ELDORADO NATIONAL FOREST

Maintenance Specifications for Roads

(MARCH 2012)

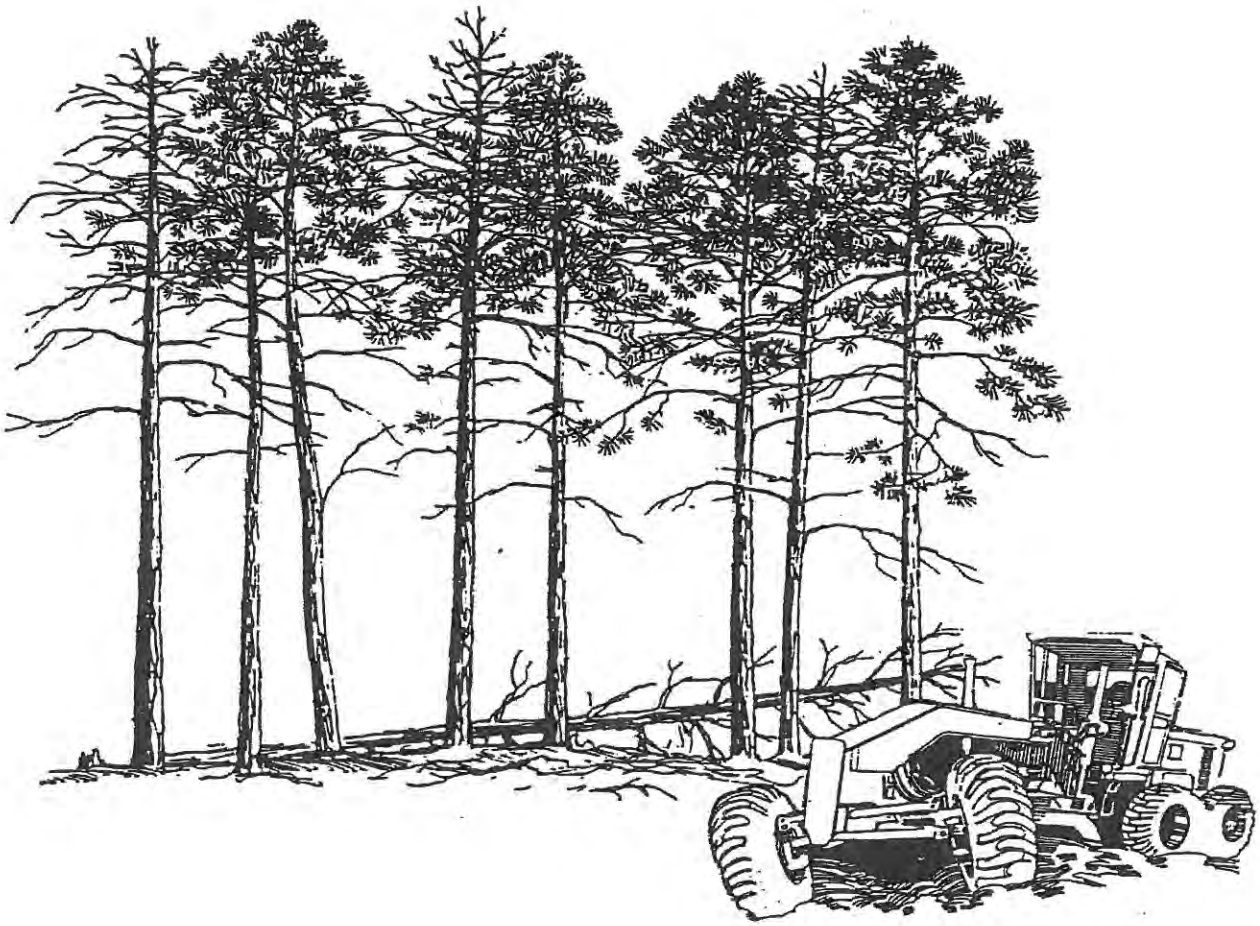


Table of Contents

Table of Contents 2
800 ABBREVIATIONS AND DEFINITIONS (3/12) 6
QUANTITY MEASUREMENT TERMS 6
DEFINITIONS 8
806 - WEED AND DISEASE PREVENTION (7/2009) 10
1. DESCRIPTION 10
2. REQUIREMENTS 10
3. MEASUREMENT AND PAYMENT 10
808 WORK AREA MANAGEMENT (5/97) 11
1. DESCRIPTION 11
2. REQUIREMENTS 11
3. MEASUREMENT AND PAYMENT 11
809 WATERBARS (3/12) 12
1. DESCRIPTION 12
2. REQUIREMENTS 12
3. MEASUREMENT 12
4. PAYMENT 12
810 SLIDE AND SLUMP REPAIR(3/12) 13
1. DESCRIPTION 13
2. REQUIREMENTS 13
3. MEASUREMENT 13
4. PAYMENT 13
811 BLADING (3/12) 14
1. DESCRIPTION 14
2. MAINTENANCE REQUIREMENTS 14
3. MEASUREMENT 15
4. PAYMENT 15
812 DUST ABATEMENT (3/12) 16
1. DESCRIPTION 16
2. MATERIALS 16
3. WEATHER LIMITATIONS 16
4. EQUIPMENT 16
5. MAINTENANCE REQUIREMENTS 16
6. MEASUREMENT AND PAYMENT 16
813 SPOT SURFACING (3/12) 17
1. DESCRIPTION 17
2. MATERIALS 17
3. MAINTENANCE REQUIREMENTS 17
4. MEASUREMENT 17
5. PAYMENT 17
814 ASPHALT PAVEMENT PATCHING (3/12) 18
1. DESCRIPTION 18
2. MATERIALS 18
3. MAINTENANCE REQUIREMENTS 18
4. MEASUREMENT 18
5. PAYMENT 19
815 PAVED SURFACE CLEANING (3/12) 20
1. DESCRIPTION 20

