

# Jung Way Timber Sale

## **CONSTRUCTION OF SPECIFIED ROADS**

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Schedule of Items	6 pages
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**SCHEDULE OF ITEMS**  
(Timber Sale)

Timber Sale Jungway Timber Sale

Road No. 9701000-I

Road Name N/A

Length (Miles) 0.18

Item Number	Description	Method of Meas.	Unit	Quantity	S.R.C Unit Price	Total
15101	Mobilization	AQ	Lump Sum	1.00	\$ 5,047.09	\$ 5,047.09
15202	Slope, reference, and clearing and grubbing stakes; method II, tolerance E	CQ	Mile	0.18	\$ 1,209.16	\$ 217.65
15702	Silt fence	CQ	Foot	175.00	\$ 7.43	\$ 1,300.25
15755	Dewatering structure	AQ	Lump Sum	1.00	\$ 1,660.46	\$ 1,660.46
20104	Clearing and grubbing, disposal of tops and limbs f, logs f, stumps f	CQ	Acre	0.67	\$ 4,265.66	\$ 2,857.99
20401	Roadway excavation, compaction method C, finishing method C	CQ	Cubic Yard	558.00	\$ 8.30	\$ 4,631.40
20701	Earthwork Geotextile Type II-A	CQ	Square Yard	1,715.00	\$ 1.39	\$ 2,383.85
25207	Rock buttress	AQ	Lump Sum	1.00	\$ 861.43	\$ 861.43
30155	Pit Run Aggregate, Maximum Size 4", Compactor A	CQ	Cubic Yard	410.00	\$ 21.69	\$ 8,892.90
60211	48 Inch Corrugated Steel Pipe 0.064 Inch Thickness	CQ	Foot	32.00	\$ 75.25	\$ 2,408.00
60275	18" High Density Polyethylene outlet pipe with smooth interior and annual exterior	AQ	Foot	90.00	\$ 49.83	\$ 4,484.70
60404	Catch basin, 36" Double Wall Polyethylene (PE) Pipe	AQ	Each	1.00	\$ 412.99	\$ 412.99
60501	Underdrain system	CQ	Foot	50.00	\$ 35.45	\$ 1,772.50
62529	Seeding and Mulching, Dry Method	CQ	Acre	0.31	\$ 721.95	\$ 223.80
61902a	Gate, Furnish & Install	AQ	Each	1.00	\$ 2,758.50	\$ 2,758.50

**SUB-TOTAL: \$ 39,913.51**

**TOTAL ALL ROADS: \$ 89,591.48**

**SCHEDULE OF ITEMS**  
(Timber Sale)

Timber Sale Jungway Timber Sale

Road No. 9701000-II

Road Name N/A

Length (Miles) 0.75

Item Number	Description	Method of Meas.	Unit	Quantity	S.R.C Unit Price	Total
30155	Pit Run Aggregate, Maximum Size 4", Compaction A	CQ	Cubic Yard	1,200.00	\$ 11.33	\$ 13,596.00
30318	Road reconditioning, roadbed, compaction method	CQ	Mile	0.75	\$ 3,143.33	\$ 2,357.50

**SUB-TOTAL: \$ 15,953.50**

**TOTAL ALL ROADS: \$ 89,591.48**

**SCHEDULE OF ITEMS**  
(Timber Sale)

Timber Sale Jungway Timber Sale  
Road Name N/A

Road No. 9701203-I  
Length (Miles) 0.42

Item Number	Description	Method of Meas.	Unit	Quantity	S.R.C Unit Price	Total
15202	Slope, reference, and clearing and grubbing stakes; method II, tolerance E	CQ	Mile	0.42	\$ 1,209.16	\$ 507.85
20104	Clearing and grubbing, disposal of tops and limbs f, logs f, stumps f	CQ	Acre	1.76	\$ 4,265.66	\$ 7,507.56
20401	Roadway excavation, compaction method C, finishing method C	CQ	Cubic Yard	2,479.00	\$ 2.82	\$ 6,990.78
30155	Pit Run Aggregate, Maximum Size 4", Compaction A	CQ	Cubic Yard	150.00	\$ 18.13	\$ 2,719.50
62529	Seeding and Mulching, Dry Method	CQ	Acre	1.71	\$ 723.12	\$ 1,236.54

**SUB-TOTAL: \$ 18,962.23**

**TOTAL ALL ROADS: \$ 89,591.48**

**SCHEDULE OF ITEMS**  
(Timber Sale)

Timber Sale Jungway Timber Sale

Road No. 9701203-II

Road Name N/A

Length (Miles) 0.77

Item Number	Description	Method of Meas.	Unit	Quantity	S.R.C Unit Price	Total
20103	Clearing and grubbing, disposal of tops and limbs f, logs f, stumps f	CQ	Mile	0.77	\$ 800.81	\$ 616.62
30318	Road reconditioning, roadbed, compaction method	CQ	Mile	0.77	\$ 2,334.30	\$ 1,797.41
62529	Seeding and Mulching, Dry Method	CQ	Acre	0.78	\$ 721.95	\$ 563.12
60902b	Gate, Remove and Reset	AQ	Each	1.00	\$ 1,334.78	\$ 1,334.78

**SUB-TOTAL: \$ 4,311.93**

**TOTAL ALL ROADS: \$ 89,591.48**

**SCHEDULE OF ITEMS**  
(Timber Sale)

Timber Sale Jungway Timber Sale

Road No. 9701205

Road Name N/A

Length (Miles) 0.04

Item Number	Description	Method of Meas.	Unit	Quantity	S.R.C Unit Price	Total
20103	Clearing and grubbing, disposal of tops and limbs f, logs f, stumps f	CQ	Mile	0.04	\$ 800.81	\$ 32.03
30318	Road reconditioning, roadbed, compaction method	CQ	Mile	0.04	\$ 2,334.30	\$ 93.37
62529	Seeding and Mulching, Dry Method	CQ	Acre	0.05	\$ 721.95	\$ 36.10

**SUB-TOTAL: \$ 161.50**

**TOTAL ALL ROADS: \$ 89,591.48**

## SCHEDULE OF ITEMS

(Timber Sale)

Timber Sale Jungway Timber Sale

Road No. 9738000

Road Name N/A

Length (Miles) 2.95

Item Number	Description	Method of Meas.	Unit	Quantity	S.R.C Unit Price	Total
15702	Silt fence	CQ	Foot	250.00	\$ 7.43	\$ 1,857.50
43006	Full depth patch hot asphalt concrete mixture	AQ	Lump Sum	1.00	\$ 5,462.00	\$ 5,462.00
62529	Seeding and Mulching, Dry Method	CQ	Acre	0.10	\$ 721.95	\$ 72.20
65102	Pit and Quarry Development	AQ	Lump Sum	1.00	\$ 2,897.11	\$ 2,897.11

**SUB-TOTAL: \$ 10,288.81**

**TOTAL ALL ROADS: \$ 89,591.48**

STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAYS PROJECTS FP03

Specification	Supplements	Road Numbers					
		9701 000-I	9701 000-II	9701 203-I	9701 203-II	9701 205	9738 000
101 - Terms, Format, and Definitions	✓	X	X	X	X	X	X
102 - Bid, Award, and Execution of Contract	✓	X	X	X	X	X	X
103 - Scope of Work	✓	X	X	X	X	X	X
104 - Control of Work	✓	X	X	X	X	X	X
105 - Control of Material	✓	X	X	X	X	X	X
106 - Acceptance of Work	✓	X	X	X	X	X	X
107 - Legal Relations and Responsibility to the Public	✓	X	X	X	X	X	X
108 - Prosecution and Progress	✓	X	X	X	X	X	X
109 - Measurement and Payment	✓	X	X	X	X	X	X
151 - Mobilization	✓	X	X	X	X	X	X
152 - Construction Survey and Staking	✓	X		X			
155 - Schedules for Construction Contracts	✓	X	X	X	X	X	X
157 - Soil Erosion Control	✓	X					X
201 - Clearing and Grubbing	✓	X		X	X	X	
204 - Excavation and Embankment	✓	X		X			
207 - Earthwork Geotextiles		X					
209 - Structure Excavation and Backfill	✓	X		X			
252 - Special Rock Embankment and Rock Buttress		X					
301 - Untreated Aggregate Courses	✓	X	X	X			
303 - Road Reconditioning	✓		X		X	X	
430 - Asphalt Pavement Patching	✓						X
602 - Culverts and Drains	✓	X			X		
604 - Manholes, Inlets, and Catch Basins		X					
605 - Underdrains, Sheet Drains, and Pavement Edge Drains		X					
609 - Curb and Gutter					X		
619 - Fences, Gates, and Cattleguards		X					
625 - Turf Establishment	✓	X		X	X	X	X
651 - Development of Pits & Quarries	✓						X
703 - Aggregate	✓	X	X	X			

STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAYS PROJECTS FP03

Specification	Supplements	Road Numbers					
		9701 000-I	9701 000-II	9701 203-I	9701 203-II	9701 205	9738 000
712 - Joint Material	✓	X					
713 - Roadside Improvement Material	✓	X		X	X	X	X
718 - Traffic Signing and Marking Material	✓	X	X	X	X	X	X

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## Preface

Preface\_wo\_03\_15\_2004\_m

Delete all but the first paragraph and add the following:

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

# 101 - Terms, Format, and Definitions

101.01\_nat\_us\_01\_22\_2009

## 101.01 Meaning of Terms

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

101.01\_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	<u>National Institute of Standards and Technology</u>
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.

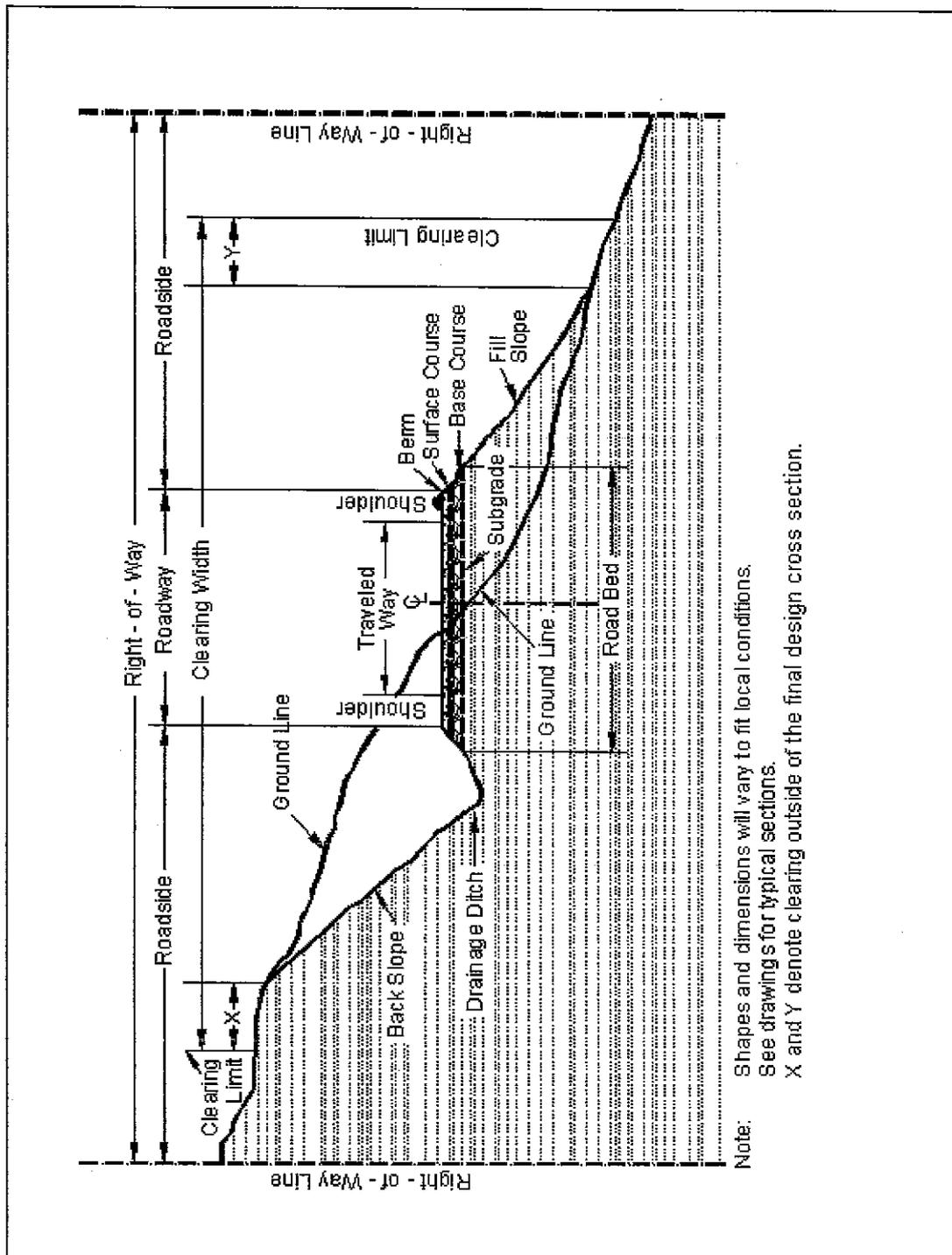
**Road Order**--An order affecting and controlling traffic on roads under Forest Service jurisdiction. Road Orders are issued by a designated Forest Officer under the authorities of 36 CFR, part 260.

**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\_02\_22\_2005

### 104.03 Drawings and Specifications

Delete subsection 104.03

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.

**Example:** The Federal Highway Administration is administering and is intending to award a contract for the reconstruction of 3 1/2 miles of Salmon la Sac Road approximately 5 miles north of this project. Schedule activities to assure no delays or interference to the operations of the Federal Highway Administration contract.

