Embankment

204.00\_nat\_us\_03\_26\_2009

**Replace Section 204 in its entirety with the following:**

### Description

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

### 204.02 Definitions.

**(a) Excavation.** Excavation consists of the following:

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

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

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

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

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

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

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

## Material

### 204.03 Conform to the following Subsections:

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

## Construction Requirements

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

**204.05 Reserved.**

**204.06 Roadway Excavation.** Excavate as follows:

**(a) General.** Do not disturb material and vegetation outside the construction limits. Incorporate only suitable material into embankments. Replace any shortage of suitable material caused by premature disposal of roadway excavation. Dispose of unsuitable or excess excavation material according to Subsection 204.14.

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

Retrieve material deposited outside of the clearing limits as directed by the CO. Place unsuitable material in designated areas.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Form furrow ditches by plowing or using other acceptable methods to produce a continuous furrow. Place all excavated material on the downhill side so the bottom of the ditch is approximately 18 inches below the crest of the loose material. Clean the ditch using a hand shovel, ditcher, or other suitable method. Shape to provide drainage without overflow.

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

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

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

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

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

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

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

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

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

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

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

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

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

When there is a pay item for waste, shape and compact the waste material in its final location. Do not mix clearing or other material not subject to payment with the waste material.

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

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

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

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

### **Measurement**

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

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

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

*(a)* Roadway prism excavation;

- (b) Rock material excavated and removed from below subgrade in cut sections;
- (c) Unsuitable material below subgrade and unsuitable material beneath embankment areas when a pay item for subexcavation is not shown in the bid schedule;
- (d) Ditches, except furrow ditches measured under a separate bid item;
- (e) Topsoil;
- (f) Borrow material used in the work when a pay item for borrow is not shown in the bid schedule;
- (g) Loose scattered rocks removed and placed as required within the roadway;
- (h) Conserved material taken from stockpiles and used in Section 204 work; and
- (i) Slide and slipout material not attributable to the Contractor's method of operation.

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

- (a) Overburden and other spoil material from borrow sources;
- (b) Overbreakage from the backslope in rock excavation;
- (c) Water or other liquid material;
- (d) Material used for purposes other than required;
- (e) Roadbed material scarified in place and not removed;
- (f) Material excavated when stepping cut slopes;
- (g) Material excavated when rounding cut slopes;
- (h) Preparing foundations for embankment construction;
- (i) Material excavated when benching for embankments;
- (j) Slide or slipout material attributable to the Contractor's method of operation;
- (k) Conserved material taken from stockpiles constructed at the option of the Contractor; and
- (l) Material excavated outside the established slope limits.

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

- (a) Unsuitable material below subgrade in cuts and unsuitable material beneath embankment areas when a pay item for subexcavation is not shown in the bid schedule;
- (b) Slide and slipout material not attributable to the Contractor's method of operations; and
- (c) Drainage ditches, channel changes, and diversion ditches.

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

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

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

(1) Include the following volumes in embankment construction:

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

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

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

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

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

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

### **Payment**

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

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 <sup>(1)</sup> or T 99, method C <sup>(1)</sup>	1 per soil type but not less than 1 per 6000 yd <sup>2</sup> but not less than 1 per layer	“	“	“
		Compaction	—	AASHTO T 310 or other approved procedures	1 per 6000 yd <sup>2</sup> 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 <sup>(1)</sup> or T 99, method C <sup>(1)</sup>	1 per soil type but not less than 1 per 6000 yd <sup>2</sup> but not less than 1 per layer	“	“	“
		Compaction	—	AASHTO T 310 or other approved procedures	1 per 6000 yd <sup>2</sup> 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**

<b>Material or Product</b>	<b>Type of Acceptance (Subsection)</b>	<b>Characteristic</b>	<b>Category</b>	<b>Test Methods Specifications</b>	<b>Sampling Frequency</b>	<b>Point of Sampling</b>	<b>Split Sample</b>	<b>Reporting Time</b>
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 <sup>(1)</sup> or T 99, method C <sup>(1)</sup>	1 per soil type but not less than 1 per 13,000 yd <sup>3</sup>	“	“	“
		Compaction	—	AASHTO T 310 or other approved procedures	1 per 3500 yd <sup>2</sup> 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 <sup>2</sup>	In-place	—	Before placing next layer

(1) Minimum of 5 points per proctor.

**Table 204-2  
Construction Tolerances**

	Tolerance Class <sup>(a)</sup>												
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>	<b>J</b>	<b>K</b>	<b>L</b>	<b>M</b>
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 <sup>(b)</sup> )	±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 - Structure Excavation and Backfill

209.10\_nat\_us\_10\_23\_2007

### 209.10 Backfill.

#### (a) General.

##### Add the following:

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

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

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

#### (b) Pipe culverts.

##### (1) Pipe culverts with compacted backfill.

##### Add the following:

Excavate an area on each side of the pipe as needed to effectively achieve compaction requirements. Backfill without damaging or displacing the pipe. Complete backfilling of the trench with suitable material.