2. EQUIPMENT 20
3. MAINTENANCE REQUIREMENTS 20
4. MEASUREMENT AND PAYMENT 20
816 MAINTENANCE OF UNPAVED SHOULDERS (3/12) 21
1. DESCRIPTION 21
2. MAINTENANCE REQUIREMENTS 21
3. MEASUREMENT AND PAYMENT 21
819 RIPRAP (3/12) 22
1. DESCRIPTION 22
2. EQUIPMENT 22
3. MATERIALS 22
4. MEASUREMENT 23
6. PAYMENT 24
831 DITCH MAINTENANCE AND CONSTRUCTION (3/12) 25
1. DESCRIPTION 25
2. MAINTENANCE REQUIREMENTS 25
3. MEASUREMENT 25
4. PAYMENT 25
832 REMOVE AND END HAUL MATERIALS (3/12) 26
1. DESCRIPTION 26
2. MAINTENANCE REQUIREMENTS 26
3. MEASUREMENT 26
4. PAYMENT 26
833 CULVERT REPLACEMENT AND INSTALLATION (3/12) 27
1. DESCRIPTION 27
2. MATERIALS 27
3. MAINTENANCE REQUIREMENTS 27
4. MEASUREMENT 27
5. PAYMENT 27
834 DRAINAGE STRUCTURE MAINTENANCE (3/12) 28
1. DESCRIPTION 28
2. MAINTENANCE REQUIREMENTS 28
3. MEASUREMENT 28
4. PAYMENT 28
835 ROADWAY DRAINAGE MAINTENANCE (3/12) 29
1. DESCRIPTION 29
2. MAINTENANCE REQUIREMENTS 29
3. MEASUREMENT 30
4. PAYMENT 30
837 DRAINAGE DIP MAINTENANCE AND CONSTRUCTION (3/12) 31
1. DESCRIPTION 31
2. MATERIALS 31
3. MAINTENANCE AND CONSTRUCTION REQUIREMENTS 31
4. MEASUREMENT 31
5. PAYMENT 31
838 MAINTENANCE FOR LIMITED USE (3/12) 32
1. DESCRIPTION 32
2. MAINTENANCE REQUIREMENTS 32
3. MEASUREMENT AND PAYMENT 33
DRAWING 838-1 34

DRAWING 838-2 35
DRAWING 838-3DRAWING 838-4 DRAWING 838-5 36
DRAWING 838-4 DRAWING 838-5....37
DRAWING 838-5 38
842 CUTTING ROADWAY VEGETATION (3/12) 39
1. DESCRIPTION....39
2. MAINTENANCE REQUIREMENTS....39
3. MEASUREMENT....40
4. PAYMENT 40
851 LOGGING OUT (3/12)....41
1. DESCRIPTION....41
2. MAINTENANCE REQUIREMENTS....41
3. MEASUREMENT....41
5. PAYMENT 41
853 REMOVAL OF STRUCTURES AND OBSTRUCTIONS (3/12) 42
1. DESCRIPTION....42
2. MAINTENANCE REQUIREMENTS....42
3. MEASUREMENT....43
4. PAYMENT 43
854 HAZARD REMOVAL AND CLEANUP (3/12)....44
1. DESCRIPTION....44
2. MAINTENANCE REQUIREMENTS....44
3. MEASUREMENT AND PAYMENT....44
862 MAINTENANCE OF TRAFFIC GATES AND BARRIERS (3/12) 45
1. DESCRIPTION....45
2. MATERIALS 45
3. MAINTENANCE REQUIREMENT 45
3. MEASUREMENT....45
4. PAYMENT 45
881 MOBILIZATION (3/12)....46
1. DESCRIPTION....46
2. MEASUREMENT....46
3. PAYMENT 46
882 EQUIPMENT MOVING (5/97) 47
1. DESCRIPTION....47
2. REQUIREMENTS....47
3 MEASUREMENT AND PAYMENT....47
891 WATER SUPPLY AND WATERING (3/12) 48
1. DESCRIPTION....48
2. MATERIALS 48
3. EQUIPMENT 48
4. MEASUREMENT....48
5 PAYMENT 48
892 BITUMINOUS PRODUCTS (5/97)....49
1. ASPHALT CEMENTS....49
2. LIQUID ASPHALTS....49
3. EMULSIFIED ASPHALTS 49
4. BITUMINOUS DUST PALLIATIVES....49
5. CERTIFICATE OF COMPLIANCE 49
6. APPLICATION TEMPERATURES 49

7. EQUIPMENT 50
8. WEATHER LIMITATIONS 50
893 AGGREGATE MATERIALS (3/12) 51
1. GENERAL MATERIAL REQUIREMENTS 51
2. AGGREGATE FOR HOT BITUMINOUS PLANT-MIX 51
3. AGGREGATE FOR SPOT SURFACING 51
894 CULVERT PIPE MATERIALS (3/12) 53
1. METALLIC-COATED CORRUGATED STEEL PIPE 53
2. DUAL WALL POLYETHYLENE PIPE 53
3. WATERTIGHT GASKETS 53

800 ABBREVIATIONS AND DEFINITIONS (3/12)

Whenever in these specifications, or in other contract documents, the following terms, or pronouns in place of them, are used, the intent and meaning shall be interpreted as follows: (Reference to a specific standard or specification shall mean the latest addition or amendment thereto in effect on date of Invitation for Bids.)

1. AASHTO - American Association of State Highway and Transportation Officials.
2. CS - Commercial Standard Issued by U.S. Department of Commerce.
3. EPA - Environmental Protection Agency.
4. FAR - Federal Acquisition Regulation System.
5. FED SPEC - Federal Specifications.
6. FSS - Federal Specifications and Standards.
7. MSHA - Mine Safety Health Administration.
8. MUTCD - Manual of Uniform Traffic Control Devices.
9. NBS - National Bureau of Standards.
10. OSHA - Occupational Safety and Health Act.
11. PS - Product Standard issued by the U.S. Department of Commerce.
12. UL - Underwriter's Laboratories, Inc.