## 105 - Control of Material

105.02\_nat\_us\_01\_18\_2007

### 105.02 Material Sources.

#### 105.02(a) Government-provided sources.

##### Add the following:

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

105.02\_nat\_us\_02\_17\_2005

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

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

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

##### (1) Government-provided mandatory sources.

Rock Pit located at MP 5.75 on FS Rd 9738, T21N, R16E, Section 6.

Obtain material for use as **Pit Run Aggregate, Pay item 30155 and Rock Buttress Rock, Pay Item 25207, as well as the Pit Run Aggregate for the Underdrain System, Pay Item 60501, and the Pit Run Backfill for the Catch Basin, Pay Item 60404,** and in the production of aggregates under Sections (301/401/411/etc.)

105.02\_nat\_us\_03\_29\_2005

### 105.02 Material Sources.

#### 105.02(a) Government-provided Sources.

##### Add the following:

Complete any pit or quarry development specified for a designated source, even when material is not obtained from the source.

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.

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

105.05\_nat\_us\_05\_12\_2004

## **105.05 Use of Material Found in the Work.**

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

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

## **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.

## **107 - Legal Relations and Responsibility To the Public**

107.11\_nat\_us\_02\_17\_2005

### **107.11 Protection of Forests, Parks, and Public Lands:**

Add the following:

*Add appropriate fire plan and equipment language.*

## **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.

## 151 - Mobilization

151.03\_nat\_us\_08\_05\_2005

### 151.03 Payment

Delete the entire subsection and add the following:

### 151.03 Payment

Mobilization is considered an indirect cost of this contract and will not be compensated as a separate work item.

## 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.**

Precision Class	Minimum Position Closure	Angular Accuracy ( $\pm$ )	L-Line Tangent Control Points <sup>a</sup> ( $\pm$ )	Vertical Closure <sup>b</sup> ( $\pm$ )
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>

a. Accuracy of offset measurement.

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

c. Use greater value.

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

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

## 155 - Schedules for Construction Contracts

155.00\_nat\_us\_05\_11\_2004

155 Delete.

Delete Section 155 in its entirety.

## 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.

157.09\_1005\_us\_05\_16\_2005

157.09 Diversions.

Delete the 1<sup>st</sup> sentence and add the following:

When shown on the drawings construct temporary channels, temporary culverts, or sandbags to divert water around disturbed areas and slopes. Earthen dams are prohibited.

Add the following to the second sentence.

When shown on the drawings ,

## 170 - Develop Water Supply and Watering

170.00\_nat\_us\_03\_30\_2005

### Description

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

### Materials

**170.02** Conform to the following subsection.

Water	725.01.
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### Construction Requirements

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

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

**170.05 Application.** Apply water uniformly without ponding or washing.

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

### Measurement

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

### Payment

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

## 201 - Clearing and Grubbing

201.00\_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.

## 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.

203.02\_nat\_us\_02\_18\_2005

### 203.02 Material.

Add the following:

Geotextile 714

203.05\_nat\_us\_02\_18\_2005

### 203.05 Disposing of Material.

Add the following:

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

(f) **Scattering.** Scatter construction slash outside the clearing limits without damaging trees. Limb all logs. Place logs and stumps away from trees, positioned so they will not roll, and are

not on top of one another. Limb and scatter other construction slash to reduce slash concentrations.

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

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

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

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

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

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

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

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

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

203.08\_nat\_us\_02\_24\_2005

## **203.08 Payment**

### Add the following:

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

## 204 - Excavation and Embankment

204.06\_nat\_us\_03\_02\_2005

### 204.06 Roadway Excavation

#### (a) General.

##### Add the following:

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

204.06\_nat\_us\_03\_02\_2005

### 204.06 Roadway Excavation.

##### Add the following:

**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.

204.09\_nat\_us\_03\_02\_2005

### 204.09 Preparing Foundation for Embankment Construction.

##### Delete subsection (a) and replace it with the following:

**(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.

204.10\_nat\_us\_03\_02\_2005

### 204.10 Embankment Construction.

##### Add the following:

Obtain written approval before beginning construction of embankments over 6 feet high at subgrade centerline.

#### (a) General.

Delete the third paragraph and add the following:

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.

204.11\_nat\_us\_04\_11\_2005

#### **204.11 Compaction.**

Delete the first paragraph and replace it with the following:

For compaction according to method (a), (b), or (c), use AASHTO T 27 to determine the amount of material retained on a Number. 4 sieve. For compaction methods (d) or (e) no sieve test is required.

Add the following compaction methods:

**(d) Layer Placement Method (Hauling and Spreading Equipment).** 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.

**(e) Layer Placement (Roller Compaction) Method.** 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 visible deformation of the layer ceases or, in when a sheepsfoot roller is used, the roller “walks out” of the layer. Make at least three complete passes.

204.13\_nat\_us\_03\_02\_2005

#### **204.13 Sloping, Shaping, and Finishing.**

Delete section (d) and add the following:

**(d) Finishing.** For surfaced roads, remove all material larger than 6 inches from the top 6 inches of the roadbed. For all roads, 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 for both surfaced and unsurfaced roads 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 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 visible displacement ceases.

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

Add Table 204-2—Construction Tolerances:

**Table 204-2 Construction tolerances.**

	Tolerance Class <sup>(a)</sup>												
	A	B	C	D	E	F	G	H	I	J	K	L	M
Roadbed width (ft)	+0.5	+0.5	+1.0	+1.0	+1.0	+1.0	+1.5	+1.0	+2.0	+2.0	+2.0	+2.0	+2.0
Subgrade elevation (ft)	±0.1	±0.2	±0.2	±0.5	±0.5	±1.0	±1.0	±1.5	±2.0	±3.0	±2.0	±3.0	(c)
Centerline alignment (ft)	±0.2	±0.2	±0.5	±0.5	±1.0	±1.0	±1.5	±1.5	±2.0	±3.0	±3.0	±5.0	(c)
Slopes, excavation, and embankment (% slope <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.

204.13\_nat\_us\_03\_02\_2005

**204.13 Sloping, Shaping, and Finishing.**

(a) Sloping.

Add the following:

Slope rounding is not required on tolerance class D through M roads.

204.14\_nat\_us\_03\_02\_2005

**204.14 Disposal of Unsuitable or Excess Material.**

Delete the text of the first paragraph and substitute the following:

Dispose of unsuitable or excess material at designated sites or legally off of the project.

204.15\_nat\_us\_02\_07\_2007

## 204.15 Acceptance

### Table 204-1 Sampling and Testing Requirements.

Add the following note to the table:

(2) When compaction methods (d) or (e) are used AASHTO M 145, T 99, T 180, and T 310 are not required for earth embankment test methods.

## 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 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.

## **212 - Linear Grading**

Delete the entire specification and replace it with the following:

### **Description**

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

## Construction Requirements

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

Immediately remove slash deposited in stream courses.

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

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

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

### Minimum Utilization Standards

Diameter (Inside Bark)

Length at Small End

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

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

### Merchantable Timber

Insert appropriate treatment method from 201.

### Unmerchantable Timber and Large Construction Slash

Insert appropriate treatment method from 203.

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

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

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

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

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

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

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

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

Construct the roadbed within the following grading tolerances:

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

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

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

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

**212.08 Acceptance.** Linear grading will be evaluated under Subsections 106.02 and 106.04.

Clearing and slash and timber treatment will be evaluated under Sections 201 and 203.

### **Measurement**

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

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

## Payment

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

### 301 - Untreated Aggregate Courses

301.00\_nat\_us\_03\_03\_2005

#### 301 Title Change.

Change the title to: Section 301 Aggregate Courses

301.01\_nat\_us\_03\_03\_2005

#### 301.01 Work.

Add the following:

Work includes producing aggregate by pit-run, grid rolling, screening, or crushing methods, or placing Government-furnished aggregate. Work may include additive mineral filler, or binder.

301.02\_nat\_us\_05\_16\_2005

#### 301.02 Material.

Add the following:

Bentonite	725.30
Calcium Chloride Flake	725.02
Lignon Sulfonate	725.20
Magnesium Chloride Brine or Calcium Chloride Liquid	725.02

301.03\_nat\_us\_02\_28\_2013

#### 301.03 General.

Add the following:

Written approval of the roadbed is required before placing aggregate.

For pit run or grid-rolled material, furnish material smaller than the maximum size. No gradation other than maximum size will be required for pit-run or 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.

Provide additives or binder, if required, at the proportions specified.

Develop and use Government furnished sources according to Section 105.

If the aggregate is produced and stockpiled before placement, handle and stockpiled according to Section 320. Establish stockpile sites at locations approved. Clear and grub stockpile sites according to Section 201.

301.04\_nat\_us\_03\_03\_2005

### **301.04 Mixing and Spreading.**

Delete the first sentence of the first paragraph and add the following:

Ensure that aggregate and any required additives, water, mineral filler, and binder are mixed by the specified method except, if crushed aggregate products are being produced and mineral filler, binder, or additives are required, uniformly blend following crushing. Control additive proportions to 0.5 percent dry weight.

**(a) Stationary Plant Method.** Mix the aggregate with other required materials in an approved mixer. Add water during the mixing operation in the amount necessary to provide the moisture content for compacting to the specified density. After mixing, transport the aggregate to the jobsite while it contains the proper moisture content, and place it on the roadbed or base course using an aggregate spreader.

**(b) Travel Plant Method.** After placing the aggregate for each layer with an aggregate spreader or windrow-sizing device, uniformly mix it with other required materials using a traveling mixing plant. During mixing, add water to provide the necessary moisture content for compacting.

**(c) Road Mix Method.** After placing the aggregate for each layer, mix it with other required materials at the required moisture content until the mixture is uniform throughout. Mix aggregate, water, and all other materials until a uniform distribution is obtained.

Spread the aggregate in a uniform layer, with no segregation of size, and to a loose depth that will provide the required compacted thickness.

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

Route and distribute hauling and leveling equipment over the width and length of each layer.

301.05\_nat\_us\_05\_17\_2005

### **301.05 Compacting**

Delete and replace with the following:

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

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

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

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

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

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

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

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

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

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

301.06\_nat\_us\_03\_03\_2005

### **301.06 Surface Tolerance.**

**Add the following:**

**Thickness and Width requirements:**

The maximum variation from the compacted specified thickness is ½ inch. The compacted thickness is not consistently above or below the specified thickness and the average thickness of

4 random measurements for any  $\frac{1}{2}$  mile of road segment is within  $+\frac{1}{4}$  inch of the specified thickness.

The maximum variation from the specified width will not exceed +12 inches at any point. The compacted width is not consistently above the specified width and the average of any four random measurements along any  $\frac{1}{2}$  mile of road segment is within +4 inches of the specified width.

Table 301-1: Add the following:

Table 301-1—Acceptance Sampling and Testing Requirements.

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Subbase & Base Courses L, M, N, O, P, Q, R	Measured and tested conformance (Subsection 106.04)	Plastic Limit	-	AASHTO T 90	1 per each 1,000 T	From the windrow or roadbed after processing	Yes	4 Hours

Table 301-1—Acceptance Sampling and Testing Requirements.

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Aggregate Width	Measured and tested conformance (Subsection 106.04)	Width	-	-	4 per each 0.5 mi	Roadbed after processing	-	4 Hours
Aggregate Thickness	Measured and tested conformance (Subsection 106.04)	Thickness	-	-	4 per each 0.5 mi	Roadbed after processing	-	4 Hours
Additive	Measured and tested conformance (Subsection 106.04)	Amount of Additive	-	-	1 per each 1,000 T	From the windrow or roadbed after processing	No	4 Hours

**301.08(b) Plasticity Index.**

Add the following to the first sentence:

“and under 703.05(c)(1)”.

Table 301-1 Field Density Requirements.

Table 301-1: Delete laboratory and field density requirements for base, subbase, and surfacing and replace with the following:

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Method Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time	
Base and Subbase	Measured and tested conformance (Subsection 106.04)	Moisture Density Method C	---	AASHTO T 99	1 per type and source of material	Source of material	Yes	Before using in work	
		Method D	---	"	"	"	"	"	
		Compaction Method C, D	---	AASHTO T 180	"	"	"	"	"
		Method D	---	"	"	"	"	"	"
		Compaction Method C, D	---	"	"	"	"	"	"
		Method C, D	---	AASHTO T 310 or other approved procedures	1 per 500 t	In-place	---	Before placing the next layer	
Surfacing	Measured and tested conformance (Subsection 106.04)	Moisture Density Method D	---	AASHTO T 180	"	"	"	Before using in work	
		Method D	---	"	"	"	"	"	
		Compaction Method C, D	---	"	"	"	"	"	
		Method C, D	---	AASHTO T 310 or other approved procedures	1 per 500 t	In-place	---	Before placing the next layer	
		Method C, D	---	"	"	"	"	"	
		Method C, D	---	"	"	"	"	"	

**301.09 Measurement.**

Replace the second paragraph with the following:

Measure aggregate by cubic yard compacted in place when payment is by contract quantities.

**301.10 Payment**

Delete the following:

adjusted according to Subsection 106.05

## **303 - Road Reconditioning**

**303.01 Work.**

Delete and add the following:

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

**303.06 Aggregate Surface Reconditioning.**

Delete and replace with the following:

**303.06 Asphalt and Aggregate Surface Reconditioning.**

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

For asphalt surfaces, clean the existing surface of all loose material, dirt, or other deleterious substances by approved methods. Remove and dispose of unsuitable material that shows evidence of distress, excess asphalt material, or settlement in the roadbed. Patch the areas with approved material that conforms to and is compatible with the adjacent pavement structure. Perform the patch work according to Section 301, 404, 430, or other sections as applicable for

the layer or courses being repaired. Clean and seal cracks in the existing asphalt surface according to Subsection 414.05. Correct surface irregularities exceeding 6 inches in depth with a specified aggregate. Place and compact the aggregate according to Subsections 301.04 and 301.05. Prelevel other dips, depressions, sags, excessive or nonexistent crown, or other surface irregularities with asphalt concrete according to Section 404. Spread and compact the asphalt concrete in layers parallel to the grade line not to exceed 2 inches in compacted depth.