209.11\_nat\_us\_02\_24\_2005

### 209.11 Compacting.

##### Delete the subsection and add the following:

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

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

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

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

**Table 209-1 Sampling and Testing Requirements**

Add the following:

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

## 251 - Riprap

251.03\_nat\_us\_08\_05\_2009

### Construction Requirements

#### 251.03 General.

Add the following:

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

#### 251.08 Measurement.

Add the following:

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

## 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  $\pm 0.10$  feet from staked line and grade elevation.

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

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

Ensure that the compacted thickness is not consistently above or below the specified thickness. The maximum variation from the compacted specified thickness is 1/2 inch.

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

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

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

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

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

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

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

## **Measurement**

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

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

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

Measure thickness perpendicular to the grade of the travelway.

Measure width perpendicular to the centerline.

## **Payment**

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

**Table 322-1  
Sampling and Testing Requirements**

<b>Material or Product</b>	<b>Type of Acceptance (Subsection)</b>	<b>Characteristic</b>	<b>Category</b>	<b>Test Methods Specifications</b>	<b>Sampling Frequency</b>	<b>Point of Sampling</b>	<b>Split Sample</b>	<b>Reporting Time</b>
Aggregate source quality 703.05	Measured and tested for conformance (106.04 & 105)	LA abrasion (course)	—	AASHTO T 96	1 per type & source of material	Source of material	Yes, when requested	Before using in work
		Sodium sulfate soundness loss (course & fine)	—	AASHTO T 104	“	“	“	“
		Durability index (course & 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**

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

**Table 322-2  
Sampling and Testing Requirements**

<b>Material or Product</b>	<b>Type of Acceptance (Subsection)</b>	<b>Characteristic</b>	<b>Category</b>	<b>Test Methods Specifications</b>	<b>Sampling Frequency</b>	<b>Point of Sampling</b>	<b>Split Sample</b>	<b>Reporting Time</b>
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.

602.06\_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

607.04\_nat\_us\_03\_02\_2005

### 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

625.03\_nat\_us\_07\_02\_2007

### 625.03 General.

Delete this subsection and replace with the following:

Apply turf establishment to prepared ground or any disturbed area between 06/01 and 10/31. Apply turf establishment to the areas shown on the plans or worklists within 7 days after completion of ground disturbing activities. Unless otherwise specified in writing by the CO apply turf establishment after each 2,000 foot section of road has been constructed to template lines. Seeded areas damaged by construction activities shall be reseeded within 10 days of the damage. Do not seed during windy weather or when the ground is excessively wet, frozen, or snow covered.

Assure that all seed and mulch used in the work conforms to the weed free requirements of Section 713.

### 625.04 Preparing Seedbed.

Delete entire subsection and replace with the following:

Ensure that the surface soil is in a roughened condition favorable for germination and growth.

### 625.05 Watering

Delete entire subsection.

### 625.06 Fertilizing.

Delete entire subsection and replace with the following:

Apply fertilizer having a chemical analysis as listed below by the following methods.

**(a) Dry Method.** Apply the fertilizer with approved mechanical equipment. Hand operated methods are satisfactory on areas inaccessible to mechanical equipment.

**(b) Hydraulic method.** Use hydraulic-type equipment capable of providing a uniform application using water as the carrying agent. Add fertilizer to the slurry and mix before adding seed. Add the tracer material when designated by the CO.

**Fertilizer.** Apply fertilizer at the rate of XXXX pounds per acre. Insure that the fertilizer meets the following chemical analysis:

<u>Nutrient</u>	<u>Percent</u>
Nitrogen, N .....	<u>XXXXXX</u>
Phosphorus, P <sub>2</sub> O <sub>5</sub> .....	<u>XXXXXX</u>
Potassium, K .....	<u>XXXXXX</u>

**625.07 Seeding.**

Delete the first sentence and add the following.

Apply seed mix by the following methods:

(a) **Dry method.** Delete the third sentence.

Add the following after subsection (b).

**Seed Mix.** Furnish and apply the following kinds and amounts of pure live seed:

<u>Type of Seed</u>	<u>Quantity of Pure Live Seed (Lbs/Acre)</u>
1. <u>Government Furnished</u>	<u>15 Lbs / Acre</u>
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____
6. _____	_____
7. _____	_____
Total	<u>100 lbs</u>

Determine the pounds of seed to be furnished per acre by dividing the pounds of pure live seed required per acre by the product of the percent purity and percent germination.

### **625.08 Mulching.**

Delete the entire subsection and replace with the following:

Apply Mulch within **24** hours after seeding by the following methods.

**(a) Dry Method.** Apply mulch with a hand spreader or a spreader utilizing forced air at a rate of **4,000** pounds per acre. Anchor the mulch with an approved stabilizing emulsion tackifier at a rate of **N/A** gallons per acre. Do not mark or deface structure, pavements, utilities, or plant growth with tackifier.

**(b) Hydraulic Method.** Apply mulch in a separate application from the seed using hydraulic-type equipment according to Subsection 625.07(b).