QUANTITY MEASUREMENT TERMS

1. Measurement under the contract shall be according to the United States standard measure.
2. The methods of measurement and computation will be those necessary to accurately determine the quantities of materials furnished and work performed.
3. All items that are measured by the linear foot will be measured parallel to its longitudinal centerline, unless otherwise shown on the drawings.
4. A station when used as a definition of term or measurement will be 100 linear feet.
5. Miles will, in the absence of known distances from existing plans or surveys, be determined by the Government using a calibrated survey odometer or equal substitute operated on the traveled way at or parallel to road centerline.
6. Single lane mile measurement will mean the product of the road length in miles times the equivalent number of continuous traveled way lanes on the road. On two (2) lane roads, the lane miles will be twice the length of the road segment maintained. On one- (1) lane roads, the added length of turnouts will be determined by using a factor that includes the cumulative length of the turnouts. Unless a different factor is established in Special Project Specifications or listed for each affected one (1) lane road in the Road Listing, forty percent (40%) of the road will be considered as having turnouts; this yields a factor of one point four (1.4) times the length in miles of the road segment maintained. This adjustment applies only to work performed under Section 811.
7. The term "ton" will mean the short ton consisting of 2,000 pounds avoirdupois. Trucks used to haul material measured by truck weight shall be weighed empty at least once daily, and each truck shall bear a plainly legible identification mark. Weigh tickets furnished by the Contractor from certified scales will be used to determine weight measurements.
8. Materials measured by the cubic yard in the hauling vehicle shall be measured therein at the point of delivery. Vehicles may be of any size or type, provided that the box is of such shape that the actual volume may be readily and accurately determined.
9. Measurement by the acre will use the length and width treated. Measurement of width will approximate significant slope breaks, but will not include minor deviations along the slopes. The measured slope distance for width will be multiplied by the length treated and converted to a standard 43560 square foot acreage value of the surface area treated.
10. Volume of bituminous products will be measured at 60 degrees F, using ASTM D-1250 for asphalts except the quantity of emulsified asphalt will be determined by measuring the emulsified asphalt at a temperature of 60 degrees F, or by converting the gallonage measured at another temperature to gallonage at 60 degrees F by means of the following formula:

$$\text{Gals. at 60 degrees F} = \frac{\text{Gallons at A degrees F}}{1+0.00025(\text{A degrees F} - 60 \text{ degrees F})}$$

In which A degrees F is the temperature of the material at the time the gallonage is measured.

11. The term "lump sum" when used in the SCHEDULE OF ITEMS will mean the complete unit as required by or described in the contract.

DEFINITIONS

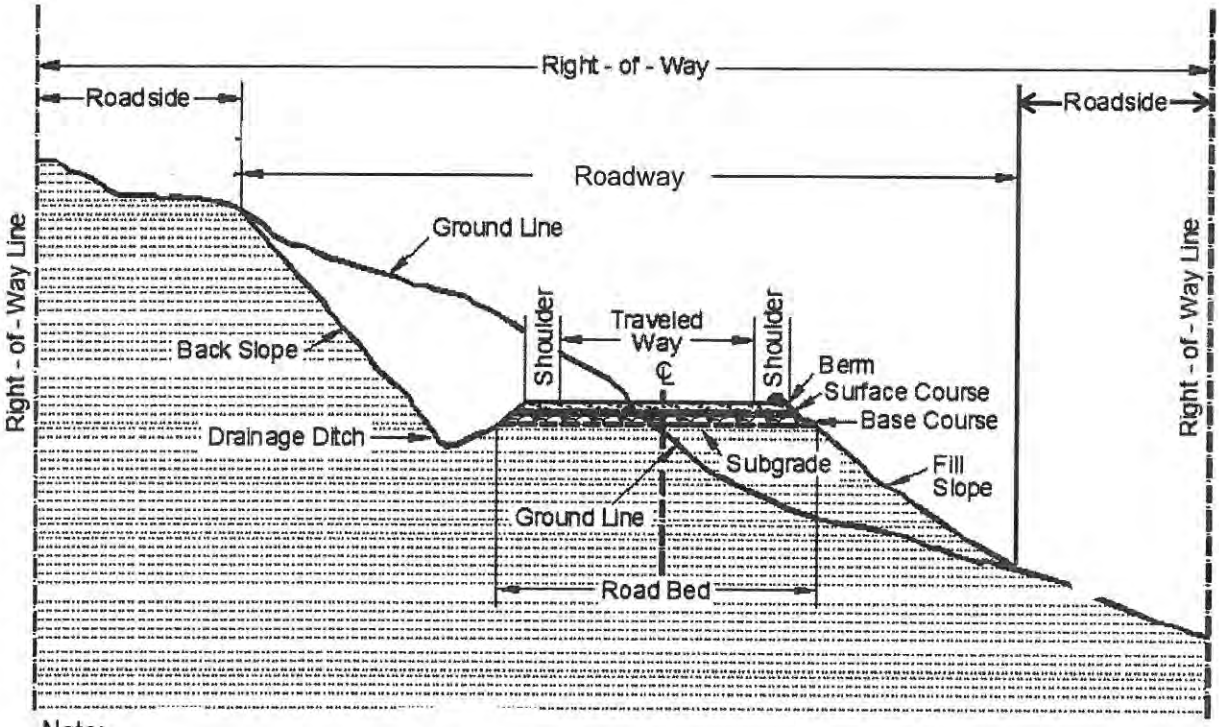
Wherever in these specifications, or in other contract documents, the following terms, or pronouns in place of them, are used, the intent and meaning shall be interpreted as follows:

1. Agreed or Approved - Official agreement or approval by use of a written document issued by the Government. Agreements also require signature of Contractor's Representative and are dated.
2. Base Course - The layer or layers of specified or selected material of designed thickness placed on a subbase or a subgrade to support a surface course. (See Illustration of Road Maintenance Terms.)
3. Berm - A curb or dike which controls roadway runoff water, or delineates traffic direction. Berms commonly parallel road centerline; however, on Limited Use Roads (Section 838) may be placed diagonally across the roadbed. (See Illustration of Road Maintenance Terms.)
4. Channel - A natural waterway leading into or away from a culvert or bridge.
5. Contract Amendment - A bilateral written supplemental agreement between the Government and the Contractor, documenting a modification outside the scope of the contract and establishing an equitable adjustment.
6. Contractor - The individual, partnership, joint venture, or corporation undertaking the execution of the work under the terms of the contract.
7. Culvert (CMP) - Any structure which provides a passageway, drain, or waterway under a road or embankment.
8. Cross ditch - A shallow ditch placed across the roadbed to remove water from the roadbed surface which can be driven across by full-size pickups or other high clearance vehicles; usually placed diagonal to the centerline. (See Section 838.)
9. Lead-off ditch - A ditch used to remove water from roadside drainage ditches, the roadway, cattleguards, or drainage structures such as culverts and drainage dips.
10. Ditch - A relatively long narrow excavation placed to collect or disperse water.
11. Drainage dip - A drainage structure which was previously constructed within the roadbed surface to form a uniform depression which allows routine passage of vehicles while diverting water from the traveled way. (See Drawing 837-1, Typical Rolling Dip.)
12. Drainage ditch - A ditch located parallel to and abutting the roadbed. (See Illustration of Road Maintenance Terms.)
13. Drainage structure - A term identifying man-made devices placed to control water movements.
14. Drawings - Illustrations showing detailed maintenance required.
15. Equipment - All machinery, operating supplies and tools necessary for the proper performance and acceptable completion of the work.
16. Excess Material - Material from the roadway excess to that needed for maintenance of roadway.
17. Fore slope - The slope of the ditch section nearest to the traveled way. (See Illustration of Road Maintenance Terms.)
18. Government - The Contracting Officer or the duly authorized Contracting Officer's Representative (COR) with authority to sign orders.
19. Grade - The vertical alignment of the top surface of the road.
20. Inspector - The Government's authorized representative designated in writing, assigned to make detailed inspections of contract performance, but not to sign orders to the Contractor.
21. Materials - Any substances specified for use in the performance of the work.
22. Measurement - Method of determining and expressing the quantities of work.
23. Nominal Dimensions or Weights - The numerical values shown on the drawings or in the specifications as measurements for the work.
24. Order - A written order by the Government directing fulfillment of work requirements under the terms of the contract.
25. Original Contract Quantities - Those estimated quantities shown in the SCHEDULE OF ITEMS as awarded.
26. Patching - Minor repairs.
27. Paved Surface or Pavement - Denotes asphalt, concrete, or other stabilized materials excluding natural aggregates. Dust palliative treatments are not considered as pavement.
28. Reasonably Close Conformity - Means compliance with customary maintenance tolerances where working tolerances are not specified.