**Delete Table 303-1 and replace with the following:**

**Table 303-1  
Sampling and Testing Requirements**

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time	
Existing Roadway	Measured and tested for conformance (106.04)	Moisture-density Method D	—	AAASHTO T 99 (1)	1 per each mixture or change in material	Processed material before incorporating in work	Yes, when requested	Before using in work	
		Moisture-density Method E	—	R-1 Marshall	"	"	"	"	
		Moisture-density Method F	—	AAASHTO T 180 (1)	"	"	"	"	"
		Moisture-density Method G	—	R-1 Marshall	"	"	"	"	"
		In-place density & moisture content	—	AAASHTO T 310 or other approved procedures	1 per 3000 yd <sup>2</sup>	In-place	—	Before placing next layer	

(1) Minimum of 5 points per proctor.

## 430 - Asphalt Pavement Patching

430.00\_nat\_us\_07\_27\_2007

### Description

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

### Material

**430.02** Conform to the following Subsections:

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

### Construction

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

#### **430.04 Full Depth Patch.**

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

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

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

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

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

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

Apply the asphalt concrete mixture according to Subsection 430.05.

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

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

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

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

#### **Measurement**

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

#### **Payment**

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

## 602 - Culverts and Drains

602.03\_nat\_us\_09\_06\_2005

### 602.03 General.

#### Add the following:

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

## 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 (Date1) and (Date2). Apply turf establishment to the areas shown on the plans or worklists within XX days after completion of ground disturbing activities. Unless otherwise specified in writing by the CO apply turf establishment after each XXXX 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.

**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>
Blue Wildrye ( <i>Elymus glaucus</i> ) 'keechelus'	3.5
California Brome ( <i>Bromus carinatus</i> ) 'Reecer'	9.0
Idaho Fescue ( <i>Festuca idahoensis</i> ) 'Wenatchee'	0.5
Bluebunch Wheatgrass ( <i>Pseudoerigneria spicata</i> ) 'Squilchuck'	2.5
Yarrow ( <i>Achillea millifolium</i> ) 'Wenatchee'	0.3
Total	16 lbs/acre

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 2,000 pounds per acre.

**(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 XXXX pounds per acre.

Apply bonded fiber matrix hydraulic mulch at a minimum rate of XXXX 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.

625.03\_nat\_us\_02\_25\_2005

**625.03 General.**

Delete the first subsection and add the following:

Apply turf establishment to finished slopes and ditches between 9/15 and 10/31. Do not seed during windy weather or when the ground is excessively wet, frozen, snow covered, extremely dry, cloddy, hard pan, or is otherwise untillable.

625.04\_nat\_us\_02\_25\_2005

#### 625.04 Preparing Seedbed.

Delete “2 inches in diameter and larger,” from the second sentence.

625.05\_nat\_us\_03\_02\_2005

#### 625.05 Watering.

Delete the entire subsection and add the following:

Maintain moisture as follows:

*Describe watering requirements for the project here.*

625.07\_nat\_us\_02\_25\_2005

#### 625.07 Seeding. (a) Dry method.

Remove the last sentence “Lightly compact the seedbed within 24 hours after seeding.”

#### 625.07 Seeding. (b) Hydraulic method.

Add the following:

Apply fertilizer conforming to Subsection 713.03 at the rates shown in Table 625-1. Fertilize areas inaccessible to hydro-type equipment by hand.

**Table 625-1. Fertilizer Application Rate.**

Type	Quantity per Slurry Unit
::	__lbs
::	__lbs

Apply the seed mixture at the rate of \_\_\_\_\_ kilograms of live seed per \_\_\_\_\_ (hectare/slurry unit). Include a tracer material consisting of either wood fiber mulch or grass cellulose fiber mulch to provide visible evidence of uniform application. Add the tracer to the slurry at a rate of \_\_\_\_\_ (400 pound per acre or 100 pound per slurry unit). Seed areas inaccessible to hydro-type equipment by hand.

## 651 - Development of Pits & Quarries

651.00\_nat\_us\_03\_02\_2005

### Description

**651.01** This work consists of clearing, grubbing, stripping topsoil, removing overburden, constructing access roads, conducting restoration activities, and performing other incidental work required for pit or quarry development.

### Construction Requirements

**651.02 General.** Submit a plan of operations according to Section 105. Perform all work in accordance with Sections 105, 201, 203, 204, 625, and 635, landscape preservation requirements, and the approved pit and quarry development plan of operations. Perform the work in accordance with MSHA 30 CFR, part 56.

**651.03 Acceptance.** Developing pits and quarries will be evaluated under Subsections 106.02 and 106.04.

### Measurement

**651.04** Measure the Section 651 items listed in the bid schedule according to Subsection 109.02.

### Payment

**651.05** The accepted quantities will be paid at the contract price per unit of measurement for the Section 651 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

## 703 - Aggregate

703.05\_nat\_us\_08\_14\_2009

**Delete 703.05 and replace with the following:**

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

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

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

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

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

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

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

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

Do not furnish material that contains asbestos fibers.

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

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

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

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

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

**Delete Table 703-2 and replace with the following:**

**Table 703-2**  
**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**

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

**Table 703-2 Correction**

**Include the following substitution**

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

703.10\_nat\_us 04\_11\_2011

**703.10(e) Flakiness Index.**

Delete and replace with the following:

Flakiness Index, FLH T 508                      30% max.

**703.10(i) Adherent Coating.**

Add the following:

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

Delete Table 703-7 and substitute the following:

**Table 703-7 Target Value Ranges**

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

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

(1) Statistical procedures do not apply.

( ) The value in the parentheses is the allowable deviation ( $\pm$ ) from the target values.

## 712 - Joint Material

712.01\_nat\_us\_03\_02\_2005

### 712.01 Sealants, Fillers, Seals, and Sleeves.

(a) Joint sealants and crack fillers.

Add the following:

(7) Low-Modulus Rubberized Asphalt. Conform to ASTM D 3405 and the following.

Cone Penetration, 75°F	100-150
Cone Penetration, -0°F	25 minimum
Flow, 140°F, 5h	3/8 in. maximum
Resilience	30-60%
Bond, -20°F, 200% extension	Pass 3 Cycles
Recommended Pour Temperature	380°F
Safe Heating Temperature	410°F
Asphalt Compatibility	Pass

## **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.

## **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.

UNITED STATES DEPARTMENT OF AGRICULTURE  
FOREST SERVICE

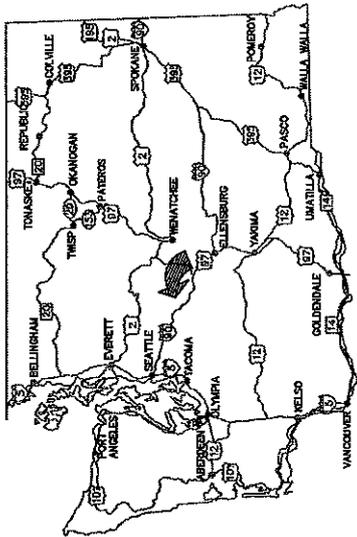
REGION 6

OKANOGAN - WENATCHEE NATIONAL FORESTS

Cle Elum Ranger District

CONSTRUCTION DRAWINGS FOR

Jung Way Timber Sale



KEY MAP OF WASHINGTON SHOWING LOCATION OF PROJECT

INDEX TO SHEETS

SHEET NO.	DESCRIPTION
1	TITLE
2	VICINITY MAP
3	CONSTRUCT/RECONSTRUCT VICINITY MAP
4	ROCK PIT PLAN
5	ESTIMATE OF QUANTITIES
6	NOTES, SYMBOLS & TYPICAL DETAILS
7	ROAD STRUCTURE DETAILS
8	CLEARING DETAILS
9	DRAINAGE LISTING
10	DRAINAGE CONSTRUCTION DETAILS
11-12	TUBE GATE DETAILS
13	TYPICAL UNDERDRAIN & TRENCH SYSTEM
14	PERFORATED VERTICAL CATCH BASIN
15	SILT FENCE DETAILS
16	STREAM DIVERSION DETAILS
17	RD 9701 000-I CONST. PLAN VIEW, 50+00-59+65
18	RD 9701 000-I CONST. PROF VIEW, 50+00-59+65
19	RD 9701 203-I CONST. PLAN VIEW, 10+00-32+25
20	RD 9701 203-I CONST. PROF VIEW, 10+00-32+25
21	RD 9701 203-II RECONST. STA 32+25-66+20
22	RD 9701 203-II RECONST. UPPER SWITCHBACK
23	WORK DESCRIPTIONS

ROAD NO.	LENGTH MILES	RECONST./CONST.	SHEET NO.
9701 000-I	0.18	CONST	17-18
9701 203-I	0.42	CONST	19-20
9701 203-II	0.77	RECONST	21-22
9701 205	0.04	RECONST	23
9701 000-II	0.75	RECONST	23
9738 000	2.95	RECONST	4/23

TOTAL CONSTRUCTION 0.60 MILES  
TOTAL RECONSTRUCTION 4.51 MILES

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**R-6**  
PACIFIC NORTHWEST REGION

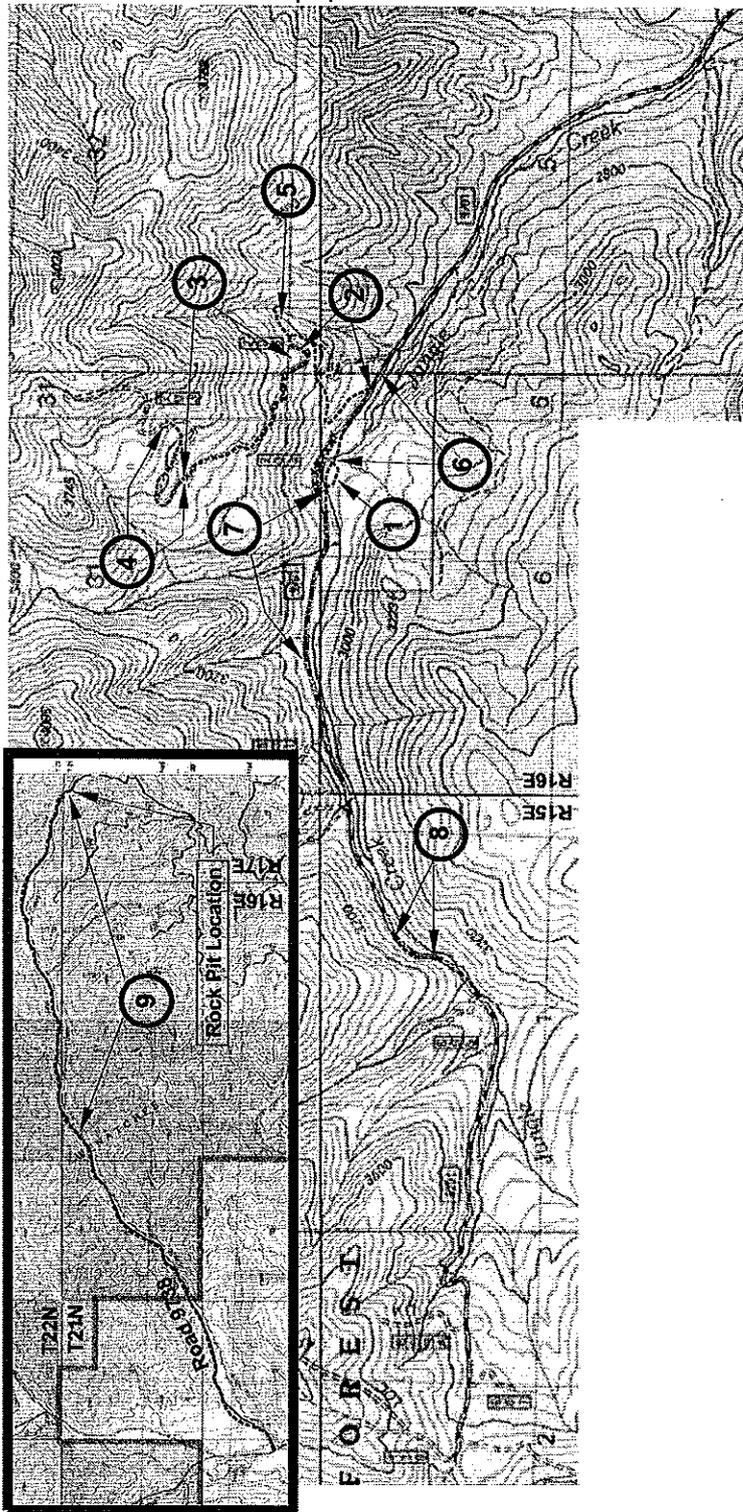
Reviewed and Approved By  
District Ranger \_\_\_\_\_ Date \_\_\_\_\_  
Forest Engineer \_\_\_\_\_ Date \_\_\_\_\_

Recommended and Approved By  
Zone Engineer \_\_\_\_\_ Date \_\_\_\_\_

Designed By \_\_\_\_\_ Date \_\_\_\_\_  
Reviewed By \_\_\_\_\_ Date \_\_\_\_\_

Sheet \_\_\_\_\_  
**Title** \_\_\_\_\_  
Sheet **1**





**Construction & Reconstruction Sites**

(Mapped Locations Approximate - Flagged/Staked on Ground)

