

CHATTAHOOCHEE-OCONEE NATIONAL FORESTS  
CHATTOOGA RIVER RANGER DISTRICT

FS-157 GOLD MINE (WILLIS KNOB)  
RECONSTRUCTION

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TRAFFIC SERVICE LEVEL D

INDEX

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ROADS ENGINEER	DATE
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REAL STAFF OFFICER	DATE
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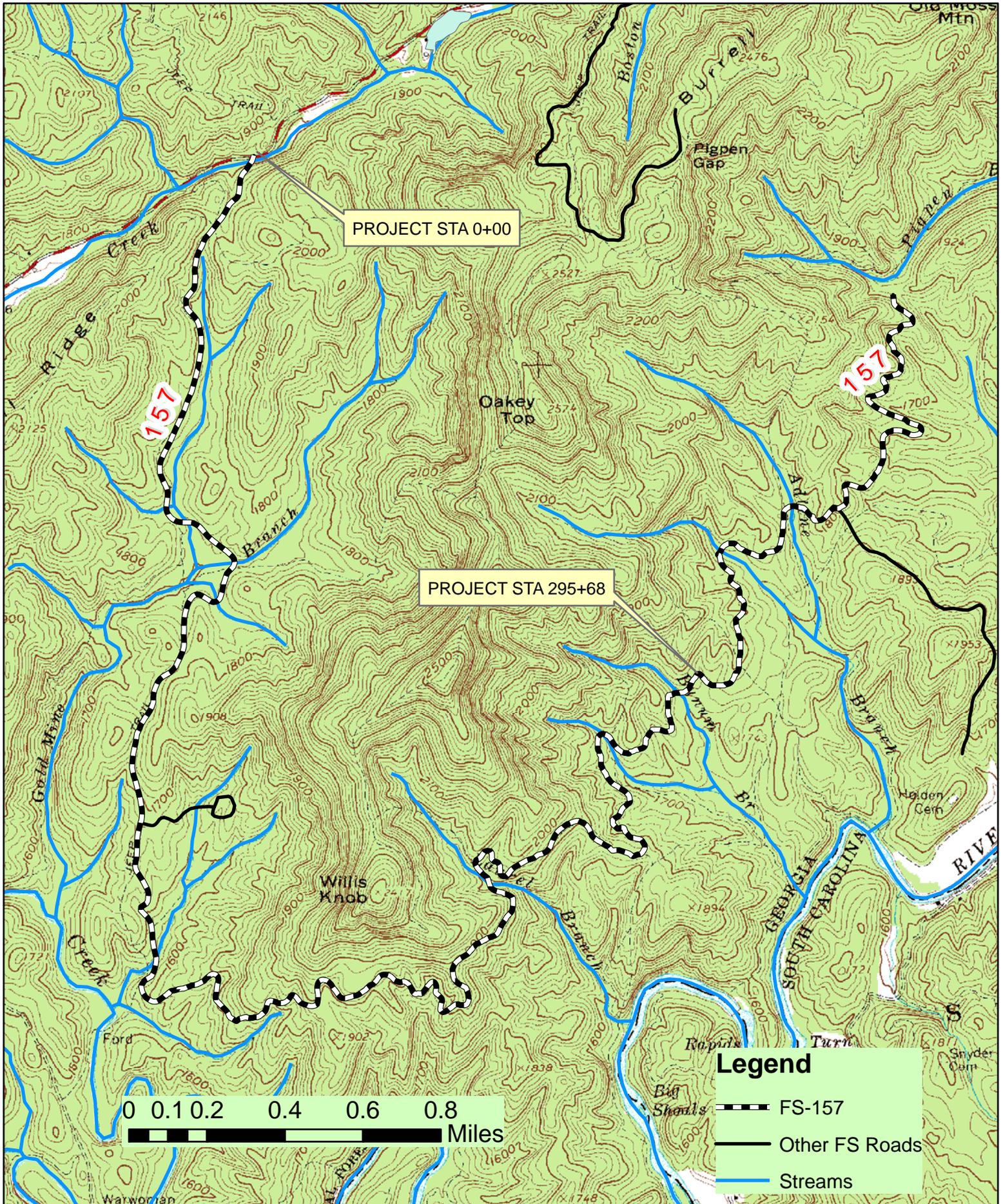
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DISTRICT RANGER	DATE
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FOREST SUPERVISOR	DATE
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# FS-157 Gold Mine (Willis Knob) Reconstruction Location Map



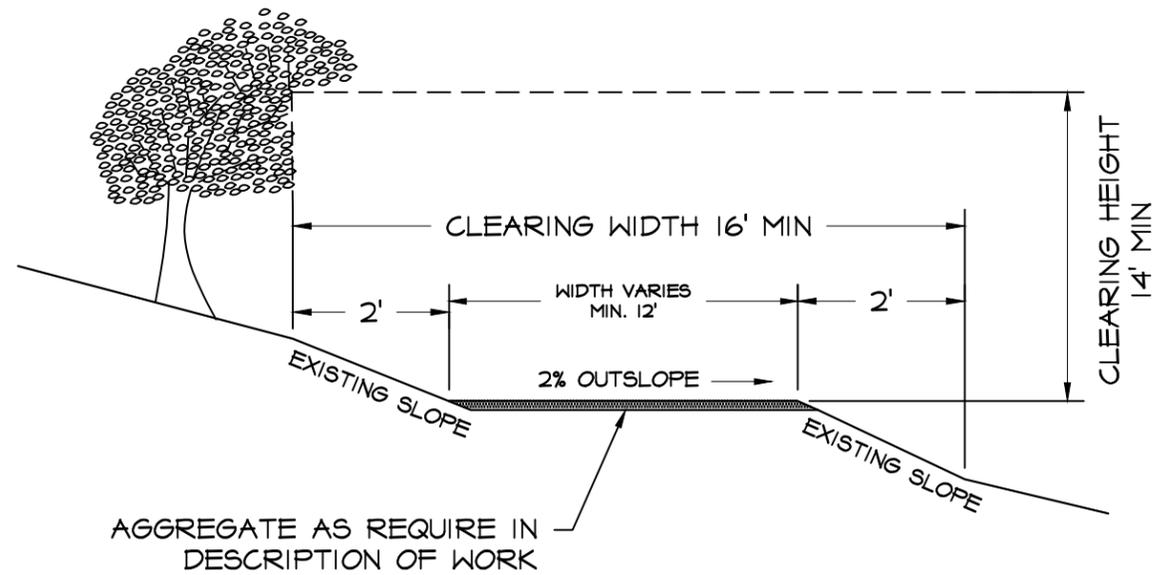
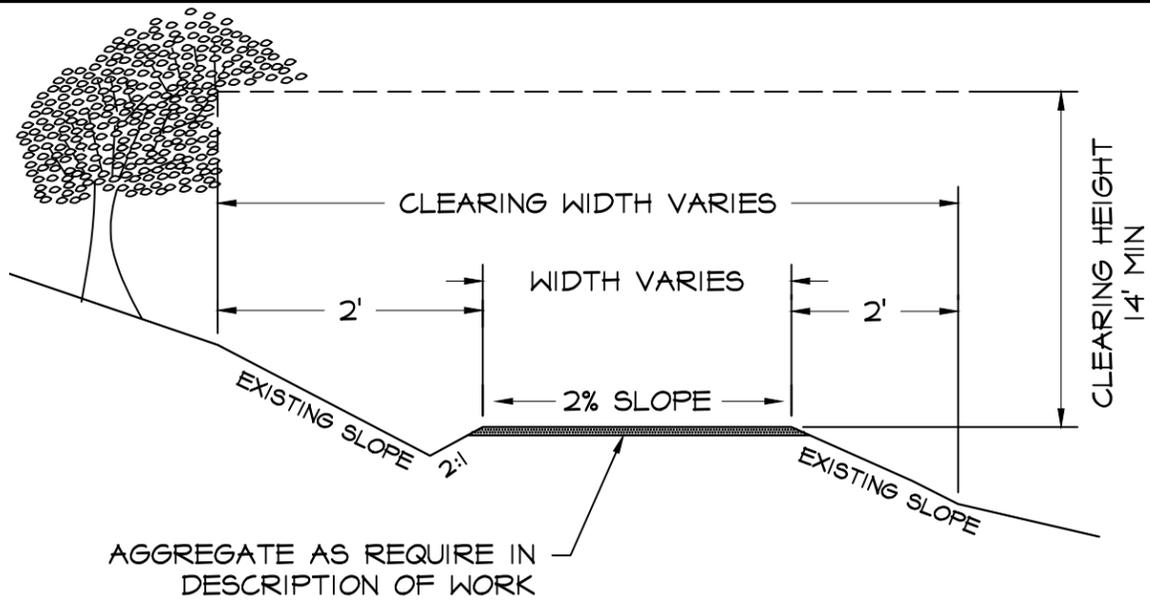
PART I - SCHEDULE OF ITEMS  
SECTION B – SERVICES AND PRICES