I. Right-of-Way - A general term denoting land, property, or interest therein acquired for or devoted to a road.

30. Roadbed - The portion of a road between the intersection of the subgrade and side slopes, excluding that portion of the ditch below the subgrade. (See Illustration of Road Maintenance Terms.)

31. Road Listing - A preliminary listing of road locations and any established work priorities.
32. Roadside - (See Illustrations of Road Maintenance Terms).
33. SCHEDULE OF ITEMS- Schedule containing a listing and description of maintenance items, quantities, units of measure, methods of measurement, unit price, and amount.
34. Shoulder - As used in this contract, the term is restricted to roads having a paved surfacing. (See Illustrations of Road Maintenance Terms.)
35. Slough or Slide - Material deposited on the roadway which may need to be repositioned or removed.
36. Slump - A localized portion of the roadbed which has slipped or otherwise become lower than that of the adjacent roadbed and constitutes a hazard to traffic.
37. Special Project Specifications - Specifications which detail conditions and requirements peculiar to the individual project.
38. Standard Specifications - Specifications for specific divisions of work.
39. Subgrade - Top surface of roadbed upon which subbase, base course, or surface course was constructed. (See Illustration of Road Maintenance Terms.)
40. Traveled Way - The portion of the roadway for the movement of vehicles. For purpose of this contract, traveled way includes turnouts and curve widening. (See Illustration of Road Maintenance Terms.)
41. Turnouts - A short auxiliary lane on a one-lane road provided for passage of meeting vehicles.
42. Unit of Measure - The unit and fractions of units shown in the Schedule of Items.
43. Unsuitable Material - Material removed during maintenance which must be disposed of in designated locations. Includes material with substantial amounts of vegetation or other objectionable material.
44. Waterbar - A deeper type cross ditch which is not intended for passage of traffic.
45. Work Schedule - The Contractor's current schedule for work progression.



Note:
Shapes and dimensions will vary to fit local conditons.
See DRAWINGS for additional clearing information.

Figure 800-1 - Illustration of road structure terms

806 - WEED AND DISEASE PREVENTION (7/2009)

1. DESCRIPTION

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

2. REQUIREMENTS

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

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

c. Equipment

1. Use a high pressure washing system

2. For work on National Forest System lands, use a washing system that traps all wash water and either stores it for removal from National Forest System lands or recycles the water for continued use. If the equipment recycles the water, provide adequate filters for seed removal. Dispose of the filter material and removed seeds in an approved manner. Do not mix soaps, detergents, or other chemicals with the wash water.

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

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

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

3. MEASUREMENT AND PAYMENT

No separate measurement or payment will be made for meeting requirements of this Section. All work and materials shall be incidental to other paid work in this contract.

808 WORK AREA MANAGEMENT (5/97)

1. DESCRIPTION

This Section establishes Contractor responsibilities for traffic control and equipment requirements in work areas.

2. REQUIREMENTS

a. Traffic Conditions - Roads other than those listed for work under Section 835 shall be open to traffic with not more than fifteen (15) minutes maximum delay time unless otherwise provided in Special Project Specifications.
b. Work which interferes with use of traveled roadways shall not be initiated or performed until a plan for satisfactory handling of traffic has been approved by the Government.
c. Traffic Control Devices

   1. The Contractor shall provide signs and other devices complying with National Standards as contained in Part VI of the Manual of Uniform Traffic Control Devices (MUTCD). Traffic control for occupied work areas shall be in accordance with these specifications. All signs and devices remain the property of the Contractor.
   2. Traffic devices shall be kept current with maintenance operation and removed upon its completion.
   3. Traffic approaching the work area from either direction and side accesses having standard Government rectangular -or trapezoidal- shaped route markers with horizontal numbering shall be warned by signing.
   4. Required signs may be mounted on portable or temporary mountings. Standard MUTCD shapes, colors, sizes, and legends shall be used.
   5. Hazards incidental to the work within or on the traveled way, shoulders, or turnouts shall be marked with hazard identification markers, illuminated beacons, and other MUTCD devices to safely guide road users through the area. Work segments not completed on a daily basis shall be marked appropriately for night travel. Contractor shall obtain authorization before commencing work at night.
   6. Advisory speed plates may be used to control traffic through the work area.

d. Flaggers - Properly equipped flag person(s) shall be provided where the traffic is required to stop before proceeding. Traffic shall be stopped in locations which provide width enough for passage of traffic and reasonable protection for vehicles. When flag control is used, advance warning signs are required.
e. Contractor's Equipment

   1. All vehicles and machinery operating on or from the traveled way or road shoulder shall have flashing lights, strobes, or rotary beacons operated continuously while work is in progress. Truck headlights shall be on while operating. Back-up horns shall be required on all self-propelled equipment in excess of 10,000 lbs. gross weight.
   2. Vehicles and machinery not currently used in the maintenance operation shall be parked off the traveled way at approved locations to minimize interference with normal use.