1. Road 9701 000-I New Construction (50+00 TO 59+65)
2. Road 9701 203-I New Construction (10+00 TO 32+25)
3. Road 9701 203-II Reconstruction (32+25 TO 66+20)
4. Road 9701 203-II Switchback Reconstruction (10+00 TO 17+00)
5. Road 9701 205 Reconstruction (0+00 TO 2+11)
6. Road 9701 000-II MP 1.466 to 1.729 Reconstruction (Aggregate)
7. Road 9701 000-II MP 1.905 to 2.266 Reconstruction (Aggregate)
8. Road 9701 000-II MP 2.926 to 3.058 Reconstruction (Aggregate)
9. Road 9738 000 MP 2.802 to 5.750 Reconstruction (Asphalt Pothole Patching)

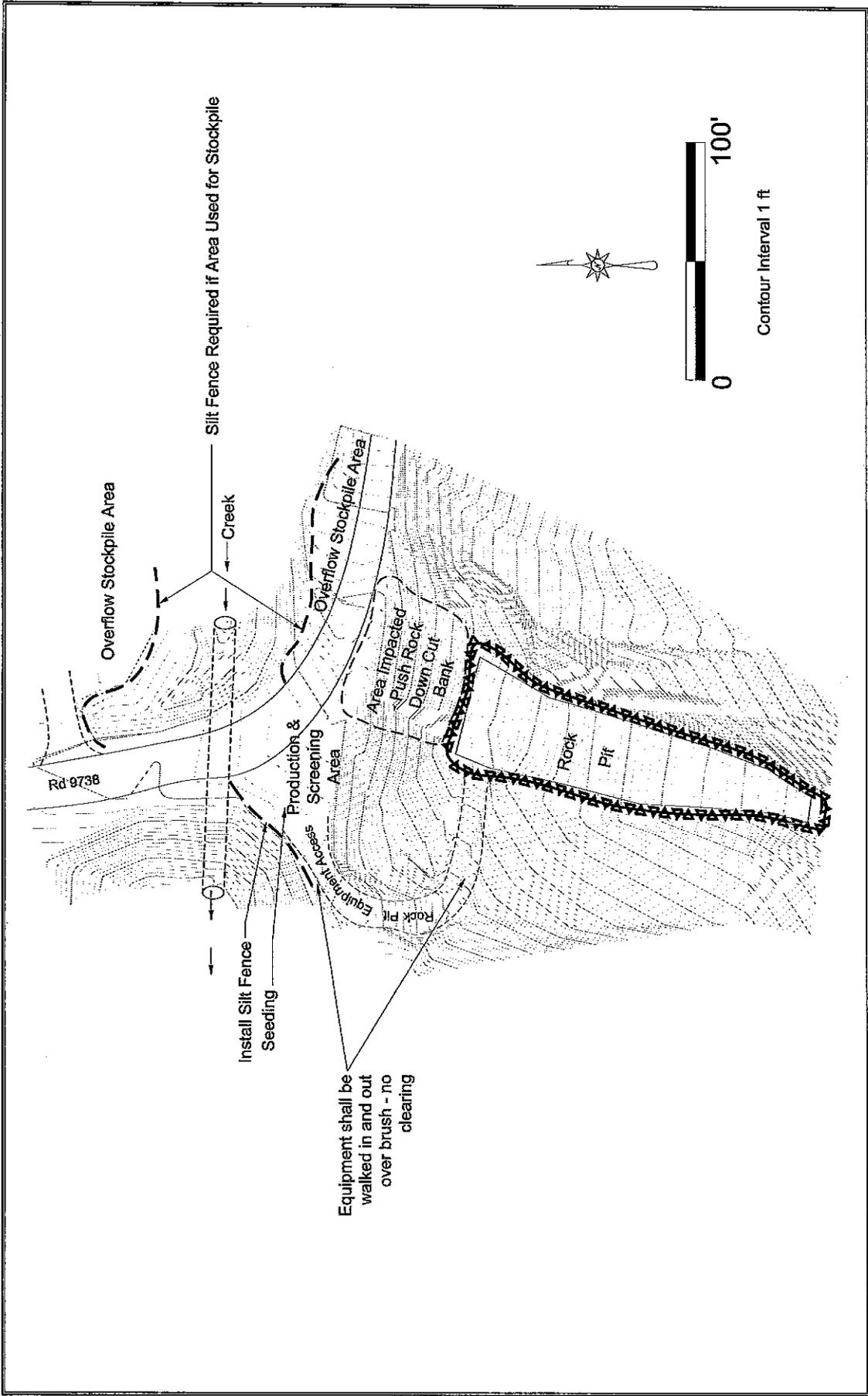
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**R-6**  
 PACIFIC NORTHWEST REGION

District  
 Cle Elum  
 RANGER DISTRICT

Forest  
 Okanogan-Wenatchee  
 National Forests  
 Project  
 Jung Way Timber Sale

Sheet Title  
 Construct/Reconstruct  
 Sites  
 Vicinity Map

Sheet  
**3**



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 R-6  
 PACIFIC NORTHWEST REGION

District  
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 RANGER DISTRICT

Forest Okanogan-Wenatchee  
 National Forests

Project Jung Way Timber Sale

Sheet Title Rock Pit Plan  
 Sheet 4

# ESTIMATE OF QUANTITIES

Sheet 5  
JUNG WAY TIMBER SALE

ITEM NO.	DESCRIPTION	METHOD OF MEASURE	UNIT	REVISION DATE	ROAD NUMBER								REMARKS	
					MILE POST (MILES)									
					9701000-I	9701000-II	9701203-I	9701203-II	9701205	9738000	QUANTITIES			
0.18	0.75	0.42	0.77	0.04	2.95									
15101	Mobilization	AQ	Lump Sum	2013	1.00									Mobilization for all roads will be paid under road 9701000-I
15202	Slope, reference, and clearing and grubbing stakes; method II, tolerance E	CQ	Mile	2013	0.18		0.42							
15702	Silt fence	CQ	Foot	2013	175.00						250.00			
15755	Dewatering structure	AQ	Lump Sum	2013	1.00									See sheet 16 for details
20103	Clearing and grubbing, disposal of tops and limbs f, logs f, stumps f	CQ	Mile	2013				0.77	0.04					
20104	Clearing and grubbing, disposal of tops and limbs f, logs f, stumps f	CQ	Acre	2013	0.67		1.76							
20401	Roadway excavation, compaction method C, finishing method C	CQ	Cubic Yard	2013	588.00		2,479.00							
20701	Earthwork Geotextile Type II-A	CQ	Square Yard	2013	1,715.00									Nonwoven separation fabric
25207	Rock buttress	AQ	Lump Sum	2013	1.00									No geotextile req'd. Oversize Material shall be obtained from FS Rd 9738 Rock Pit, Government furnished
30155	Pit Run Aggregate, Maximum Size 4", Compaction A	CQ	Cubic Yard	2013	410.00	1,200.00	150.00							Government furnished - FS Rd 9738 Rock Pit
30318	Road reconditioning, roadbed, compaction method d	CQ	Mile	2013		0.75		0.77	0.04					
43006	Full depth patch hot asphalt concrete mixture	AQ	Lump Sum	2013							1.00			
60211	48 inch Corrugated Steel Pipe 0.064 inch Thickness	CQ	Foot	2013	32.00									Government furnished, give ER 10 days notice prior to installation
60275	18" High Density Polyethylene cutlet pipe with smooth interior and annual exterior	AQ	Foot	2013	90.00									
60404	Catch basin, 36" Double Wall Polyethylene (PE) Pipe	AQ	Each	2013	1.00									See sheet 14 for details. Rock shall be obtained from FS Rd 9738 Rock Pit
60501	Underdrain system	CQ	Foot	2013	50.00									See sheet 13 for details. Rock shall be obtained from FS Rd 9738 Rock Pit
62529	Seeding and Mulching, Dry Method	CQ	Acre	2013	0.31		1.71	0.78	0.05		0.10			See sheet 23 for seed/mulch mix
65102	Pit and Quarry Development	AQ	Lump Sum	2013							1.00			See sheet 4 for details
60902b	Gate, Remove and Reset	AQ	Each	2013				1.00						See sheets 11 & 12 for details
61902a	Gate, Furnish & Install	AQ	Each	2013	1.00									See sheets 11 & 12 for details

# Notes, Symbols & Typical Details

**DISPOSAL OF MERCHANTABLE TIMBER (TIMBER MEETING UTILIZATION STANDARDS):**  
Merchantable timber (timber Meeting Utilization Standards) shall be decked in locations shown on drawings, within reach of standard loading equipment.

To meet minimum tree specifications, trees must be equal or exceed 7-inches DBH and contain at least one minimum piece. Such timber shall be felled and bucked into log lengths not exceeding 52 ft. Pieces (logs) shall also be considered as meeting Utilization Standards, and be required to be decked, when such pieces would have met Utilization Standards if bucking lengths were varied to include such material. Merchantable timber shall be limbed and bucked. Log decks shall be free of slash and debris. Material not meeting Utilization Standards, including any material remaining after deck removal, shall be disposed of as other construction slash pursuant to Specification 201.04.

**MINIMUM UTILIZATION STANDARDS:**

SEE AT.2- Volume Estimate and Utilization Standards.

**DISPOSAL OF UNMERCHANTABLE TIMBER:** Logs not meeting Utilization Standards which are suitable for use as firewood, may be scattered and decked. Material not suitable for firewood shall be treated by other slash methods.

**STAKES:** All stakes shall have the following minimum nominal dimensions. Hubs shall be 2 in. X 2 in. X 8 in. Guard, reference, slope, and other stakes shall be 0.3 in. X 1.5 in. X 18 in. Lath shall be 0.4 in. X 1.5 in. X 3 ft. Other dimensions and materials may be used, such as steel reinforcing bars and metal pins, if approved by the Engineer. The color of paint or flagging, as well as the colors for use on stakes for clearing, reference, structures, and slope staking shall be fluorescent orange. Other colors may be used if approved in writing by the Engineer.

SYMBOLS	DESCRIPTION
BOP, EOP	BEGINNING OF PROJECT, END OF PROJECT
CW	CURVE WIDENING
FW	FULL WIDTH AREA*
TOL, TOR, TOS	TURNOUT LEFT/RIGHT/SPLIT
V	DRAIN DIP
LOD	LEAD-OUT DITCH
○ & ○	CULVERT ( EXISTING )
⋈ & ⋈	CULVERT ( INSTALL )

TURNOUT	

ROAD	

TURNAROUND	

SPLIT	

J HOLE	

SLOPE	

\* BACKSLOPES SHALL CONFORM TO CONSTRUCTION TOLERANCES ON ROAD STRUCTURE DETAILS SHEET.

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FOREST SERVICE  
**R-6**  
PACIFIC NORTHWEST REGION

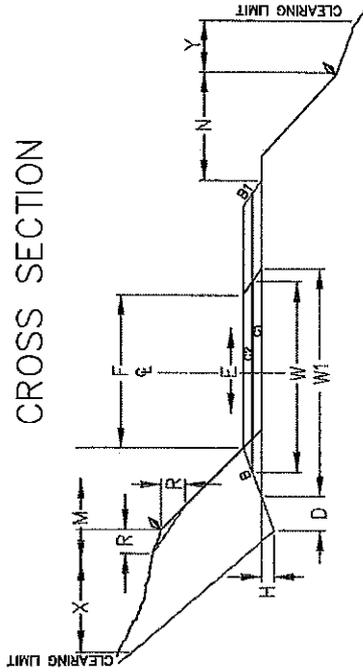
District  
**Cle Elum**  
RANGER DISTRICT

Not To Scale

Forest **Okanogan-Wenatchee**  
National Forests  
Project **Jung Way Timber Sale**

Sheet Title  
**Notes, Symbols & Typical Details**  
Sheet **6**

# CROSS SECTION



ROAD NUMBER	SEGMENT	STATION OF MILE POST TO	STATION OF MILE POST	CLEARING		GRADING										PAVEMENT STRUCTURE				
				BEYOND SHOULDER	BEYOND SLOPE STAKE	CONSTRUCTION TOLERANCE	FINISH ROADED	DITCH DIMENSIONS	ROADBED WIDTH	FINISH ROADED	DITCH	ROADBED WIDTH	GRADATION	DEPTH	SLOPE RATIO					
				X	Y	E	W	OS	W1	D	H	W	D	F	C1	C2	C1	B	B1	
9701 000	I	50+00	59+65	3	1	1	17	SP	17	6d	3	1	14					6	1:1	1:1
9701 203	I	10+00	32+25	3	1	1	17	SP	17	6d	3	1	14					6	1:1	1:1
9701 203	II	32+25	66+20	3	1	1	14	SP	14	6d	3	1	14					6	1:1	1:1
		10+00	17+00	3	1	1	14	SP	14	6d	3	1	14					6	1:1	1:1
9701 205		0+00	2+11	3	1	1	14	SP	14	6d	3	1	14							
9701 000	II	1.47	1.73 MI	3	1	1	17	SP	17	6d	3	1	14					6	1:1	1:1
		1.91	2.27 MI	3	1	1	17	SP	17	6d	3	1	14					6	1:1	1:1
		2.93	3.06 MI	3	1	1	17	SP	17	6d	3	1	14					6	1:1	1:1
9738 000		2.80	5.75 MI	3	1	1	14	SP	14	6d	3	1	14							

# Road Structure Details

- (1) CURVE WIDENING, WHEN SPECIFIED, SHALL BE ADDED TO THE INSIDE OF THE CURVE.
- (2) ROADBED WIDTH, FILL WIDENING, TURNOUT LENGTHS, FILL AND BACKSLOPE RATION SHALL BE AS SPECIFIED IN CONSTRUCTION STAKING NOTES AND/OR DRAWINGS.
- (3) SEEDING, FERTILIZING AND/OR MULCHING AREA INCLUDES N, X & Y SHOWN ON THE TYPICALS AND ALL OTHER AREAS DISTURBED BY CONSTRUCTION (INCLUDES BURN BAYS AND DECKING AREAS).
- (4) TURNOUTS, TURNAROUNDS AND CURVE WIDENING SHALL BE SURFACED TO THE SAME DEPTH AS THE TRAVELED WAY AND TO THE DIMENSIONS SPECIFIED IN CONSTRUCTION STAKING NOTES AND/OR DRAWINGS.
- (5) ROADBED TEMPLATE TYPES ARE SHOWN ON THE DRAWINGS AND SHALL BE CONSTRUCTED TO THE FOLLOWING TOLERANCE:  
 OUTSLOPE (OS): 0 TO 5 %  
 INSLOPE (IN): 2 TO 5 %  
 CROWN (CR): 2 TO 4 %
- (6) FINISHING ROADBED:  
 a. ROCKS PROTRUDING MORE THAN 4 INCHES ABOVE THE SUBGRADE SHALL BE REDUCED TO THE FINISHED SUBGRADE OR REMOVED. NO OVERSIZE MATERIAL SHALL BE LEFT ON THE SHOULDERS OR IN THE DITCHES. OVERSIZE MATERIAL IS DEFINED AS ROCKS 2 INCHES OR GREATER IN DIMENSION.
- (7) DITCHES ARE TO BE CONSTRUCTED WHERE NOTED ON THE WORK DESCRIPTION SHEETS OR PLAN AND PROFILE SHEETS.