FS-157 Gold Mine (Willis Knob) Reconstruction  
Chattooga River Ranger District  
Chattahoochee-Oconee National Forests  
Rabun County

**B- 1 - SCHEDULE OF ITEMS**

Item No.	Description	Pay Unit	Est. Qty	Unit Price	Total Price
15714	Erosion Control & Pollution Prevention Plan	Lump Sum	1	\$_____	\$_____
20101	Clearing and Grubbing	Lump Sum	1	\$_____	\$_____
25102	*Placed riprap, FP-03 Class 1 or GDOT Surge	Ton	30	\$_____	\$_____
25102	Placed riprap, FP-03 Class 4 or GDOT Type 1	Ton	72	\$_____	\$_____
30115	Aggregate surface course, compacted GDOT #4, compaction method A	Ton	54	\$_____	\$_____
30318	Road reconditioning	Lump Sum	1	\$_____	\$_____
62530	Seeding and Mulching, Dry Method	Lump Sum	1	\$_____	\$_____
63501	Temporary traffic control	Lump Sum	1	\$_____	\$_____
				<b>TOTAL</b>	<b>\$_____</b>

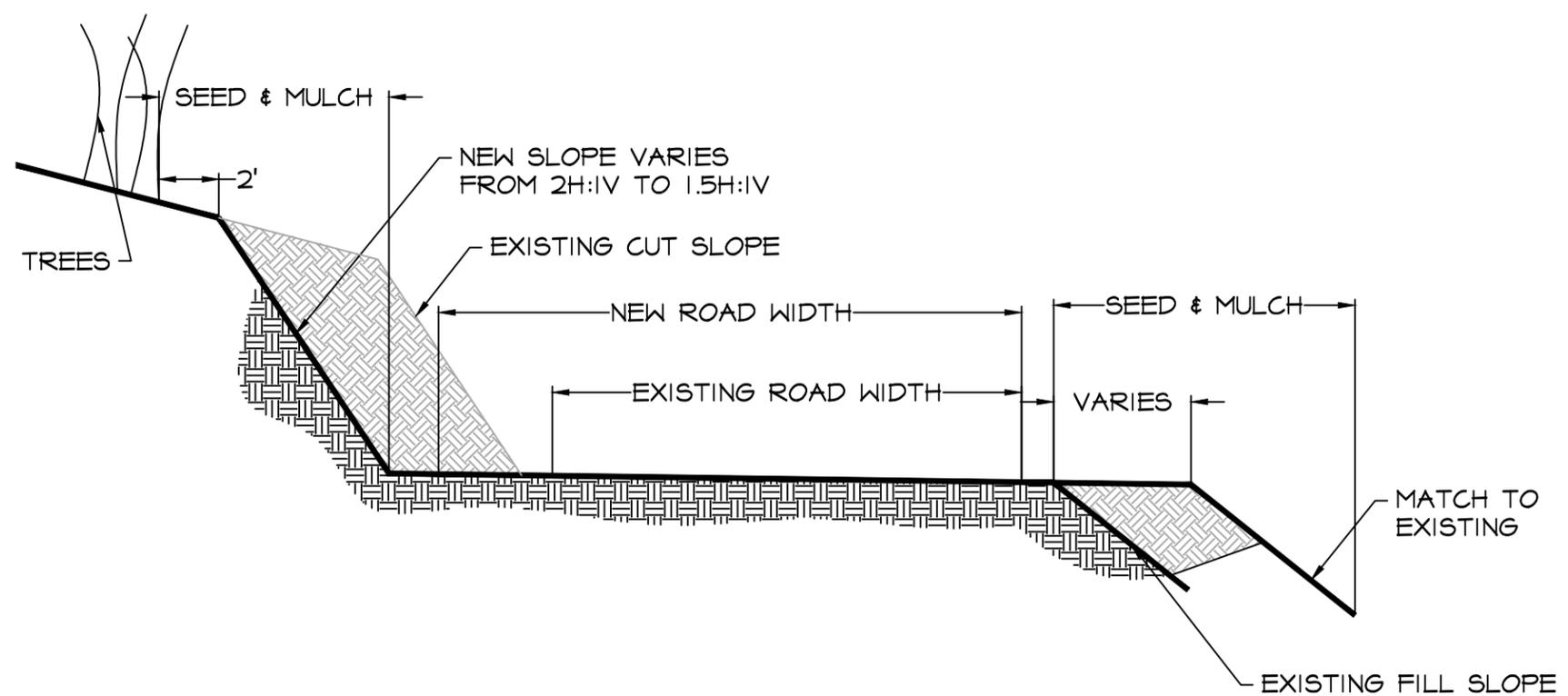
\*placed rip rap includes moving class 1 and placing on outlet



**ROAD TYPICAL SECTION**

NOT TO SCALE

NOTES:  
ROAD WIDTH VARIES FROM 16'  
TO 22'. SEE DESCRIPTION OF  
WORK FOR DETAILS.



**TYPICAL ROAD SECTION FOR CURVE WIDENING**

NOT TO SCALE

- NOTES:
1. EXACT LOCATION OF WORK WILL BE STAKED BY FOREST SERVICE PERSONNEL.
  2. SEE DESCRIPTION OF WORK FOR NEW ROAD WIDTH.
  3. INSTALL GADOT #4 STONE PER DESCRIPTION OF WORK.
  4. CUT SLOPE MATERIAL WILL BE INSTALL AND COMPACTED AT FILL SIDE SLOPE.
  5. NEW FILL SIDE SLOPE SHOULD MATCH EXISTING FILL SLOPE.
  6. SEED AND MULCH ALL DISTURBED AREAS.
  7. ALL WORK SHALL BE APPROVED BY FOREST SERVICE PERSONNEL.