3. MEASUREMENT AND PAYMENT

No separate measurement or payment will be made for meeting requirements of this Section. All work and materials shall be incidental to paid work in this contract.

809 WATERBARS (3/12)

1. DESCRIPTION

This work consists of installing or removing Waterbars in the Roadbed.

2. REQUIREMENTS

a. Waterbars shall be installed on roads shown in the Drawings or staked on the ground by the Forest Service.
b. All material excavated shall be used in the installation of the Waterbar. Bermed material shall be compacted by operating heavy equipment over the length and width of the Waterbar.
c. Waterbars removed for haul by blading the berm into the adjacent depression to form a smooth transition along the Traveled Way. The length and width of the fill material shall be compacted by the equipment performing the work.
d. Waterbars may be required to be installed between seasons of use and then removed when haul is resumed. Waterbar installation may also be required when use of a road has been completed.

3. MEASUREMENT

a. Waterbars installed during haul and post haul maintenance shall not be measured. This work shall be considered incidental to other paid work.

b. Waterbars installed during prehaul road work shall be measured by the total number of units for each item listed in the SCHEDULE OF ITEMS completed and accepted.

4. PAYMENT

The quantities measured and accepted will be paid for at the contract unit price shown in the SCHEDULE OF ITEMS.

810 SLIDE AND SLUMP REPAIR(3/12)

1. DESCRIPTION

a. Slide removal is the removal from Roadway and disposal of any material, such as soil, rock, and vegetation that cannot be routinely handled by a motor grader during Ditch Maintenance, Section 831, and Blading, Section 811.
b. Slump repair is the filling of depressions or washouts in Roadway which cannot be routinely filled by a motor grader during Blading, Section 811.
c. Slide removal and slump repair includes excavation, loading, hauling, placing, and compacting of waste or replacement material and the development of disposal or borrow areas.

2. REQUIREMENTS

a Slide material, including soil, rock and vegetative matter which encroaches into the Roadway, shall be removed. The slope which generated the slide material shall be reshaped during the removal of the slide material with the excavation and loading equipment. Slide material deposited on the fill slope and below the Traveled Way will not be removed unless needed for slope stability or to protect adjacent resources.
b. Surface and Base Courses shall not be excavated during slide removal operations.
c. Slide material which cannot be used for other beneficial purposes shall be disposed of at disposal sites SHOWN ON THE CONTRACT AREA MAP or DRAWINGS. Material placed in disposal sites will not require compaction unless compaction is SHOWN ON THE ROAD MAINTENANCE REQUIREMENTS SUMMARY or DRAWINGS or as directed by the Forest Service.
d. When filling slumps or washouts, material shall be moved from agreed locations or borrow sites SHOWN ON CONTRACT AREA MAP or DRAWINGS, placed in layers, and compacted by operating the hauling and spreading equipment uniformly over the full width of each layer.
e. Existing aggregate surfacing shall be salvaged when practical and relaid after depressions have been filled.
f. Damaged aggregate base, aggregate surfacing, and bituminous pavement shall be repaired under Specification 814 Asphalt Pavement Patching.
g. The repaired areas of the slump shall conform to the cross section which existed prior to the slump and shall blend with the adjacent undisturbed Traveled Way.
h. The maximum volume of Purchaser responsibility for slide and slump repair is SHOWN ON ROAD MAINTENANCE REQUIREMENTS SUMMARY. Greater volumes of slide and slump repair not qualifying as Catastrophic Damage are Forest Service responsibility.

3. MEASUREMENT

a. Unless specifically SHOWN IN THE DRAWINGS or indicated in the SCHEDULE OF ITEMS there shall be no separate measurement or payment for meeting requirements of this Section. All work and materials shall be incidental to Section 811- Blading or other paid work in this contract

b. When SHOWN IN THE DRAWINGS or indicated in the SCHEDULE OF ITEMS work shall be measured by the total number of units for each item listed in the SCHEDULE OF ITEMS completed and accepted.

4. PAYMENT

The quantities measured and accepted will be paid for at the contract unit price shown in the SCHEDULE OF ITEMS.

811 BLADING (3/12)

1. DESCRIPTION

This work consists of surface blading native or aggregate roadbed where shown in the ROAD MAINTENENCE REQUIREMENT SUMMARY or shown in the DRAWINGS to a condition to facilitate traffic and provide proper drainage. Blading includes watering, shaping the crown or outsloping and compaction of traveled way, road side ditches, swales, shoulders, berms, and drainage dips in accordance with this specification. Work shall also include the maintenance of culverts, catch basins, and inlet basins.

2. MAINTENANCE REQUIREMENTS

a. Timing- Routine surface blading shall be performed during the contract period as ordered by the Government. Contractor shall commence surface blading within two (2) contract days after receipt of written order unless otherwise stated in the order.

b. General

1. The existing traveled way and shoulders, including turnouts unless otherwise ordered, shall be bladed and shaped to produce a surface which is uniform, consistent to grade, and crowned or cross-sloped as indicated by the character of the existing surface unless otherwise shown in the ROAD MAINTENENCE REQUIREMENT SUMMARY, SCHEDULE OF ITEMS and DRAWINGS, to at least one half inch (1/2") per foot of width, but not more than three quarter inch (3/4") per foot of width. Surfacing materials shall be thoroughly loosened to no less than 2 inch depth or the depth of potholes or corrugations. Scarification to facilitate cutting to the full depth of potholes or corrugations may be elected by the Contractor but will be considered incidental to blading. Scarification shall not go deep enough to cause contamination of the surfacing. See DRAWINGS for minimal blading width and additional requirements.
2. Contractor shall apply water prior to and during blading when sufficient moisture is not present to obtain the required compaction and prevent segregation. Water supply, hauling, and application shall be in accordance with Section 891 and shall be incidental to blading.
3. Existing native, rock or aggregate surfaced drainage dips shall be shaped incidental to blading to divert surface runoff to existing outlet devices, ditches and discharge locations.
4. The Contractor shall establish a blading pattern which provides a uniform driving surface, retains the surfacing on the roadbed and provides a thorough mixing of the materials within the completed surface width. Upon final blading, no disturbed rock shall protrude more than two (2) inches above the adjacent surface unless otherwise provided in the contract. Material not meeting this dimension shall be removed and placed outside the roadbed so as not to obstruct drainage ways or structures. This material may be scattered off the roadbed if there is free drainage.

c. Routine Blading

1. Upon completion of blading, the surfaces shall conform to the dimensions shown in the DRAWINGS.
2. Roadbed width in excess of the dimensions shown shall be shaped only as needed to provide drainage away from the traveled way. Established grasses and other vegetation shall not be removed from the excess width except as incidental to providing drainage or unless otherwise provided in the contract.

d. Compaction

Unless Compaction Method A is included in the SCHEDULE OF ITEMS and ROAD MAINTENENCE REQUIREMENT SUMMARY, all traveled ways requiring compaction shall be compacted by Method B. Compaction shall commence immediately following blading. Contractor shall apply water prior to and during blading when sufficient moisture is not present to obtain the required compaction and prevent segregation

Compaction methods are:

Compaction Method A: By breaking track while operating equipment on the traveled way.