(SP) CONSTRUCTION TOLERANCE: WHERE CONSTRUCTION STAKES ARE NOT SPECIFIED AND CLEARING LIMIT MARKING IS THE ONLY CONTROL REQUIRED, THE FOLLOWING SHALL GOVERN, UNLESS OTHERWISE SHOWN ON THE DRAWINGS. GRUB STUMPS WITHIN THE ROADWAY AND IN ACCORDANCE WITH FP-03 SPEC. 201.05

ROADBED WIDTH: as shown in column "W", plus curve widening, turnout widths, and fill widening.  
 CENTERLINE ALIGNMENT - 50 FOOT MINIMUM RADIUS CURVE.  
 GRADE - CHANGE BETWEEN GRADES SHALL BE UNIFORM AND NOT EXCEED 10 PERCENT IN 25 FEET.  
 MAXIMUM GRADE: - 10 PERCENT FAVORABLE  
 - 15 PERCENT ADVERSE

FILL - NATURAL CATCH OBTAINED USING SIDE CAST CONSTRUCTION METHOD.

BACKSLOPE - COMMON 2 H : 1 V, ON FLAT GROUND, CUTS UNDER 3 FEET  
 COMMON 1 H : 1 V, UNDER 55% TO 3/4 H : 1 V, OVER 55%  
 RIPRAPPE 1/2 H : 1 V  
 SOLD 1/4 H : 1 V

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 PACIFIC NORTHWEST REGION

District  
 Cle Elum  
 RANGER DISTRICT

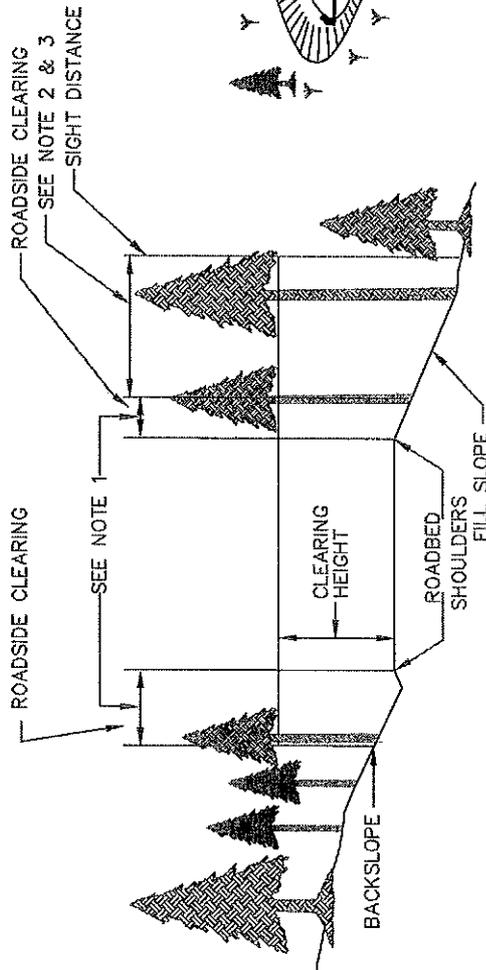
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Forest Okanogan-Wenatchee  
 National Forests  
 Project Jung Way Timber Sale

Sheet Title  
 Road Structure  
 Details

Sheet  
**7**

# CLEARING DETAILS

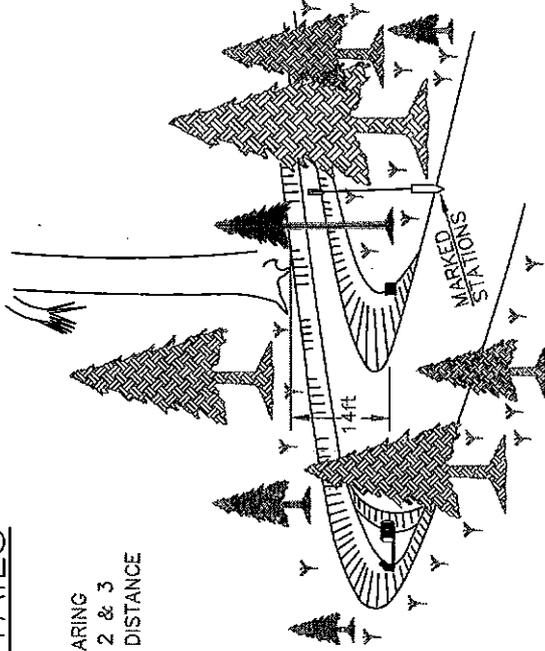


# CLEARING LIMITS TYPICAL

NO SCALE

## NOTES

1. ALL CONIFERS, HARDWOODS AND BRUSH WITHIN 1 FOOT OF THE OUTSIDE SHOULDER OF THE ROAD AND 5 FEET FROM THE BOTTOM OF THE DITCH OR INSIDE SHOULDER SHALL BE REMOVED.
2. THE AREA OF SIGHT DISTANCE CLEARING WILL BE FROM THE ROADSIDE CLEARING LIMIT, TO A LINE OF SIGHT BETWEEN THE BEGINNING AND ENDING STATIONS MARKED ON THE GROUND. CONIFERS WITHIN THIS AREA SHALL BE THINNED TO APPROXIMATELY A 12 FEET TRUNK SPACING, EXCEPT WHERE MARKED WITH PAINT OR FLAGGING FOR REMOVAL TO AN ALTERNATE SPACING. ALL HARDWOODS & BRUSH WITHIN THESE LIMITS SHALL BE REMOVED.



# SIGHT DISTANCE TYPICAL

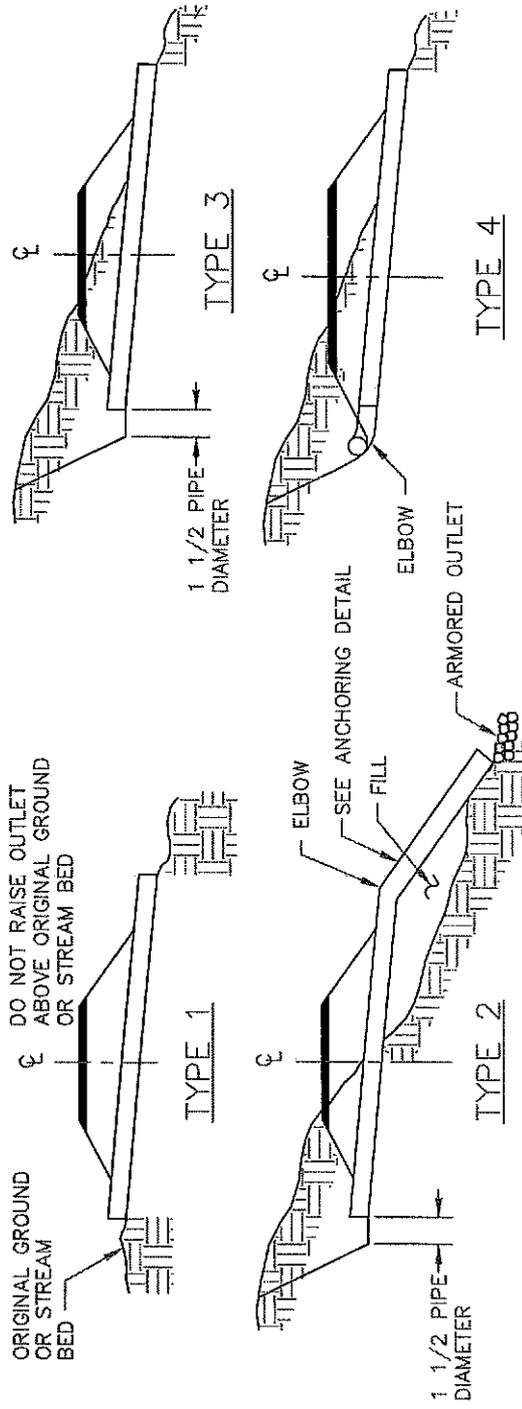
NO SCALE

3. BRANCHES ON REMAINING CONIFERS SHALL BE TRIMMED FROM GROUND LEVEL TO A CLEARING HEIGHT LIMIT 14 FEET ABOVE THE ROADBED OR TO A LIMIT OF 60% OF THE TREE'S HEIGHT, WHICHEVER IS LESS. LIMBS OF VEGETATION SHALL BE CUT SO AS TO NOT PROTRUDE WITHIN THE CLEARING LIMITS.

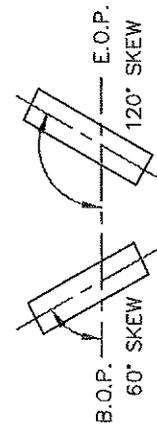




# DRAINAGE CONSTRUCTION DETAILS



## SKEW DIAGRAM



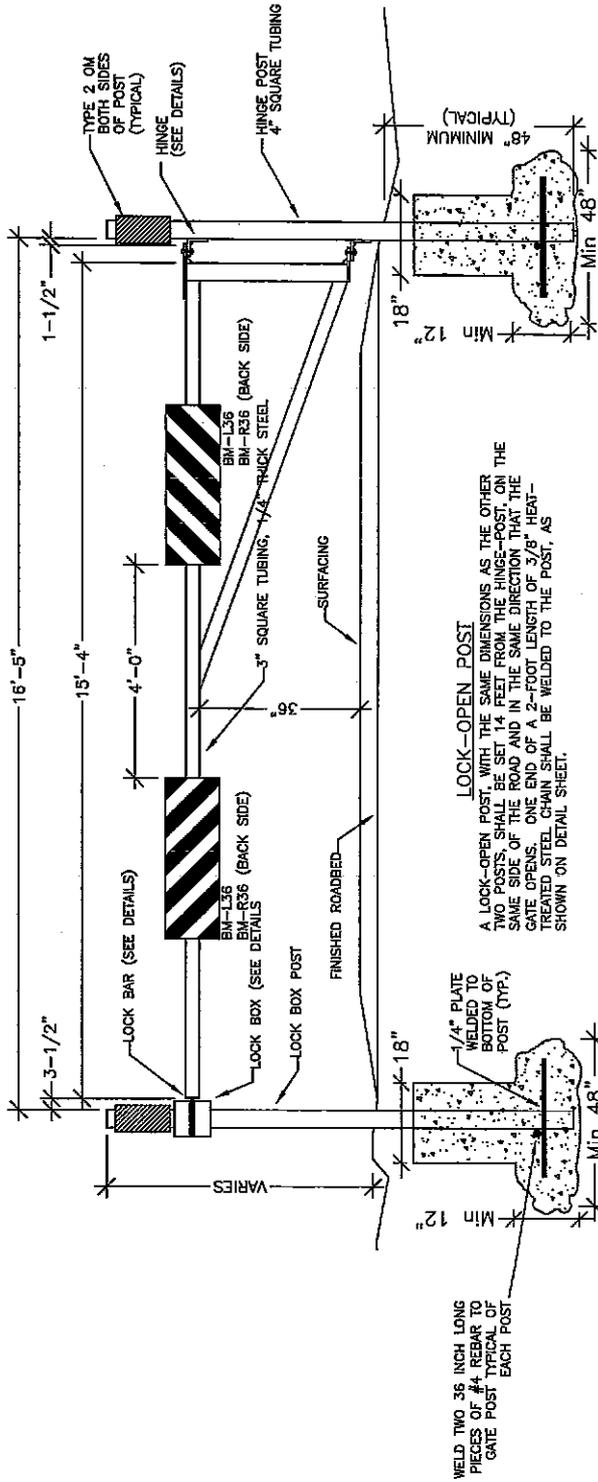
B.O.P. = BEGINNING OF PROJECT  
E.O.P. = END OF PROJECT

## SECTION A-A



## OUTLET DITCH

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE <b>R-6</b> <small>PACIFIC NORTHWEST REGION</small>	District <b>Cle Elum</b> RANGER DISTRICT	Not To Scale	Sheet Title Drainage Construction Details	Sheet <b>10</b>
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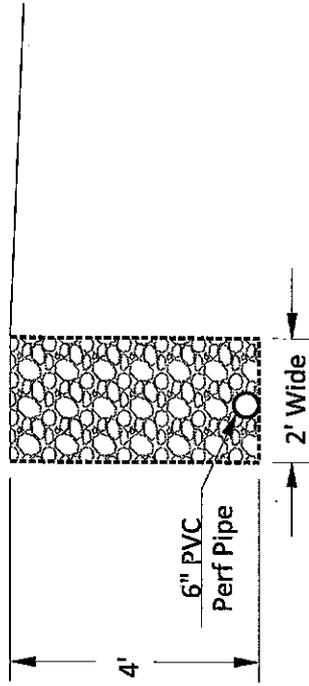
**GENERAL NOTES**