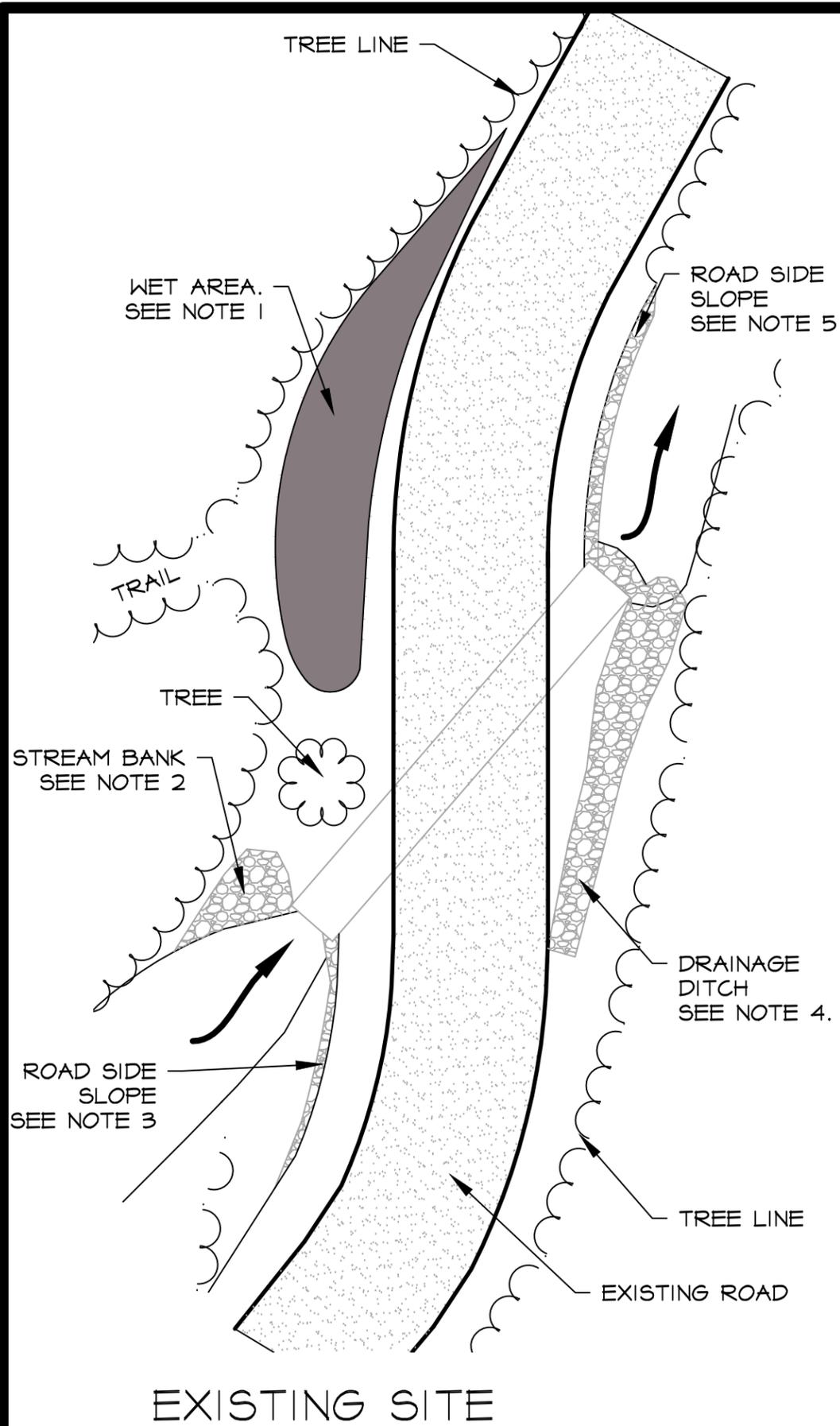
U.S. FOREST SERVICE  
SOUTHERN REGION

F.S.-157 Gold Mine (Willis Knob) Road Reconstruction  
Chattanooga River Ranger District  
Chattahoochee-Oconee National Forest

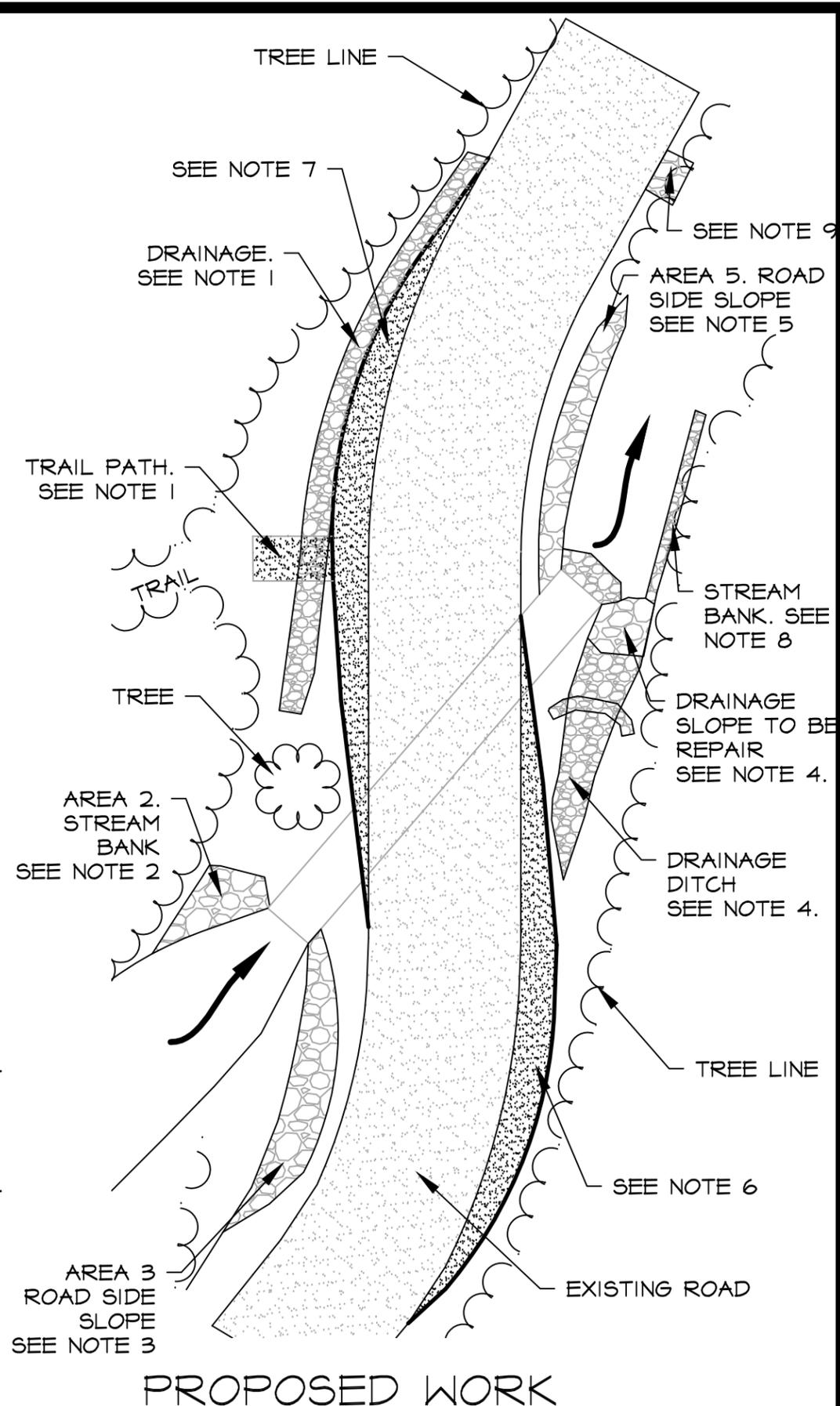
MARK	DATE	DESCRIPTION

PROJECT NO:  
CAD FILE NAME:  
DRAWN BY: D. MATOS  
CHECKED BY:

Sheet title  
Typical Road Sections



- NOTES:
1. FILL AREA WITH EXTRA MATERIAL FROM AREAS 3 & 5 AND CONSTRUCT DRAINAGE WITH EXISTING SURGE STONE FROM AREAS 2, 3 & 5. CONSTRUCT PATH OF 6" OF GADOT #4 ROCK FOR 10' LONG X 5' WIDE TO PROVIDE TRAIL CROSSING OVER DRAINAGE
  2. REMOVE EXISTING SURGE STONE AND REUSE PER NOTES 1, 4 & 8. RESHAPE BANK SLOPE TO A 1.5:1 MAXIMUM FOR APPROXIMATELY 15'. INSTALL FP-03 CLASS IV RIPRAP AT SLOPE.
  3. REMOVE EXISTING SURGE STONE AND REUSE PER NOTES 1, 4 & 8. RESHAPE BANK SLOPE TO A 1.5:1 MAXIMUM FOR APPROXIMATELY 30'. INSTALL FP-03 CLASS IV RIPRAP AT SLOPE.
  4. REMOVE SURGE STONE AT DITCH OUTLET. RESHAPE SLOPE TO A 1.5:1 MAXIMUM. REINSTALL SURGE STONE AT DITCH AREA AND FP-03 CLASS IV RIPRAP AT SLOPE. CONSTRUCT CATCH BASIN.
  5. REMOVE EXISTING SURGE STONE AND REUSE PER NOTES 1, 4 & 8. RESHAPE BANK SLOPE TO A 1.5:1 MAXIMUM FOR APPROXIMATELY 30'. INSTALL FP-03 CLASS IV RIPRAP AT SLOPE.
  6. WIDEN ROAD TO RIGHT SIDE FOR 75'. ROAD WIDTH SHALL BE 20'. INSTALL 2" OF GADOT #4 STONE AT NEW ROAD SECTION.
  7. WIDEN ROAD TO LEFT SIDE FOR 75'. ROAD WIDTH SHALL BE 20'. INSTALL 2" OF GADOT #4 STONE AT NEW ROAD SECTION.
  8. REINFORCE STREAM BANK INSTALLING SURGE STONE FROM AREAS 2, 3 & 5 FOR 20'.
  9. INSTALL SURGE STONE AND/OR CLASS IV RIPRAP (AS AVAILABLE).



EXISTING SITE

PROPOSED WORK



U.S. FOREST SERVICE  
SOUTHERN REGION

F.S.-157 Gold Mine (Willis Knob) Road Reconstruction  
Chattooga River Ranger District  
Chattahoochee-Oconee National Forest

MARK	DATE	DESCRIPTION

PROJECT NO:  
CAD FILE NAME:  
DRAWN BY: D. MATOS  
CHECKED BY:

Sheet title  
Road Work

Station	Object	Description
0+00 to 0+50	BOP	Add 3" of GDOT #4 Stone
3+64	Culvert	Armor Outlet with 1 ton surge stone
120+00	Wing Ditch	Install on left side before the curve
120+28	Culvert	Armor Outlet with 5 tons surge stone
125+81	Culvert	Remove top layer of the rip rap from the inlet and outlet and replace with approximately 4 loads of Class 3 Stone to achieve bank stability. Use smaller rip rap to armor the outlet and prevent the bank cutting.
126+56 to 127+31		Reshape the left side of the road to drain, place one load of GDOT#4 to create a turnout and prevent erosion
143+61 to 144+36		Widen road to the right for 75' to achieve 16' road width
144+36 to 144+86		Widen road to the right for 50' to achieve 16' road width
152+85 to 153+60		Widen road to the right for 75' to achieve 22' road width
153+60 to 154+10		Widen road to the right for 50' to achieve 16' road width
157+94 to 158+29		Armor right shoulder for 35' with 10 tons of class 1 rip rap
158+29 to 158+54		Armor right shoulder for 25'. Add 10 tons of class 1 rip rap
188+87		Fill hole at bottom of culvert with 3 tons of class 1 rip rap
189+37		Fill hole on right with 3 tons of class 1 rip rap
268+44		Armor outlet with 1 ton of class 1 rip rap

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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

101.00\_nat\_us\_07\_25\_2005

101.01\_nat\_us\_01\_22\_2009

#### 101.01 Meaning of Terms

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

101.01\_nat\_us\_01\_22\_2009

#### 101.01 Meaning of Terms

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

101.03\_nat\_us\_06\_16\_2006

#### 101.03 Abbreviations.

Add the following to (a) Acronyms:

AFPA	American Forest and Paper Association
MSHA	Mine Safety and Health Administration
NIST	<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.