Compaction Method B: 8-10 ton pneumatic, steel or equivalent vibrating roller, operated to cover the full width five (5) times.

e. Intrusions - Where the minimum width shown in the DRAWINGS is not available, the Contractor will construct berms where ordered and marked on the ground. Material to provide berms will come from the roadway or sources designated in the DRAWINGS.
f. Undercutting - Roadway back slope shall not be undercut.
g. Intersections

1. At intersections, the roadbeds of side roads which are not closed or restricted from vehicular use shall be bladed to assure smooth transitions.
2. Field evidence of closure or restrictions shall be considered to be signing, cross ditching in the road surface (traveled way), earth berms or other devices placed to discourage or eliminate use by passenger cars, also roads listed for work under Sections 835 or 838 shall be considered restricted.
3. Side roads listed for work under this Section shall be considered as not restricted.

h. Cleaning of Structures - Materials resulting from work under this Section shall not be allowed to remain on or in structures, such as bridges, culverts, cattleguards, or drainage dips. See the following Sections for additional requirements:
   831 – Ditch Maintenance
   834 – Drainage Structures
   835 – Roadway drainage Maintenance
   877 – Drainage Dip Maintenance
i. Berms - Existing berms shall be maintained to the condition of adjacent segments when ordered by the Government.

3. MEASUREMENT

a. Road blading during haul and post haul maintenance shall not be measured. This work shall be considered incidental to other paid work.

b. Road blading during prehaul road work shall be measured by the total number of units for each item listed in the SCHEDULE OF ITEMS completed and accepted.

4. PAYMENT

The quantities measured and accepted will be paid for at the contract unit price shown in the SCHEDULE OF ITEMS.

812 DUST ABATEMENT (3/12)

1. DESCRIPTION

This work shall consist of preparing Traveled Way and furnishing and applying materials to abate dust. The roads requiring dust abatement, type of dust abatement material to be used, the rates of application, and frequency of applications will be shown in the ROAD MAINTENENCE REQUIREMENT SUMMARY may be changed by written agreement.

2. MATERIALS

The dust palliative materials shall be as shown in the road listing unless shown as an option for Contractor's election from the following materials:

a. Water (H2O) for dust abatement will be incidental to hauling under this contract and shall be obtained from sources shown on the SALE AREA MAP OR CONTRACT MAP, unless otherwise agreed.

3. WEATHER LIMITATIONS

a. Water applications are not limited by weather forecast or temperature.

4. EQUIPMENT

a. Equipment shall meet the requirements in Section 891 WATER SUPPLY AND WATERING.

5. MAINTENANCE REQUIREMENTS

a. Water applications shall be limited to abatement for hauling vehicles under this contract and shall be provided at a frequency and rate which controls dust such that vehicle tail lights and turn signals remain visible. Rates of application shall be varied as needed but shall be low enough to avoid forming rivulets. Frequency of application shall be sufficient to accomplish the abatement without saturating and softening the traveled way. Compacted or glazed road surface or wheel tracks may be loosened as needed for water penetration.
b. Prior to initial application, when needed the road will be ordered bladed and shaped under Section 811, Blading.
c. Required subsequent applications may be applied to the existing road surface without blading unless it is ordered.
d. Dust abatement material shall be discharged only on roads approved by the Government.

6. MEASUREMENT AND PAYMENT

a. When Water is specified there will be no separate measurement or payment. Work shall be considered incidental to other paid work.

813 SPOT SURFACING (3/12)

1. DESCRIPTION

This work consists of placing surface aggregate as shown in the DRAWINGS, staked on the ground, or designated by the Government. It includes preparing the area, furnishing, hauling, and placing all necessary materials and other work necessary to blend with the adjacent road cross section.

2. MATERIALS

a. Materials will be Government furnished when stated in the DRAWINGS or Special Project Specifications.
b. Materials furnished by the Contractor shall conform to the quality and gradation requirements shown in Section 893.

3. MAINTENANCE REQUIREMENTS

a. The area to be spot surfaced shall be thoroughly loosened to a minimum depth of one inch (1") prior to placement of aggregate.
b. Mixing and Placing

   1. When scheduled coincident with work under Section 811, spot surfacing and existing aggregate, when ordered, shall be mixed with water until a uniform mixture is obtained prior to final shaping and compaction.
   2. The material shall otherwise be spread on the prepared area in layers no more than four (4) inches in depth. When more than one (1) layer is required, each layer shall be shaped and compacted before the succeeding layer is placed. Upon completion, the spot surfacing shall reasonably conform to the adjacent cross section and provide smooth transitions in the road profile.
   3. Unless Compaction Method A is included in the SCHEDULE OF ITEMS, all spot rock sections requiring compaction shall be compacted by Method B. Compaction shall commence immediately following blading. Contractor shall apply water prior to and during blading when sufficient moisture is not present to obtain the required compaction and prevent segregation

   Compaction methods are:

   Compaction Method A: By breaking track while operating equipment on the traveled way.

   Compaction Method B: 8-10 ton pneumatic, steel or equivalent vibrating roller, operated to cover the full width five (5) times.

4. MEASUREMENT

1. The quantity will be the number of tons of aggregate placed as shown in the SCHEDULE OF ITEMS.
2. Hauling is considered incidental and included in price for spot surfacing.

5. PAYMENT

The accepted quantities will be paid for at the contract unit prices shown in SCHEDULE OF ITEMS.

814 ASPHALT PAVEMENT PATCHING (3/12)

1. DESCRIPTION

When required this work consists of patching potholes and skin patching of asphalt surfaces. The work includes preparing the area to be patched, furnishing and placing all necessary materials and work. All areas to be patched will be marked by the Government.