- ALL PIPE IS TO BE STANDARD GAUGE STEEL ASTM SPECIFICATION 53 DIMENSIONS SHOWN ARE NOMINAL PIPE SIZE.
- ALL MATERIAL SHALL BE FREE OF RUST. ALL CUTS AND WELDS SHALL BE REASONABLY SMOOTH. ALL BURRS FROM CUTTING AND WELDING SHALL BE REMOVED.
- POSTS SHALL BE SET VERTICALLY. TEMPORARY BRACES OR GUYS SHALL BE INSTALLED AS REQUIRED TO HOLD THE POSTS IN PROPER POSITION UNTIL SOIL COMPACTION AROUND POSTS HAS BEEN COMPLETED.
- THE LOCK ASSEMBLY POST SHALL BE INSTALLED AND ADJUSTED AS NECESSARY FOR PROPER OPERATION OF THE LATCH PLATE WITH CROSSBEAM LEVEL.
- SET LOCK POST 19 FEET FROM CENTERLINE ON DOUBLE LANE ROADS AND 10 FEET ON SINGLE LANE ROADS APPROXIMATELY 13 FEET FROM POST AS STAKED BY THE ENGINEER.
- ALL METAL SHALL RECEIVE 1 COAT OF RUST CONTROL PRIMER AND 2 COATS OF EXTERIOR ENAMEL PAINT (RUSTOLEUM BROWN). CONTRACTOR TO SUBMIT COLOR SAMPLE TO ENGINEER FOR APPROVAL.
- ADHESIVE BACKED OBJECT OR BARRICADE MARKERS SHALL BE APPLIED TO STEEL PLATES AND METAL GATE POSTS AS PER MANUFACTURERS RECOMMENDATIONS.
- BARRICADE MARKERS TO BE 0.080 ALUMINUM WITH ENGINEER GRADE REFLECTIVE SHEETING OF THE PROPER COLOR AND MARKINGS TO COMPLY WITH MUTCD SPECIFICATIONS.  
TYPE 2 OR REFLECTIVE YELLOW, 6" X 12"  
BM-L/R 36 REFLECTIVE RED & WHITE, 12" X 36"
- FASTEN OBJECT MARKER SIGNS TO METAL PIPE WITH ZINC OR NICKEL PLATED BOLTS, WASHERS, LOCK WASHERS & NUTS. USE 1/2" DIA. BOLTS FOR BM-L/R 36 SIGNS & 3/8" DIA. BOLTS WITH WASHER AT EACH END AND NUT FULLY ENGAGED. PROVIDE 1/4" TO 1/2" MAXIMUM THREAD BEYOND NUT.

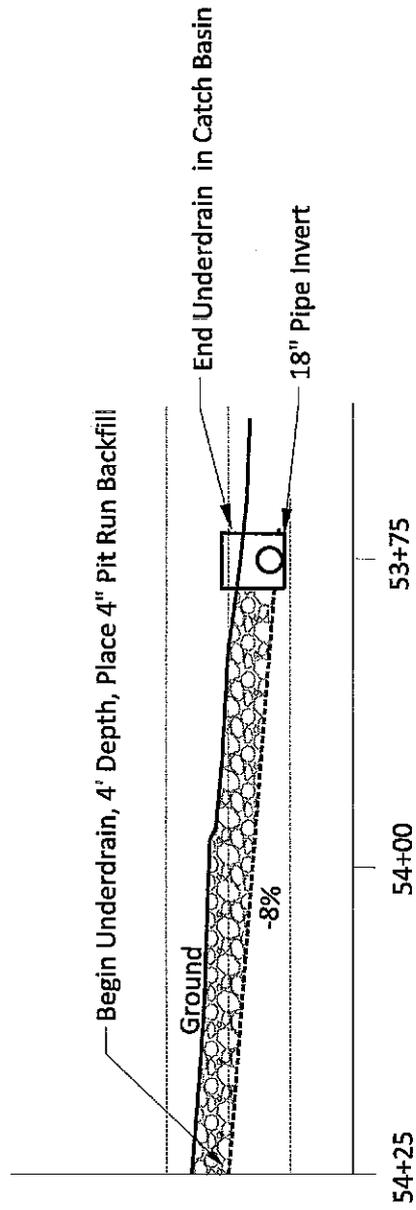


### TRENCH CROSS SECTION

NTS



### TRENCH & UNDERDRAIN PROFILE VIEW



U.S. DEPARTMENT OF AGRICULTURE  
FOREST SERVICE  
**R-6**  
PACIFIC NORTHWEST REGION



District  
Cle Elum  
RANGER DISTRICT



Forest Okanogan-Wenatchee  
National Forests  
Project Jung Way Timber Sale

Sheet Title

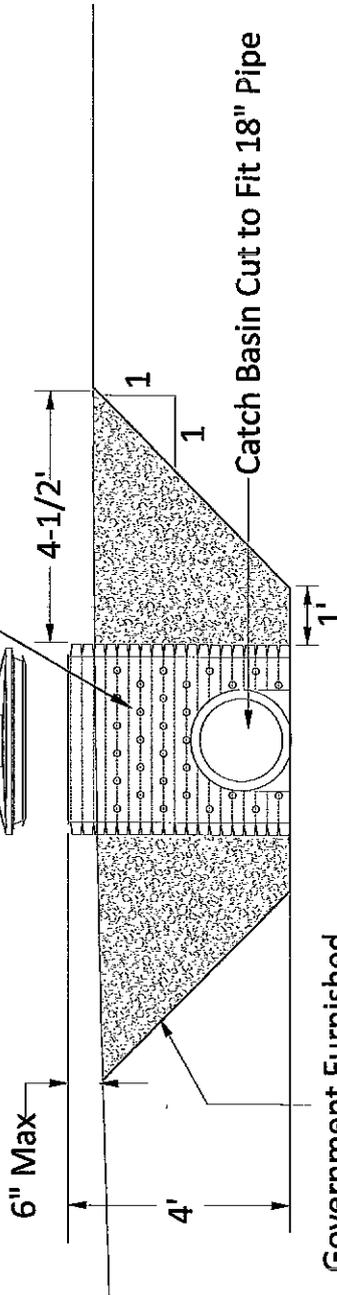
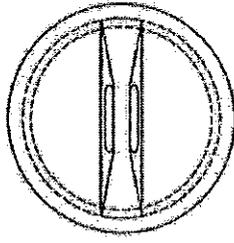
Typical Underdrain &  
Trench System

Sheet

13

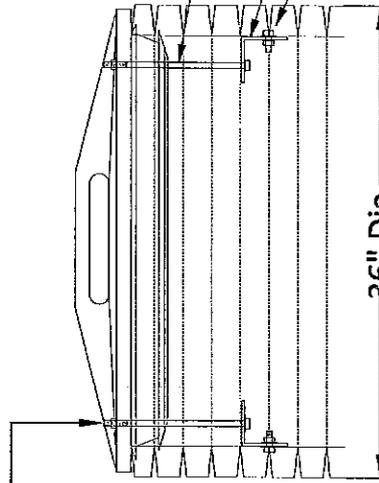
Factory End Plug,  
With Field Bolts

Contractor shall drill  
1 1/2" Drain Holes, Drilled 6" O.C.



Government Furnished  
"Clean" Pit Run Backfill, Max.  
Size 4", as approved by ER

Squash Exposed Threads 1"



36" Dia.

END PLUG  
ADS Or Equal

8" - 60° NON-PRESSURE PIPE  
END PLUG WITH GASKETS\*

DIAMETER	PRODUCT CODE
24" (600mm)	2433AA
30" (750mm)	3033AA
36" (900mm)	3633AA
42" (1050mm)	4233AA

Anchors for End Plug Lid  
Vertical 1/2" Galv Bolts w/Washers, Nuts  
(or Vertical Threaded Rod)  
- 2 pcs 4" x 4" x 1/4" Steel Angle  
- 1/2" Galv Bolts w/Washers, Nuts

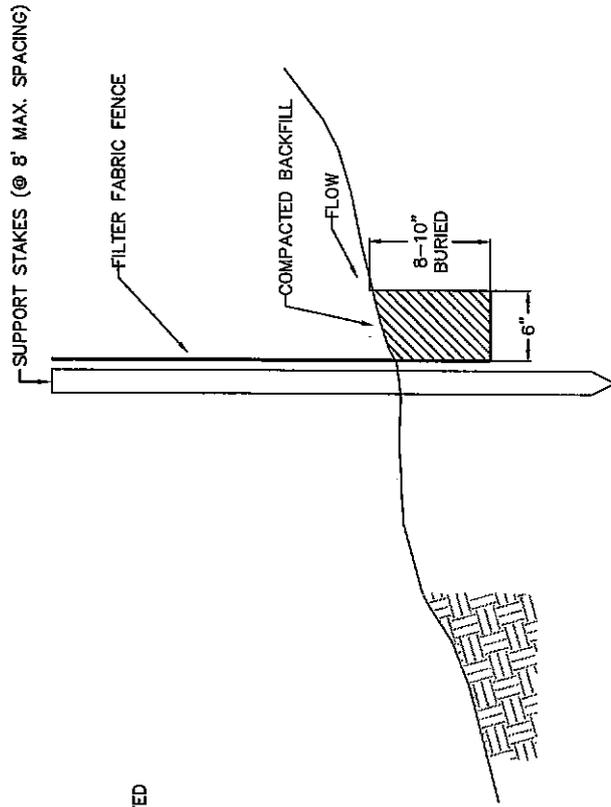
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R-6  
PACIFIC NORTHWEST REGION

District  
Cle Elum  
RANGER DISTRICT

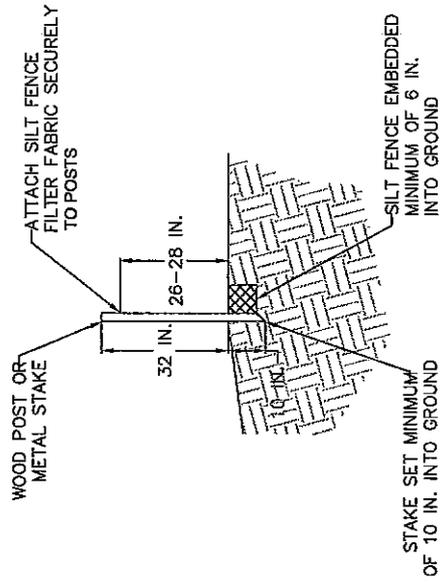
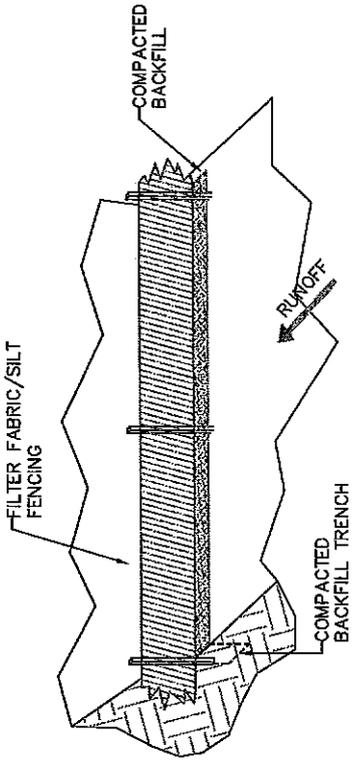
Not To Scale

Forest Okanogan-Wenatchee  
National Forests  
Project Jung Way Timber Sale

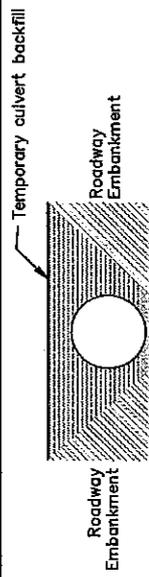
Sheet Title  
Perforated Vertical  
Catch Basin Details  
Sheet  
1.4



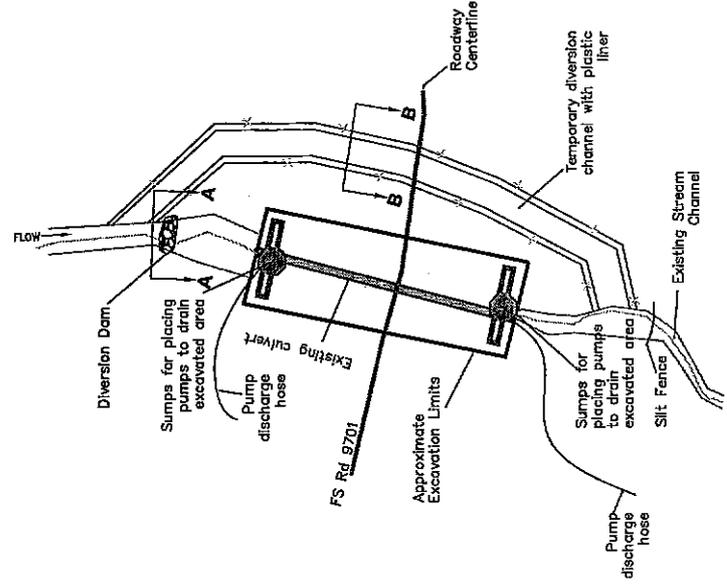
NOTE: BOTH ENDS OF FENCE SHALL EXTEND 6 FT UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT. STAKES SHALL BE METAL OR THICK WOOD.