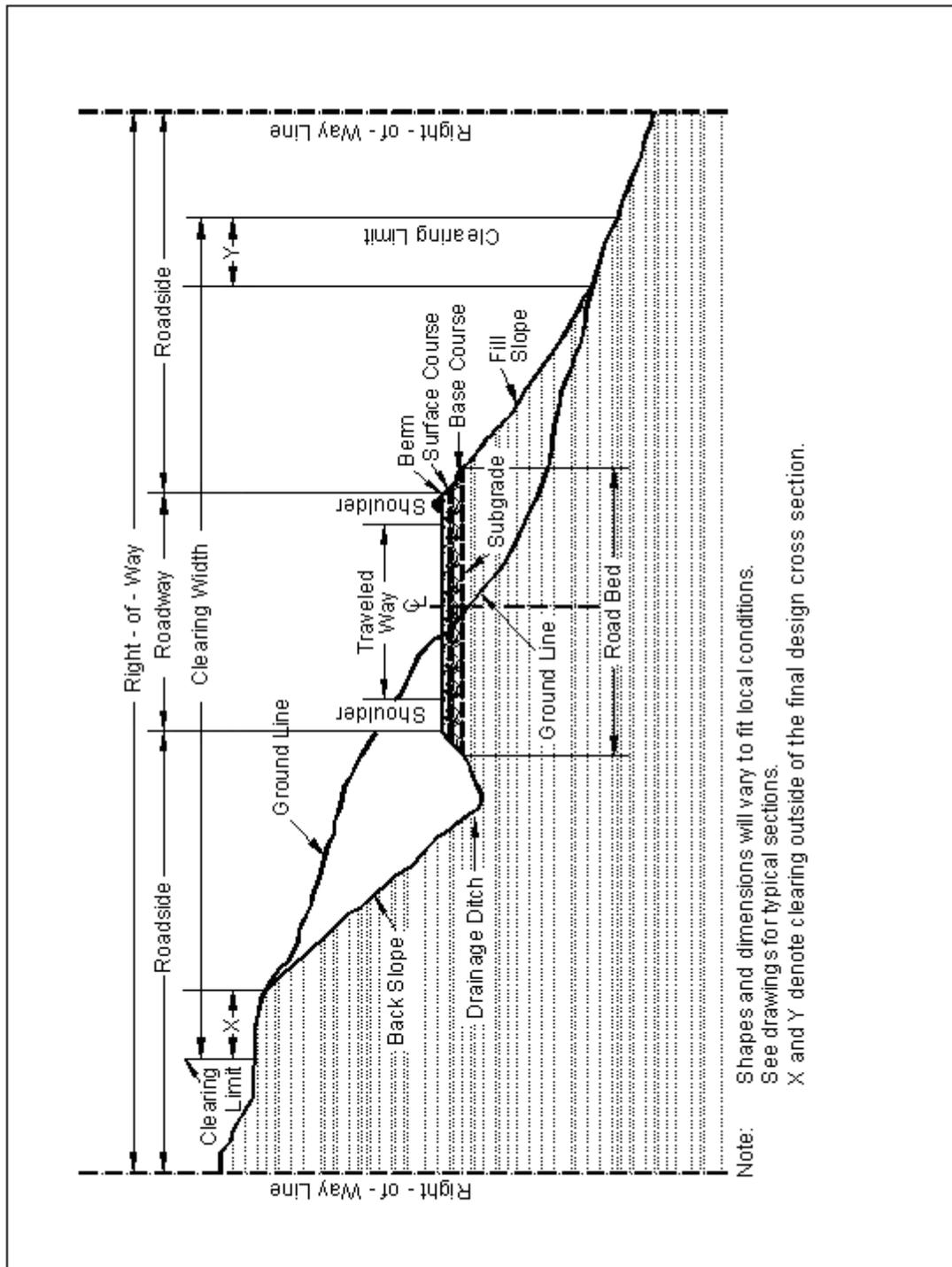
**Road Order**--An order affecting and controlling traffic on roads under Forest Service jurisdiction. Road Orders are issued by a designated Forest Officer under the authorities of 36 CFR, part 260.

**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\_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.

## 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.

**105.05 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 Conformity with Contract Requirements.**

Delete Subsection 106.01 and substitute the following:

References to standard test methods of AASHTO, ASTM, GSA, and other recognized standard authorities refer to the methods in effect on the date of solicitation for bids.

Perform all work to the lines, grades, cross-sections, dimensions, and processes or material requirements shown on the plans or specified in the contract.

Incorporate manufactured materials into the work according to the manufacturer's recommendations or to these specifications, whichever is more strict.

Plan dimensions and contract specification values are the values to be strived for and complied with as the design values from which any deviations are allowed. Perform work and provide material that is uniform in character and reasonably close to the prescribed value or within the specified tolerance range. The purpose of a tolerance range is to accommodate occasional minor variations from the median zone that are unavoidable for practical reasons.

When standard manufactured items are specified (such as fence, wire, plates, rolled shapes, pipe conduits, etc., that are identified by gauge, unit mass, section dimensions, etc.), the identification will be considered to be nominal masses or dimensions. Unless specific contract tolerances are noted, established manufacturing tolerances will be accepted.

The Government may inspect, sample, or test all work at any time before final acceptance of the project. When the Government tests work, copies of test reports are furnished to the Contractor upon request. Government tests may or may not be performed at the work site. If Contractor testing and inspection is verified by the Government, the Contractor's results may be used by the Government to evaluate work for acceptance. Do not rely on the availability of Government test results for process control.

Acceptable work conforming to the contract will be paid for at the contract unit bid price. Four methods of determining conformity and accepting work are described in Subsections 106.02 to 106.05 inclusive. The primary method of acceptance is specified in each Section of work. However, work may be rejected at any time it is found by any of the methods not to comply with the contract.

Remove and replace work that does not conform to the contract, or to prevailing industry standards where no specific contract requirements are noted, at no cost to the Government.

(a) Disputing Government test results. **If the accuracy of Government test results is disputed, promptly inform the CO. If the dispute is unresolved after reasonable steps are taken to resolve the dispute, further evaluation may be obtained by written request. Include a narrative describing the dispute and a proposed resolution protocol that addresses the following:**

- (1) Sampling method;
- (2) Number of samples;
- (3) Sample transport;
- (4) Test procedures;
- (5) Testing laboratories;
- (6) Reporting;
- (7) Estimated time and costs; and
- (8) Validation process.

If the evaluation requires additional sampling or testing be performed, mutually agree with the Government on witnessing procedures and on sampling and testing by a third party laboratory. Use a third party laboratory accredited by the AASHTO accreditation program. Provide proof of the laboratory's accreditation for the test procedures to be used. Do not use the same laboratory that produced the disputed Government test results or that produced the test results used as a basis for the dispute.

The CO will review the proposed resolution protocol and may modify it before final approval and execution.

The Government will use the approved resolution protocol test results to determine the validity of the disputed testing. If the Government test results are validated, the Contractor will be responsible for all costs associated with developing and performing the resolution protocol. If the Government test results are not validated, the Government will be responsible for all costs associated with developing and performing the resolution protocol. If the validity of the Government test results cannot be determined, the Contractor and Government will equally share all costs associated with developing and carrying out the resolution protocol.

**(b) Alternatives to removing and replacing non-conforming work.** As an alternative to removal and replacement, the Contractor may submit a written request to:

- (1) Have the work accepted at a reduced price; or
- (2) Be given permission to perform corrective measures to bring the work into conformity.

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

106.07\_nat\_us\_05\_11\_2004

### **106.07 Delete**

Delete subsection 106.07.

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

107.05\_nat\_us\_05\_11\_2004

### **107.05 Responsibility for Damage Claims.**

Delete the entire subsection.

107.06\_nat\_us\_06\_16\_2006

### **107.06 Contractor's Responsibility for Work.**

Delete the following from the first paragraph.

“except as provided in Subsection 106.07”.

107.08\_nat\_us\_03\_29\_2005

### **107.08 Sanitation, Health, and Safety**

Delete the entire subsection.

107.09\_nat\_us\_06\_16\_2006

### **107.09 Legal Relationship of the Parties.**

Delete the entire subsection.

107.10\_nat\_us\_06\_16\_2006

### **107.10 Environmental Protection.**

Add the following:

Design and locate equipment repair shops, stationary refueling sites, or other facilities to minimize the potential and impacts of hazardous material spills on Government land. Before beginning any work, submit a Hazardous Spill Plan. List actions to be taken in the event of a spill. Incorporate preventive measures to be taken, such as the location of mobile refueling facilities, storage and handling of hazardous materials, and similar information. Immediately notify the CO of all hazardous material spills. Provide a written narrative report form no later than 24 hours after the initial report and include the following:

- Description of the item spilled (including identity, quantity, manifest number, and other identifying information).
- Whether amount spilled is EPA or state reportable, and if so whether it was reported, and to whom.
- Exact time and location of spill including a description of the area involved.
- Containment procedures.