2. MATERIALS

Materials shall be designated in the SCHEDULE OF ITEMS.

3. MAINTENANCE REQUIREMENTS

a. Potholes

1. Existing materials shall be removed to a minimum of two (2) inches or as necessary to reach firm support, but limited to maximum twelve (12) inch depth. If firm support for a patch is not available, the hole shall be barricaded and the Government shall be notified. Prior to Contractor placing any materials, Government will determine corrections to be made.
2. The edges of the prepared hole shall be extended to form a vertical face in unfractured asphalt surfacing. The prepared hole shall generally be round or rectangular in shape and cleaned of all loose material. The bottom and sides shall be sprayed with an emulsified asphalt.
3. Prepared potholes shall be patched or barricaded immediately.
4. The bituminous mixture shall be placed in layers not exceeding four (4) inches. Each layer shall be compacted thoroughly with hand tampers, mechanical tampers, or rollers.
5. Finished surface shall, as a minimum, be compacted with a tamper or a 8- to 10-ton steel roller or comparable vibratory roller. Upon completion, the compacted pothole patch shall be flush with or not more than one quarter (1/4) inch above the level of the adjacent pavement.

b. Skin Patches

1. Prior to skin patching, potholes shall be patched.
2. Minor depressions, light raveling, or surface checking at scattered locations shown on the DRAWINGS or marked on the ground shall be treated by applying a skin patch.
3. Prior to skin patching, the surface shall be cleaned of loose and deleterious material, then sprayed with emulsified asphalt at the rate ordered by the Government. No bituminous mixture shall be placed until the prepared surface is approved by the Government.
4. Bituminous mixture shall be distributed uniformly in layers not to exceed two (2) inches compacted depth. When multiple layers are required, joints shall be offset at least six (6) inches between layers.
5. Each layer shall be compacted with an eight (8) to ten (10) ton steel roller or comparable vibratory roller.
6. The completed patch shall have transitions which shall be at least as smooth as the adjacent pavement after twenty-four (24) hours of exposure to traffic.

c. Disposal - All materials removed from pothole and skin patching operations shall be removed to a disposal site designated by the COR or shown on the DRAWINGS.

4. MEASUREMENT

a. Bituminous Mixture

1. Hot and cold bituminous mixture acceptable placed will be measured by the ton. Bituminous materials incorporated into the mixture will be incidental to the item.

2. Ton Measure - The quantity of mixture will be the number of tons in the accepted work. Any material rejected in the field as not meeting specifications shall be deducted based on estimated quantities. Rejected quantities shall be reconciled between the Government and the Contractor each day. If not reconciled each day, the Government's figures will apply.

b. The following work is incidental:

1. Cleaning of surfaces.
2. Haul and compaction of bituminous mixture.
3. Material removal and disposal.
4. Emulsified asphalt used on existing surfaces will be measured by the gallon prior to dilution. Dilution materials shall be considered incidental.

5. PAYMENT

a. The accepted quantities will be paid for at the contract unit price shown in the SCHEDULE OF ITEMS.

815 PAVED SURFACE CLEANING (3/12)

1. DESCRIPTION

When required this work consists of removing loose material from paved, traveled way, including bridge decks and paved shoulders where shown in the Drawings.

2. EQUIPMENT

a. Equipment shall have the capability of removing all loose material from paved surfaces without damage to the surface.
b. Use of hydraulic flushing equipment will not be permitted within a horizontal distance of two hundred (200) feet from a live stream, unless approved by the Government.

3. MAINTENANCE REQUIREMENTS

The paved surface shall be cleaned to the width stated in DRAWINGS. Materials shall be moved away from road centerline on double-lane roads. Bridge deck cleaning shall require all materials be moved longitudinally off the deck.

4. MEASUREMENT AND PAYMENT

No separate measurement or payment will be made for meeting requirements of this Section. All work and materials shall be incidental to Section 811- Blading or other paid work in this contract.

816 MAINTENANCE OF UNPAVED SHOULDERS (3/12)

1. DESCRIPTION

This work consists of maintaining unpaved shoulders adjacent to a paved traveled way. Work area will be identified by the Government or shown in the DRAWINGS.

2. MAINTENANCE REQUIREMENTS

Existing shoulder material shall be bladed and shaped the entire width to drain away from the traveled way. Vegetative or other unsuitable materials may be bladed onto slopes adjacent to the roadbed unless otherwise shown in the DRAWINGS. The shoulder material shall be moistened if necessary for compaction. The shoulder shall be compacted adjacent to paved surface edge prior to final shaping. Grader wheels may be used for this compaction. Final shaping shall provide a smooth transition to the paved surface edge. Upon completion, the paved surface shall be cleaned of loose materials in accordance with Section 815.

3. MEASUREMENT AND PAYMENT

No separate measurement or payment will be made for meeting requirements of this Section. All work and materials shall be incidental to Section 811- Blading or other paid work in this contract.

819 RIPRAP (3/12)

1. DESCRIPTION

When required this work shall consist of furnishing, hauling and placing erosion resistant and protective materials for use on embankments, stream banks, culvert inlets and outlets, channel bottoms and side slopes, abutment wings, structure foundations, and other designated locations shown in the DRAWINGS or staked on the ground.

2. EQUIPMENT

All methods employed in performing the work and all equipment, tools and machinery used for handling the material and executing any part of the work shall be subject to the approval of the Government before the work is started, and whenever unsatisfactory, they shall be changed or improved as required.

3. MATERIALS

Unless shown in the SCHEDULE OF ITEMS, all materials shall be furnished by the Contractor and shall meet the following requirements:

a. Riprap

1. Rock used for riprap shall be hard angular rock with a Durability Absorption Ratio greater than 23 or between 10 – 23 if the Durability Index is greater than 52.
2. Durability Absorption Ratio = $\frac{\text{Durability Index (Course)}}{\text{Percent Absorption} + 1}$ AASHTO T 210 / AASHTO T 85

3. Neither the breadth nor thickness of any piece of riprap shall be less than one-third its length. Rock shall be free from overburden, spoil, shale, and organic material; shall meet the following gradation requirements for the class specified; and shall be delivered to designated locations.
2. Rock for grouted riprap shall be free of fines that prevent penetration of grout.
3. Riprap class and gradation is as follows