Apply wood fiber or grass straw cellulose fiber mulch at a rate of **N/A** pounds per acre.

Apply bonded fiber matrix hydraulic mulch at a minimum rate of **N/A** pounds per acre. Apply so no hole in the matrix is greater than 0.04 inches. Apply so that no gaps exist between the matrix and the soil.

Inaccessible areas may be mulched by hand. Apply mulch uniformly over the entire disturbed area.

### **625.09 Protecting and Caring for Seeded Areas**

Delete the first sentence and add the following:

Protect and care for seeded areas until final acceptance.

### **625.11 Measurement.**

Delete the entire Subsection and replace with the following:

Measure the Section 625 items listed in the bid schedule according to Subsection 109.02.

## 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

### 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  
Target Value Ranges for Subbase and Base Gradation  
Percent by Mass Passing Designated Sieve (AASHTO T 27 and T 11)**

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

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

**Delete Table 703-3 and replace with the following:**

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

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

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

**Add Table 703-16:**

**Table 703-16**

**Gradation Requirements for Screened Aggregate**

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

## 705 - Rock

705.02\_nat\_us\_08\_05\_2009

### 705.02 Riprap Rock.

Delete Table 705-1 and replace it with the following:

**Gradation Requirements for Riprap**

<b>Class</b>	<b>Percent of Rock by Mass</b>	<b>Mass (pounds)</b>	<b>Approximate Cubic Dimension<sup>b,c</sup> (inches)</b>
1	20	22 to 33	6 to 8
	30	11 to 22	5 to 6
	40	1 to 11	2 to 5
	10 <sup>a</sup>	0 to 1	0 to 2
2	20	55 to 110	8 to 10
	30	22 to 55	6 to 8
	40	2 to 22	3 to 6
	10 <sup>a</sup>	0 to 2	0 to 3
3	20	220 to 330	14 to 16
	30	110 to 220	10 to 14
	40	11 to 110	5 to 10
	10 <sup>a</sup>	0 to 11	0 to 5
4	20	550 to 770	18 to 20
	30	220 to 570	14 to 18
	40	22 to 220	6 to 14
	10 <sup>a</sup>	0 to 22	0 to 6
4a	20	770 to 1353	20 to 24
	30	330 to 770	16 to 20
	40	33 to 330	7 to 16
	10 <sup>a</sup>	0 to 33	0 to 7
5	20	1540 to 2200	26 to 28
	30	1100 to 1540	20 to 26
	40	55 to 1100	8 to 20
	10 <sup>a</sup>	0 to 55	0 to 8
6	20	1870 to 3520	28 to 34
	30	1100 to 1870	22 to 28
	40	110 to 1100	10 to 22
	10 <sup>a</sup>	0 to 110	0 to 10
7	20	4400 to 5940	35 to 39
	30	2200 to 4400	28 to 35
	40	220 to 2200	14 to 28

	10 <sup>a</sup>	0 to 220	0 to 14
8	20	7000 to 10000	42 to 47
	30	4000 to 7000	35 to 42
	40	400 to 4000	16 to 35
	10 <sup>a</sup>	0 to 400	0 to 16

- (a) Furnish spall and rock fragments graded to provide a stable dense mass.
- (b) The volume of a rock with these cubic dimensions has a mass approximately equal to the specified rock mass.
- (c) Furnish rock with breadth and thickness at least one-third its length.

## 713 - Roadside Improvement Material

713.05\_nat\_us\_03\_02\_2005

### 713.05 Mulch.

Add the following:

Assure that mulch used on the project is certified noxious weed free by the appropriate authority in the jurisdiction of use.

## 714 - Geotextile and Geocomposite Drain Material

714.03\_nat\_us\_02\_25\_2005

### Tables 714-1 and 714-4.

Add the following note to both tables:

**(4) Woven slit film will not be allowed.**

Add the following:

### 714.03 Geogrids.

Furnish geogrids consisting of polymeric materials such as polypropylene, polyethylene, or polyester formed into a stable network of bars or straps fixed at their junctions such that the bars retain their relative position to each other.

Elevate and protect rolls with a waterproof cover if stored outdoors.

**(a) Physical requirements.** Furnish geogrid treated to resist ultraviolet degradation, and conforming to the physical strength requirements shown in table 714-7 according to ASTM D 4595 for the specified geogrid category. Strength values shown in table 714-7 represent minimum average roll values and are for the direction of primary reinforcement. Ensure that the aperture size for all geogrids is between  $\frac{3}{4}$  to 3 inches.

**(b) Evaluation procedures.** Geogrids will be evaluated under Subsection 106.03. Furnish a certification and a sample of the geogrid.

**Table 714-7—Physical strength requirements for geogrids.**

Category	Minimum Ultimate Strength at Breakage ( <i>lbs/ft</i> )
1	890
2	1985
3	2875
4	4110
5	5475
6	8215

## 718 - Traffic Signing and Marking Material

718.05\_nat\_us\_08\_05\_2009

### 718.05 Aluminum Panels

Delete the third paragraph and replace with the following:

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