- Summary of any communications the Contractor had with news media, Federal, state and local regulatory agencies and officials, or Forest Service officials.
- Description of clean-up procedures employed or to be employed at the site including final disposition and disposal location of spill residue.

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

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

## **108 - Prosecution and Progress**

108.00\_nat\_us\_02\_16\_2005

### **108 Delete.**

Delete Section 108 in its entirety.

## **109 - Measurement and Payment**

109.00\_nat\_us\_02\_17\_2005

### **109 Deletions**

Delete the following entire subsections:

**109.06 Pricing of Adjustments.**

**109.07 Eliminated Work.**

**109.08 Progress Payments.**

**109.09 Final Payment.**

109.02\_nat\_us\_06\_16\_2006

### **109.02 Measurement Terms and Definitions.**

**(b) Contract quantity.**

Add the following:

Contract quantities will be adjusted only when there are errors in the original design of 15% or more.

Change the following:

“(b) Cubic yard” to “(c) Cubic yard”.

Add the following definition:

**(p) Thousand Board Feet (Mbf).** 1,000 board feet based on nominal widths, thickness, and extreme usable length of each piece of lumber or timber actually incorporated in the job. For glued laminated timber, 1,000 board feet based on actual width, thickness, and length of each piece actually incorporated in the job.

## **155 - Schedules for Construction Contracts**

155.00\_nat\_us\_05\_11\_2004

## **155 Delete.**

Delete Section 155 in its entirety.

## **156 - Public Traffic**

156.03\_nat\_us\_02\_24\_2005

### **156.03 Accommodating Traffic During Work.**

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

## **201 - Clearing and Grubbing**

201.01\_nat\_us\_02\_18\_2005

### **201.01 Description**

Replace with the following

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

201.04\_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.

## 209 - Structure Excavation and Backfill

209.10\_nat\_us\_10\_23\_2007

### 209.10 Backfill.

#### (a) General.

##### Add the following:

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

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

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

#### (b) Pipe culverts.

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

##### Add the following:

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

209.11\_nat\_us\_02\_24\_2005

### 209.11 Compacting.

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

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

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

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

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

### Table 209-1 Sampling and Testing Requirements

##### Add the following:

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

## 251 - Riprap

251.03\_nat\_us\_08\_05\_2009

### Construction Requirements

#### 251.03 General.

Add the following:

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

#### 251.08 Measurement.

Add the following:

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

## 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\_09\_14\_2005

### **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\_10\_14\_2011

### **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.** Operate spreading and hauling equipment over the full width of the travelway.

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

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

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

**Compaction E.** Removed.

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

**Compaction G.** Removed.

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

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 ½ mile of road segment is within + ¼ 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 ½ mile of road segment is within +4 inches of the specified width.

## **303 - Road Reconditioning**

303.01\_nat\_us\_03\_02\_2005

### **303.01 Work.**

Delete and add the following:

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

303.06\_nat\_us\_08\_05\_2008

### **303.06 Aggregate Surface Reconditioning.**

Delete and replace with the following:

#### **303.06 Asphalt and Aggregate Surface Reconditioning.**

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

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

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

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

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

## 625 - Turf Establishment

625.01\_0803\_us\_07\_12\_2006

### 625.05 Fertilizing

(a) Dry method or (b) Hydraulic method

Add the following:

Fertilizer shall be uniformly applied at the rate of 800 lbs. per acre and shall have a chemical analysis of 10% Nitrogen, 10% Phosphorus, and 10% Potassium.

### 625.07 Seeding

Add the following

The Clover shall be inoculated.

The Tall Turf Fescue shall be certified by the supplier to be Endophyte Free.

Seed shall be applied at the rates for both of the Methods for the seeding periods as follows:

Seed Mix for Long Term Erosion Control

Seeding depth: <1/4"

No fertilizer. If concerned about soil productivity, check pH and adjust with lime if necessary.

### Spring Plantings

Seed in spring from April 1 to June 15

Common Name	Scientific Name	Cultivar or source	Amount (lbs PLS)
Brown top millet or spring oats	Urochloa ramosa or Avena sativa	Any	10 to 30
Switchgrass	Panicum virgatum	Locally adapted material or 'Cave-in-Rock' or 'Alamo'	1.5
Big bluestem	Andropogon gerardii	Locally adapted material or 'KY ecotype' or 'Kaw'	2
Indiangrass	Sorghastrum nutans	Locally adapted material or 'Americus' or 'KY ecotype'	2

---

Locally adapted material - genetic source from Southern Blue Ridge or Piedmont area  
PLS = pure live seed

Fall Plantings

Seed in fall from Sept. 15 to Nov. 15

Common Name	Scientific Name	Cultivar or source	Amount (lbs PLS)
Crimson clover	Trifolium incarnatum	Any	15
Virginia wild rye	Panicum virgatum	Locally adapted material or 'Alamo'	1.5

Locally adapted material - genetic source from Southern Blue Ridge or Piedmont area  
PLS = pure live seed

**625.08 Mulching,**

Delete the last two sentences in the first paragraph

**635 - Temporary Traffic Control**

635.03\_nat\_us\_05\_13\_2004

**635.03 General.**

Add the following:

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

**703 - Aggregate**

703.05\_nat\_us\_08\_14\_2009

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

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

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

- |  |             |
|--|-------------|
| <b>(1)</b> Gradation   | Table 703-2 |
| <b>(2)</b> Liquid limit, AASHTO T 89                                 | 25 max.     |
| <b>(3)</b> Plastic limit, AASHTO T 90                                | Nonplastic  |
| <b>(4)</b> Los Angeles abrasion, AASHTO T 96                         | 40% max.    |
| <b>(5)</b> Sodium sulfate soundness loss (5 cycles),<br>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),<br>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)				
3/8 inch			40 – 69 (6)	51 – 82 (6)	62 – 90 (6)
No. 4	28 – 42 (6)	40 – 60 (8)	31 – 54 (6)	36 – 64 (6)	36 – 74 (6)
No. 40	9 – 17 (4)			12 – 26 (4)	12 – 26 (4)
No. 200	4.0 – 8.0 (3)	4.0 – 12.0 (4)	4.0 – 7.0 (3)	4.0 – 7.0 (3)	4.0 – 7.0 (3)

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

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

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

Sieve Size	Grading Designation						
	F	G	H	S	T	U	
1 1/2 inch	100			100			
1 inch	97-100	100		72 - 92 (6)	100		
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	

## 705 - Rock

705.02\_nat\_us\_08\_05\_2009

### 705.02 Riprap Rock.

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

**Gradation Requirements for Riprap**

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

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

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

## 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.



Sediment Barrier

Sd1



SILT FENCE

THE MANUFACTURER SHALL HAVE EITHER AN APPROVED COLOR MARK YARN IN THE FABRIC OR LABEL THE FABRICATED SILT FENCE WITH BOTH THE MANUFACTURER AND FABRIC NAME EVERY 100 FEET.  
 THE TEMPORARY SILT FENCE SHALL BE INSTALLED ACCORDING TO THIS SPECIFICATION, AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. FOR INSTALLATION OF THE FABRIC, SEE FIGURES 6-20.4, 6-20.5, AND 6-20.6 RESPECTIVELY.  
 POST INSTALLATION SHALL START AT THE CENTER OF THE LOWPOINT (IF APPLICABLE) WITH REMAINING POSTS SPACED 6 FEET APART FOR TYPE A AND B SILT FENCES AND 4 FEET APART FOR TYPE C SILT FENCE. WHILE TYPE A AND B SILT FENCES CAN BE USED WITH BOTH WOOD AND STEEL POSTS, ONLY STEEL POSTS SHALL BE USED WITH TYPE C SILT FENCE. FOR POST SIZE REQUIREMENTS, SEE TABLE 6-20.3. FASTENERS FOR WOOD POSTS ARE LISTED IN TABLE 6-20.4.  
 ALONG STREAM BUFFERS AND OTHER SENSITIVE AREAS, TWO ROWS OF TYPE C SILT FENCE OR ONE ROW OF TYPE C SILT FENCE BACKED BY HAYBALES SHALL BE USED.