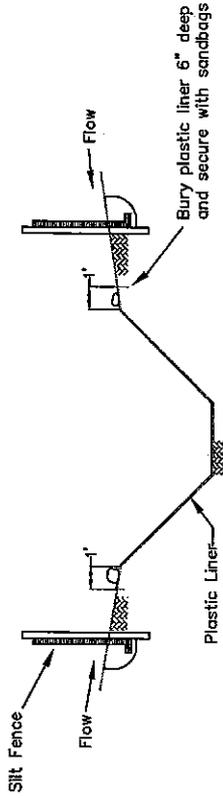
EROSION CONTROL MEASURES ARE TO BE APPLIED ALONG NATURAL WATER PATHS TO ALL SOIL DISTURBING ACTIVITIES, TO PREVENT ACCELERATED SURFACE EROSION OF RECENTLY DISTURBED SOILS.



Section A-A



Section B-B  
Temporary Culvert Option



Section B-B  
Plastic Lined Diversion Channel

Diversion, Sediment and Erosion Control

Spill kit and spill plan shall be furnished by the Purchaser and on site at all times. A silt barrier/filter shall be constructed before any instream work is performed. The silt barrier shall be constructed with a silt fence. The silt fence shall be installed to conform to ground irregularities along bottom of channel and into each bank to effectively channel stream flow through the filter material.

Disturbance of stream channel shall be held to a minimum and shall be restored to pre-project conditions at completion of project. The use of heavy equipment in the stream shall be held to an absolute minimum. Care shall be taken to ensure that no petroleum or toxicants fall or leach into the stream. A temporary stream diversion shall be constructed before any work is permitted in the stream channel. The temporary diversion shall be approved by the ER before the stream is diverted from its natural channel. The temporary diversion shall be of sufficient size to pass flows and debris for the duration of the project. The temporary diversion dam shall be constructed of clean inert material (sandbags, washed rock, Ecology blocks or other approved material) in combination with 6 mil. polyethylene plastic or approved equal.

Forest Service Fish Biologist will be on site when stream is diverted. Give 5 days written notice prior to diverting.

Conserve excavated stream channel material for structure channel backfill. Surplus excavated material shall be incorporated into the roadway and spread uniformly along fill slopes, beyond high water flow.

All Soil Erosion and Pollution control material shall be removed from government land.

Dewater Details

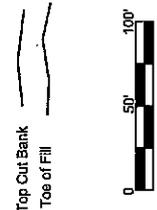
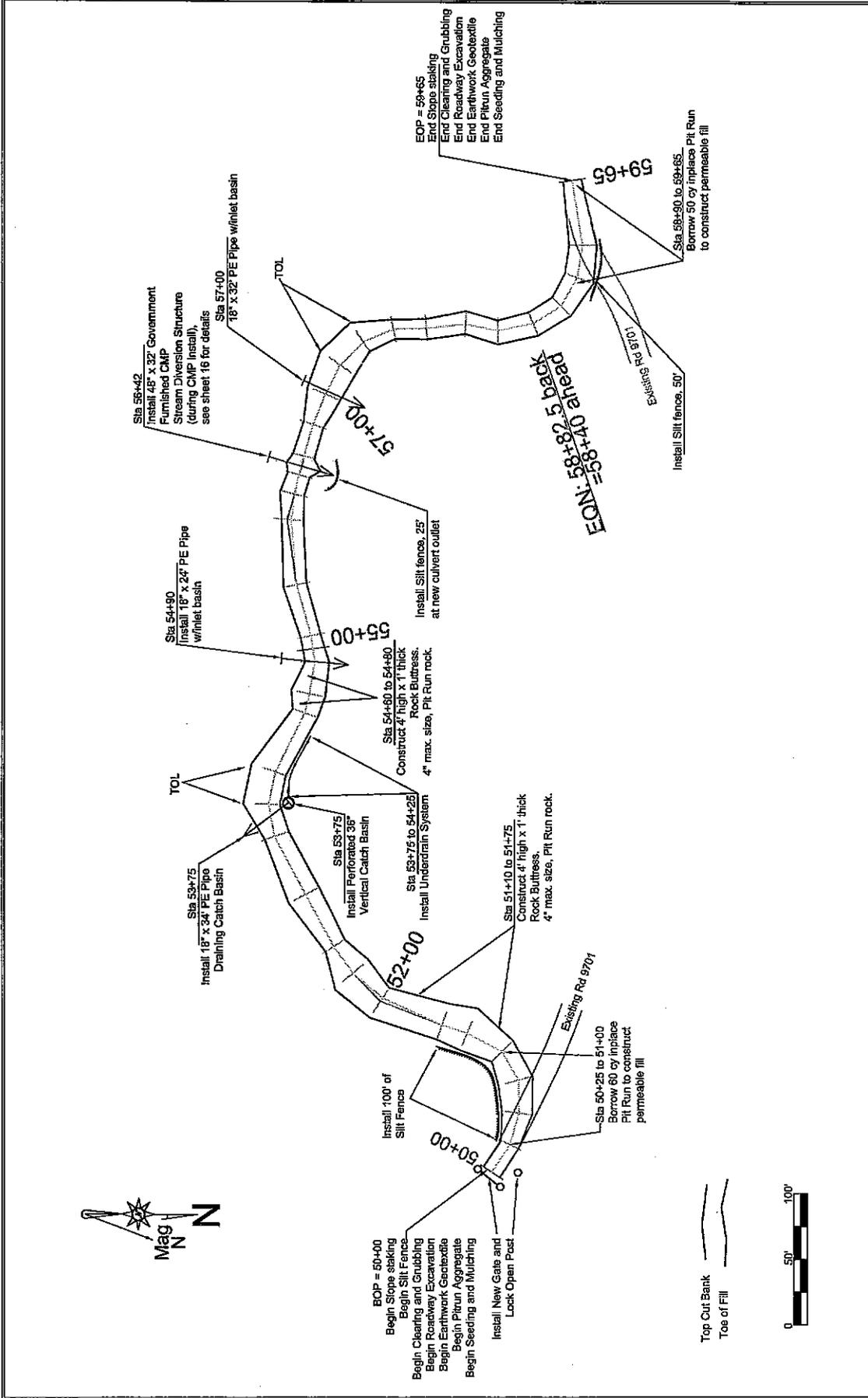
Waste water from project activities shall be routed to an area outside the bankfull channel to allow removal of fine sediment and other contaminants prior to infiltrating back into stream.

Bypass outlet location will be staked and approved by the ER prior to installation.

NOTE:  
1. Use plastic liner along the entire length and width of the temporary diversion channel.

2. Construct diversion channel at a minimum grade of 0.5 percent.

3. Do not construct with longitudinal joints if using a plastic liner. Bury the upstream edge of the liner a minimum of 6" deep and secure with riprap, sandbags, or other approved material.



Sheet Title  
 RD 9701 CONST.-I  
 PLAN VIEW  
 50+00-59+65

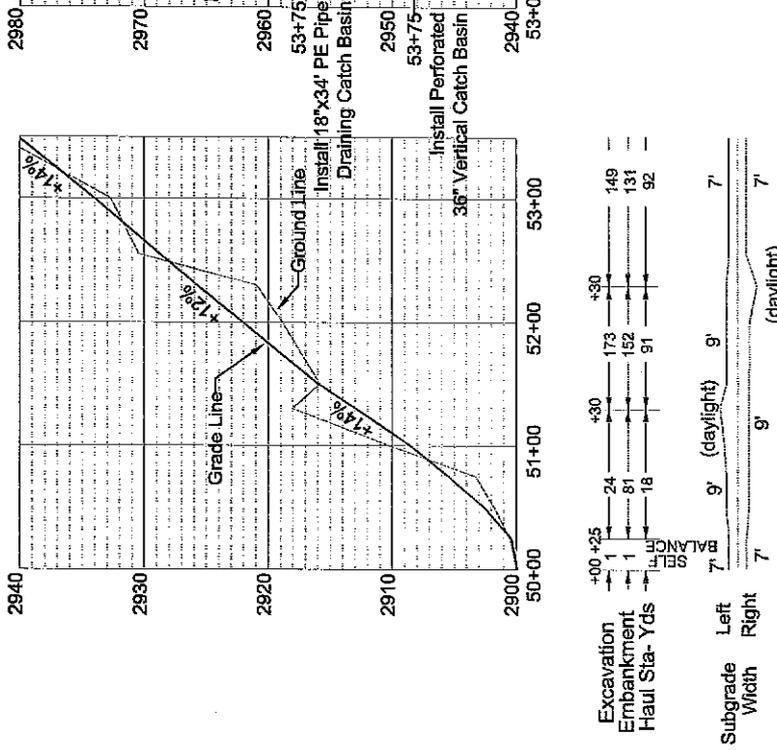
Forest Okanogan-Wenatchee  
 National Forests  
 Project Jung Way Timber Sale

District Cle Elum  
 RANGER DISTRICT

District Cle Elum  
 RANGER DISTRICT

U.S. DEPARTMENT OF AGRICULTURE  
 FOREST SERVICE  
 R-6  
 PACIFIC NORTHWEST REGION

Sheet 17



Excavation	+00+25	1	24	+30	173	+30	149
Embankment		1	81		152		131
Haul Sta. Yds			18		91		92
Subgrade	Left	7	9	(daylight)	9		7
Width	Right	7	9			(daylight)	7

	+50	+30	+50	+50	+75	+00	+50	+40	+50	+65
	41	29	48	3	33	33	30	24	22	0
	2	13	8	0	3	3	20	6	6	7
(turnout)	17	7	7	8	17	7	9			

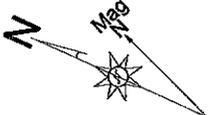
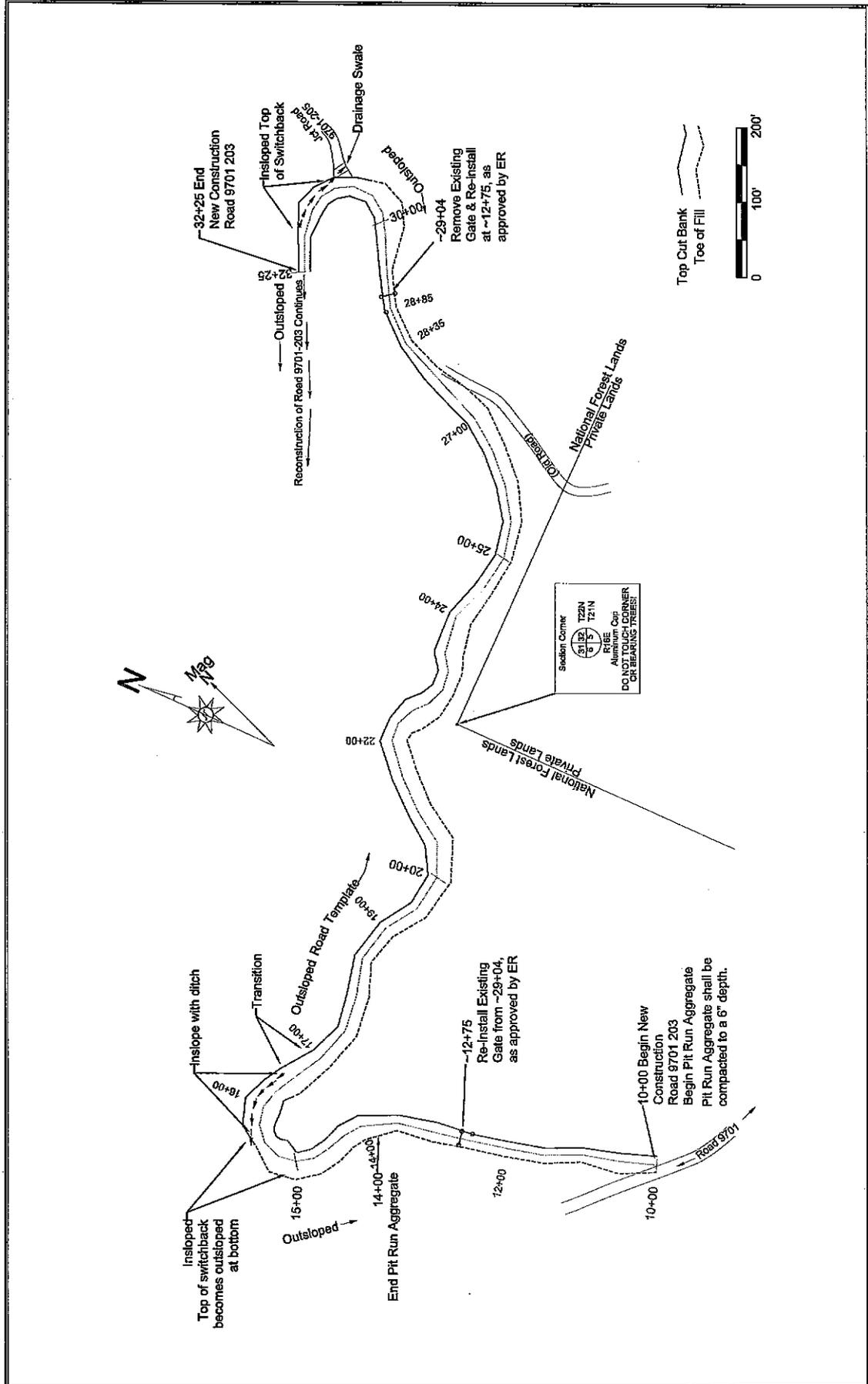
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 PACIFIC NORTHWEST REGION

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 RANGER DISTRICT

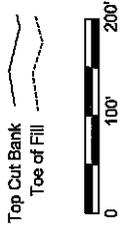
Forest Okanogan-Wenatchee  
 National Forests  
 Project Jung Way Timber Sale

Sheet Title  
 RD 9701 CONST.-1  
 PROFILE VIEW  
 50+00-59+65

Sheet  
 18



Sweden Corner  
 51'32" 12'2N  
 8'5" 12'1N  
 RIBE  
 Aluminum Cap  
 DO NOT TOUCH CORNER  
 OR MARKING TREES!