MAINTENANCE

SEDIMENT SHALL BE REMOVED ONCE IT HAS ACCUMULATED TO ONE-HALF THE ORIGINAL HEIGHT OF THE BARRIER. FILTER FABRIC SHALL BE REPLACED WHENEVER IT HAS DETERIORATED TO SUCH AN EXTENT THAT THE EFFECTIVENESS OF THE FABRIC IS REDUCED (APPROXIMATELY SIX MONTHS). TEMPORARY SEDIMENT BARRIERS SHALL REMAIN IN PLACE UNTIL DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED. ALL SEDIMENT ACCUMULATED AT THE BARRIER SHALL BE REMOVED AND PROPERLY DISPOSED OF BEFORE THE BARRIER IS REMOVED.

DEFINITION

SEDIMENT BARRIERS ARE TEMPORARY STRUCTURES TYPICALLY CONSTRUCTED OF SILT FENCE SUPPORTED BY STEEL OR WOOD POSTS. OTHER TYPES OF BARRIERS MAY INCLUDE SANDBAGS, STRAW BALES, BRUSH PILES OR OTHER FILTERING MATERIAL.

PURPOSE

TO PREVENT SEDIMENT CARRIED BY SHEET FLOW FROM LEAVING THE SITE AND ENTERING NATURAL DRAINAGE WAYS OR STORM DRAINAGE SYSTEM BY SLOWING STORM WATER RUNOFF AND CAUSING THE DEPOSITION OF SEDIMENT AT THE STRUCTURE.

CONDITIONS

BARRIERS SHOULD BE INSTALLED WHERE RUNOFF CAN BE STORED BEHIND THE BARRIER WITHOUT DAMAGING THE FENCE OR THE SUBMERGED AREA BEHIND THE FENCE. SILT FENCE SHALL NOT BE INSTALLED ACROSS STREAMS, DITCHES, WATERWAYS, OR OTHER CONCENTRATED FLOW AREAS.

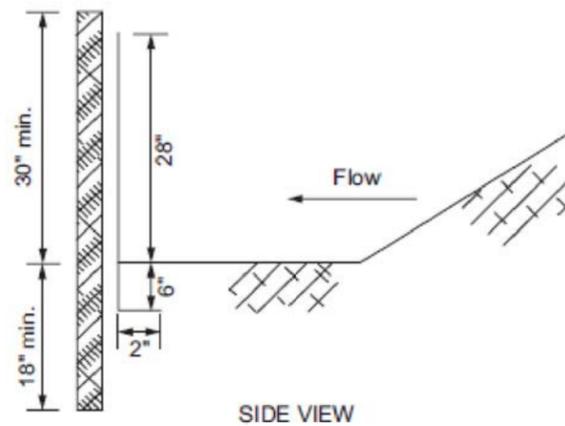
TYPE C SILT FENCE SD1-C

TYPE C FENCE IS 36-INCHES WIDE WITH WIRE REINFORCEMENT. THE WIRE REINFORCEMENT IS NECESSARY BECAUSE THIS FABRIC ALLOWS ALMOST THREE TIMES THE FLOW RATE AS TYPE A SILT FENCE. TYPE C SILT FENCE SHALL BE USED WHERE RUNOFF FLOWS OR VELOCITIES ARE PARTICULARLY HIGH OR WHERE SLOPES EXCEED A VERTICAL HEIGHT OF 10 FEET.

PROVIDE A RIPRAP SPLASH PAD OR OTHER OUTLET PROTECTION DEVICE FOR ANY POINT WHERE FLOW MAY TOP THE SEDIMENT FENCE. ENSURE THAT THE MAXIMUM HEIGHT OF THE FENCE AT A PROTECTED, REINFORCED OUTLET DOES NOT EXCEED 1 FT. AND THAT SUPPORT POST SPACING DOES NOT EXCEED 4 FT.

Table 6-20.3. Post Size

Type	Minimum Length	Type of Post	Size of Post
Type A	4'	Soft wood	3" dia. or 2x4
		Oak	1.5" x 1.5"
		Steel	1.3lb./ft. min.
Type B	3'	Soft wood	2" dia. or 2x2
		Oak	1" x 1"
		Steel	.75lb./ft. min.
Type C	4'	Steel	1.3lb./ft. min.



NOTES – EROSION CONTROL PLAN

PHASE 1

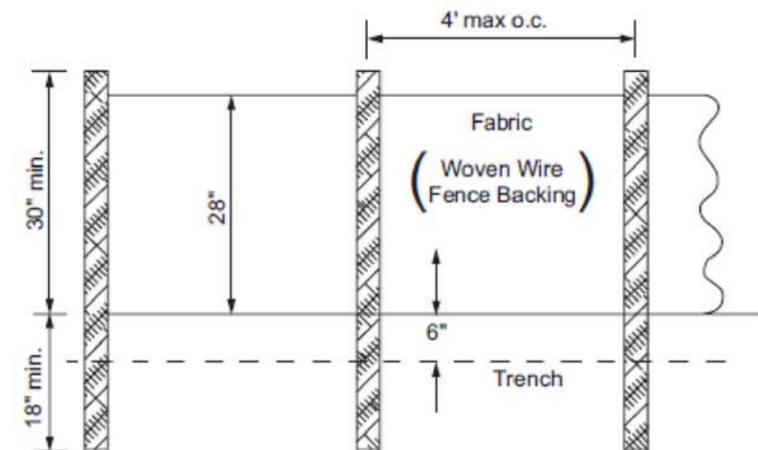
- A. INSTALL SILT FENCE PRIOR TO ANY GROUND DISTURBANCE AND IN ACCORDANCE WITH SHEET EC2.
- B. MAINTAIN SILT FENCE THROUGH OUT PROJECT BY REGULAR INSPECTION AND REGULAR CLEAN OUT OF ANY BUILT UP SEDIMENTATION.

PHASE 2

- A. INSTALL HAY BALES PRIOR TO CULVERTS REMOVAL AND IN ACCORDANCE WITH SHEET EC3.
- B. INSTALL HAY BALES AS NEEDED FOR SEDIMENT CONTROL THROUGH OUT DISTURBED AREA.
- C. REMOVE ALL SEDIMENT UPSTREAM OF HAY BALES DAILY USING HAND TOOLS.
- D. HAY BALES WITHIN STREAM SHALL BE REMOVED FROM STREAMBED EACH NIGHT.