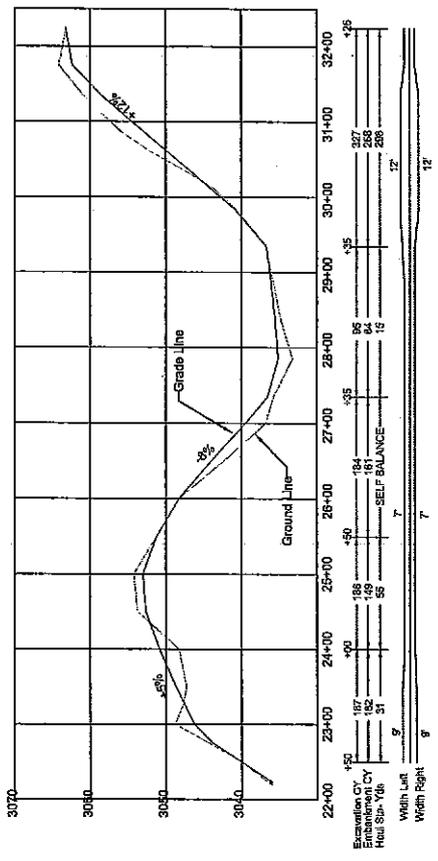
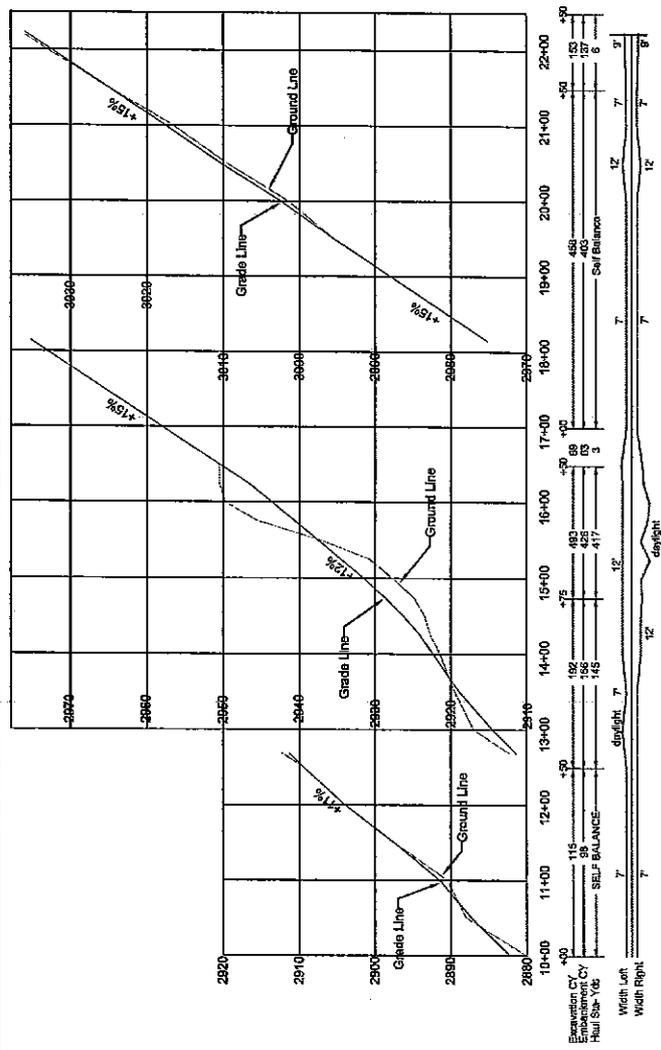
Sheet Title  
 RD 9701 203 CONST.-I  
 PLAN VIEW  
 10+00-32+25

Forest Okanogan-Wenatchee  
 National Forests  
 Project Jung Way Timber Sale

District Cle Elum  
 RANGER DISTRICT

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Sheet  
 19

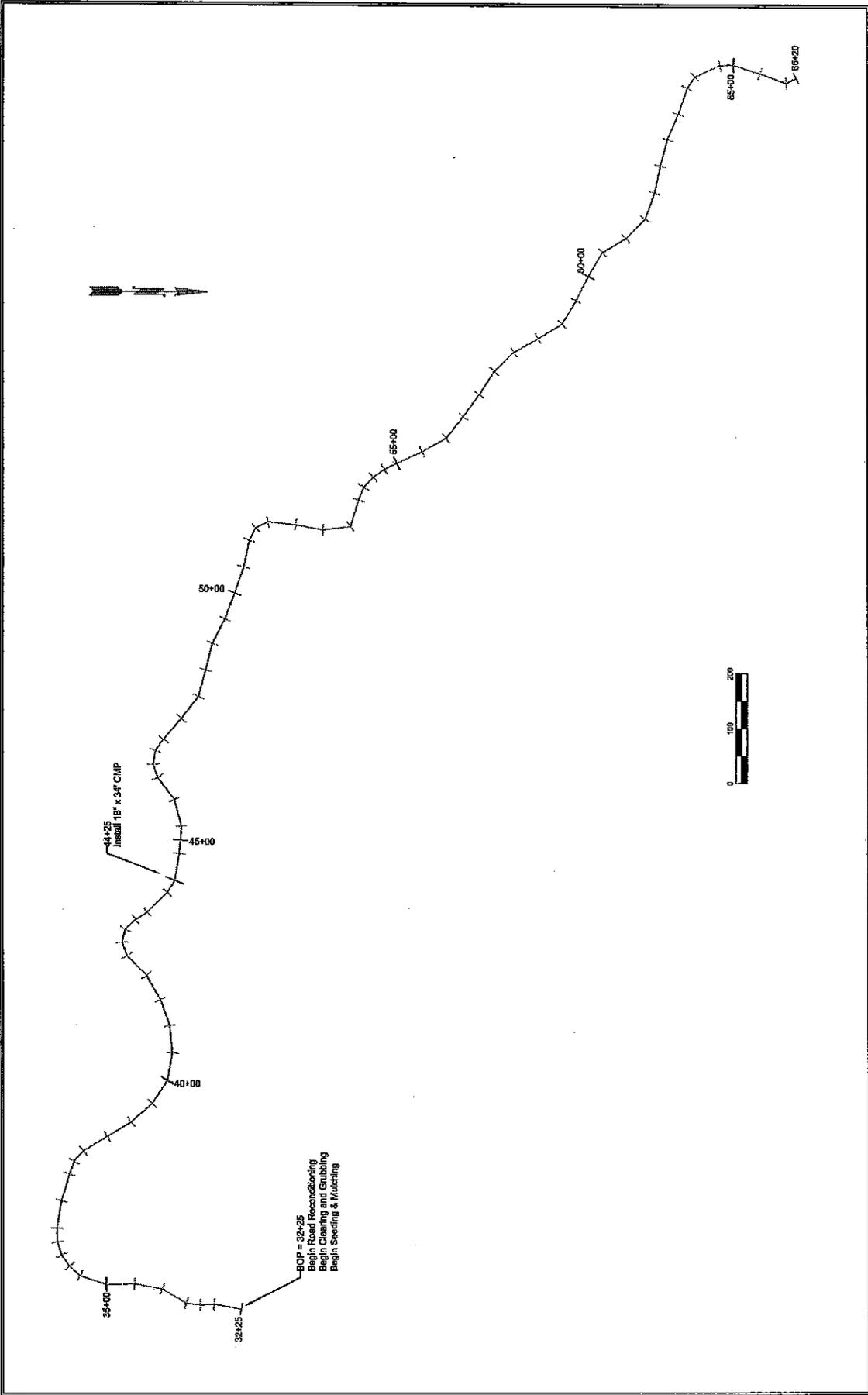


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Forest Okanogan-Wenatchee  
 National Forests  
 Project Jung Way Timber Sale

Sheet Title  
 RD 9701 203 CONST.-1  
 PROFILE VIEWS  
 10+00-32+25  
 Sheet  
 20



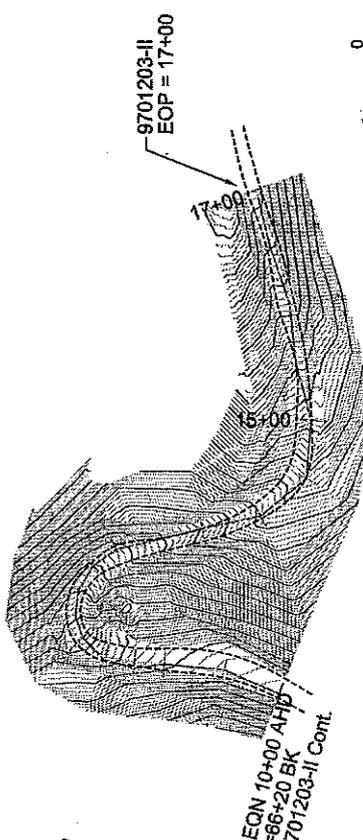
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**R-6**  
 PACIFIC NORTHWEST REGION

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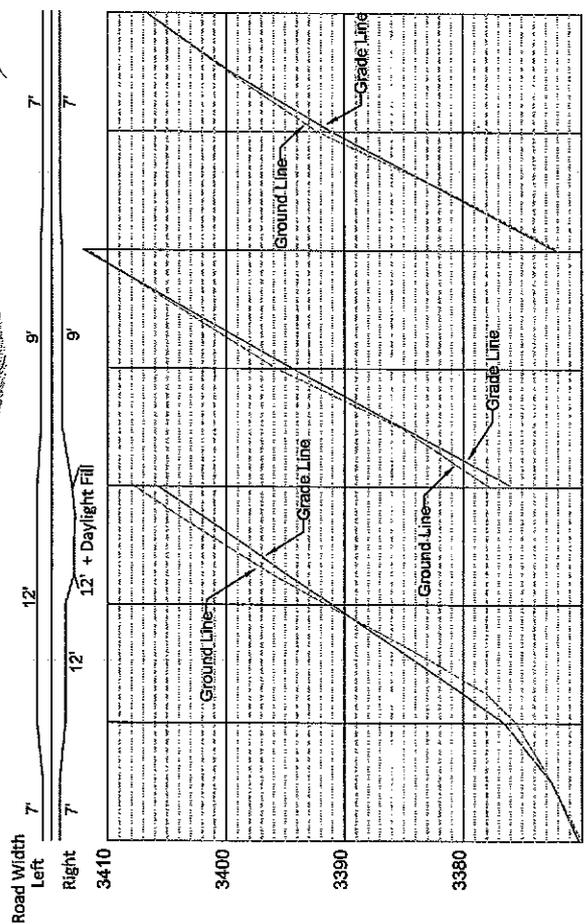


Forest Okanogan-Wenatchee  
 National Forests  
 Project Jung Way Timber Sale

Sheet Title  
 RD 9701 203-II  
 RECONST  
 32+25-66+20  
 Sheet  
**21**



Top Cut Bank  
Toe of Fill



Station	Excavation	Embankment	Haul Sta Yds
10+00	3	3	0
11+00	521	456	747
12+00	48	4	13
13+00			
14+00			
15+00			
16+00			
17+00			

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Sheet Title  
Rd 9701 203-II  
Reconst  
Upper Switchback  
Sheet 22

RD. #9701 000-II

MP 1.47 WORK DESCRIPTION  
 BEGIN ROAD RECONDITIONING  
 BEGIN AGGREGATE  
 END ROAD RECONDITIONING  
 END AGGREGATE

1.73

1.91 BEGIN ROAD RECONDITIONING  
 BEGIN AGGREGATE  
 END ROAD RECONDITIONING  
 END AGGREGATE

2.27

2.93 BEGIN RECONDITIONING  
 BEGIN AGGREGATE  
 END ROAD RECONDITIONING  
 END AGGREGATE

3.06

FINISHED ROAD SHALL HAVE A "CROWN" TEMPLATE

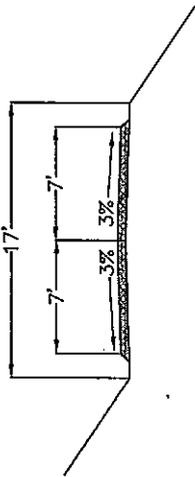
RD. #9701 205

STA 0+00 WORK DESCRIPTION  
 BEGIN CLEARING AND GRUBBING  
 BEGIN ROAD RECONDITIONING  
 BEGIN SEEDING & MULCHING

2+11 END CLEARING AND GRUBBING  
 END ROAD RECONDITIONING  
 END SEEDING & MULCHING

FINISHED ROAD SHALL HAVE AN "OUTSLOPE" TEMPLATE

CROWN TEMPLATE W/6" COMPACTED AGGREGATE



RD. #9738 000 + PIT WORK

MP 2.80 WORK DESCRIPTION  
 BEGIN POTHOLE PATCHING,  
 FULL DEPTH PATCH HOT  
 ASPHALT CONCRETE MIXTURE

5.75 END POTHOLE PATCHING

AT PIT-  
 SILT FENCING SHALL BE PLACED  
 ACCORDING TO PIT PLAN.  
 SEEDING SHALL BE SPREAD ON ALL  
 DISTURBED AREAS

Seed/Mulch Mix	Species	Lbs/Acre
	Locally adapted native biotype	
Blue Wildrye	.....	3.5
<i>Elymus glaucus 'keechelus'</i>	.....	9.0
California Brome	.....	0.5
<i>Bromus carinatus 'Reecer'</i>	.....	2.5
Idaho Fescue	.....	0.3
<i>Festuca idahoensis 'Wenatchee'</i>	.....	
Blubunch Wheatgrass	.....	
<i>Pseudobernertia spicata 'Squitchuck'</i>	.....	
Yarrow	.....	
<i>Achillea millefolium 'Wenatchee'</i>	.....	
Total		16.0lbs/ac

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Not To Scale

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