PHASE 3

- A. REMOVE HAY BALES ONCE EARTH DISTURBANCE IS COMPLETED.
- B. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED ONCE DISTURBING ACTIVITIES HAVE CEASED.
- C. SILT FENCE SHALL REMAIN IN PLACE UNTIL PROJECT IS COMPLETED AND SEED HAS CAUGHT ROOT.



NOTE:  
 Use 36" D.O.T. approved fabric.  
 Use steel posts - only

SILT FENCE - TYPE C

FIGURE 6-20.6

\* INFORMATION TAKEN FROM MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA FIFTH ED. 2000 PG. 6-127 THROUGH 6-130.



U.S. FOREST SERVICE  
 SOUTHERN REGION

F.S.-157 Gold Mine (Willis Knob) Road Reconstruction  
 Chattooga River Ranger District  
 Chattoahoochee-Oconee National Forest

MARK	DATE	DESCRIPTION

PROJECT NO:  
 CAD FILE NAME:  
 DRAWN BY: D. MATOS  
 CHECKED BY:

Sheet Title  
 SILT FENCE  
 DETAILS

**DEFINITION**

SEDIMENT BARRIERS ARE TEMPORARY STRUCTURES TYPICALLY CONSTRUCTED OF SILT FENCE SUPPORTED BY STEEL OR WOOD POSTS. OTHER TYPES OF BARRIERS MAY INCLUDE SANDBAGS, STRAW BALES, BRUSH PILES OR OTHER FILTERING MATERIAL.

**PURPOSE**

TO PREVENT SEDIMENT CARRIED BY SHEET FLOW FROM LEAVING THE SITE AND ENTERING NATURAL DRAINAGE WAYS OR STORM DRAINAGE SYSTEM BY SLOWING STORM WATER RUNOFF AND CAUSING THE DEPOSITION OF SEDIMENT AT THE STRUCTURE.

**CONDITIONS**

BARRIERS SHOULD BE INSTALLED WHERE RUNOFF CAN BE STORED BEHIND THE BARRIER WITHOUT DAMAGING THE FENCE OR THE SUBMERGED AREA BEHIND THE FENCE. SILT FENCE SHALL NOT BE INSTALLED ACROSS STREAMS, DITCHES, WATERWAYS, OR OTHER CONCENTRATED FLOW AREAS.

**TYPE C SILT FENCE SD1-C**

TYPE C FENCE IS 36-INCHES WIDE WITH WIRE REINFORCEMENT. THE WIRE REINFORCEMENT IS NECESSARY BECAUSE THIS FABRIC ALLOWS ALMOST THREE TIMES THE FLOW RATE AS TYPE A SILT FENCE. TYPE C SILT FENCE SHALL BE USED WHERE RUNOFF FLOWS OR VELOCITIES ARE PARTICULARLY HIGH OR WHERE SLOPES EXCEED A VERTICAL HEIGHT OF 10 FEET.

PROVIDE A RIPRAP SPLASH PAD OR OTHER OUTLET PROTECTION DEVICE FOR ANY POINT WHERE FLOW MAY TOP THE SEDIMENT FENCE. ENSURE THAT THE MAXIMUM HEIGHT OF THE FENCE AT A PROTECTED, REINFORCED OUTLET DOES NOT EXCEED 1 FT. AND THAT SUPPORT POST SPACING DOES NOT EXCEED 4 FT.

**DESIGN CRITERIA**

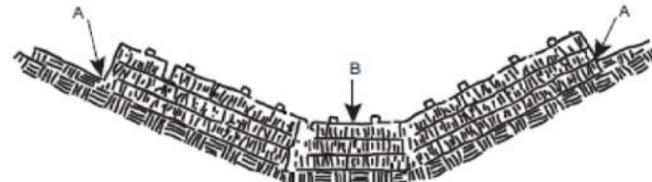
HAY OR STRAW BALES  
HAY OR STRAW BALES RETAIN SEDIMENT LOAD TRANSPORTED BY SHEET FLOW FROM DISTURBED AREAS. THE BALES' COMPARATIVELY LOW FLOW RATE SHOULD BE CONSIDERED WHEN CHOOSING THE APPROPRIATE SEDIMENT BARRIER. PONDING ABOVE THE BALE CAN OCCUR RAPIDLY. THE SLOPE LENGTHS CONTRIBUTING RUNOFF TO A BALE BARRIER CANNOT EXCEED THOSE LISTED IN TABLE 6-20.1. STRAW AND HAY BALES SHALL NOT BE USED IF THE PROJECT DURATION IS EXPECTED TO EXCEED THREE MONTHS.

Maximum Slope Length	Land Slope Above Bale
Percent	Feet
<2	75
2 to 5	50
5 to 10	35
10 to 20	20
>20	10

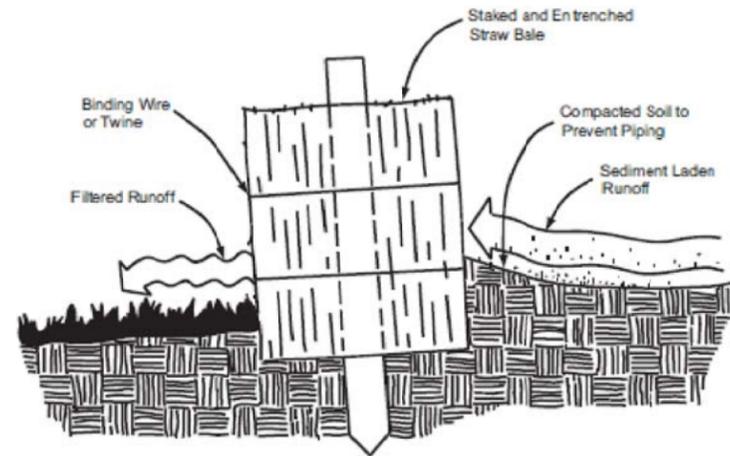
**CONSTRUCTION SPECIFICATIONS**

HAY OR STRAW BALES (SD1-HB)  
(IF APPROVED BY LOCAL ISSUING AUTHORITY)

BALES WILL BE PLACED IN A SINGLE ROW, LENGTHWISE, ON THE CONTOUR AND EMBEDDED IN THE SOIL TO A DEPTH OF 4 INCHES. BALES MUST BE SECURELY ANCHORED IN PLACE BY STAKES OR BARS DRIVEN THROUGH THE BALES OR BY OTHER ACCEPTABLE MEANS TO PREVENT DISPLACEMENT. SEE FIGURES 6-20.1 AND 6-20.2 FOR INSTALLATION REQUIREMENTS.



PROPER PLACEMENT OF STRAW BALE BARRIER IN DRAINAGE WAY



Note: Embed hay bales a minimum of 4 inches.

CROSS-SECTION OF A PROPERLY INSTALLED STRAW BALE

FIGURE 6-20.1

FIGURE 6-20.2



U.S. FOREST SERVICE  
SOUTHERN REGION

F.S.-157 Gold Mine (Willis Knob) Road Reconstruction  
Chattooga River Ranger District  
Chattahoochee-Oconee National Forest

MARK	DATE	DESCRIPTION

PROJECT NO:  
CAD FILE NAME:  
DRAWN BY: D. MATOS  
CHECKED BY:

Sheet Title  
HAY BALE DETAILS