TABLE 1 - RIPRAP GRADATION REQUIREMENTS

Class	Percent of Rock by Mass	Mass (pounds)	Approximate Min. Dimension [b,c] (inches)
1	20	22 to 33	6 to 8
	30	11 to 22	5 to 6
	40	1.1 to 11	2 to 5
	10[a]	0 to 1.1	0 to 2
2	20	55 to 110	8 to 10
	30	22 to 55	6 to 8
	40	2.2 to 22	3 to 6
	10[a]	0 to 2.2	0 to 3
3	20	220 to 330	14 to 16
	30	110 to 220	10 to 14
	40	11 to 110	5 to10
	10[a]	0 to11	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[a]	0 to 22	0 to 6
4a	20	770 to1353	20 to 24
	30	330 to 770	16 to 20
	40	33 to 330	7 to16
	10[a]	0 to 33	0 to 7
5	20	1540 to 2200	26 to 28
	30	770 to 1540	20 to 26
	40	55 to 1100	8 to 20
	10[a]	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[a]	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[a]	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[a]	0 to 400	0 to 16

4. Each load of riprap shall be well graded from the smallest to the maximum size specified.
5. Furnish spall and rock fragments graded to provide a stable dense mass.
6. The volume of a rock with these cubic dimensions has a mass approximately equal to the specified rock mass.
7. Furnish rock with breadth and thickness at least one-third its length.

b. Grout

1. Grout for riprap shall be delivered to designated sites. Grout for riprap shall consist of concrete containing 5 sacks of cement per cubic yard, aggregate with a maximum size of ¾ inches, and water limited to that necessary to ensure good workability. Reasonably clean and strong aggregate of appropriate size gradation, as approved by the CO, shall be used.
2. A water reducer, set retarder shall be submitted for approval and will include recommended dosage for 2, 3, and 4 hour hauls.

4. MEASUREMENT

a. The quantity will be the number of cubic yards measured in the hauling vehicles, or tonnage verified by certified weight slips whichever is shown in the SCHEDULE OF ITEMS.
b. Hauling is considered incidental when materials are furnished by the Contractor or Government furnished materials. Haul is included in price for supply and installation.
c. Application of grout will be measured by the hour for mixer truck standby starting when application begins. On site mixing and setup will be considered incidental to grout cost.

6. PAYMENT

The accepted quantity will be paid for at the contract unit price shown in the SCHEDULE OF ITEMS.

831 DITCH MAINTENANCE AND CONSTRUCTION (3/12)

1. DESCRIPTION

This Section provides for routine maintenance of various types of ditches to provide a waterway that is unobstructed, as shown in the ROAD MAINTENENCE REQUIREMENT SUMMARY or marked on the ground. Drainage ditch maintenance is limited to materials contained within the ditch below the elevation of the adjacent edge of the traveled way or shoulder. Work also includes the construction of ditches where shown on the DRAWINGS or staked on the ground.

2. MAINTENANCE REQUIREMENTS

a. During ditch maintenance care shall be taken to retain existing low growing vegetative cover (primarily grasses and forbs).
b. Ditches shall be maintained by removing rock, soil, wood, and other materials. Upon completion the maintained ditch shall be of the same character as abutting segments that were not required to be maintained.
c. Back slopes shall not be undercut by removal operations.
d. Suitable material up to four (4) inches in greatest dimension removed from the ditches may be blended into existing native road surface and shoulder or placed in designated berm.
e. Material from ditch cleaning operations shall not be blended into or bladed across aggregate surfaced roads nor bladed onto or across bituminous surfaced roads.
f. Material in excess of 2(d) or subject to 2(e) will be ordered hauled to a designated waste area under Section 832. Excess materials temporarily stored on the ditch slope or edge of the shoulder shall be removed daily.
g. Limbs and wood chunks in excess of one (1) foot in length or three (3) inches in diameter shall be removed from ditches and placed outside the roadway.
h. Paved surfaces shall be cleaned of all materials resulting from Contractor's ditch maintenance work. Paved surface cleaning shall be in accordance with Section 815.
i. Lead-off ditches shall be shaped to drain away from the traveled way.

3. MEASUREMENT

a. Unless specifically shown in the DRAWINGS, SCHEDULE OF ITEMS or ROAD MAINTENENCE REQUIREMENT SUMMARY there shall be no separate measurement or payment for meeting requirements of this Section. All work and materials shall be incidental to Section 811- Blading or other paid work in this contract

b. When SHOWN IN THE DRAWINGS or indicated in the SCHEDULE OF ITEMS work shall be measured by the total number of units for each item listed in the SCHEDULE OF ITEMS completed and accepted.

4. PAYMENT

The quantities measured and accepted will be paid for at the contract unit price shown in the SCHEDULE OF ITEMS.

832 REMOVE AND END HAUL MATERIALS (3/12)

1. DESCRIPTION

Work consists of ordered loading, hauling, and placing of slide, slough, or excess materials such as rock, soil, vegetation, and other materials to designated disposal sites.

2. MAINTENANCE REQUIREMENTS

a. Excess materials generated by work under other Sections of this contract may be ordered for removal, haul, and disposal under this Section. Removal and disposal under all Sections will be ordered without haul when a distance of less than two hundred (500) feet is involved.

b. Slide and slough materials to be removed shall include those in the area extending approximately six (6) feet vertically above the road surface and that area extending not more than four (4) feet down slope from the roadbed. Material shall be disposed of at designated sites as shown on DRAWINGS or identified in Special Project Specifications.

   The slope which generated the slide material shall be reshaped as nearly as practical to its original condition by equipment operating from road surface. Reshaping of roadside ditches in slide area shall be in accordance with Section 831.

c. When ordered by the Government, slumps shall be filled by compacting selected materials into roadway depressions. Compaction shall be by Method (2).

d. All materials removed and placed in disposal sites shall be placed by one or more of the following methods as shown in ROAD MAINTENENCE REQUIREMENT SUMMARY or DRAWINGS.

   1. Method 1 - Side Casting and End Dumping. Material may be placed by side casting and end dumping. Where materials include large rocks, a solid fill shall be provided by working smaller pieces and fines into voids. The finished surfaces shall be shaped to drain.
   2. Method 2 - Layer Placement - Surfaces on which materials are to be placed shall be stepped or roughened prior to placing any material. Materials shall be placed in approximately horizontal layers no more than twelve (12) inches thick. Each layer shall be compacted by operating hauling and spreading equipment over the full width of each layer.

3. MEASUREMENT

a. Unless specifically shown in the DRAWINGS, SCHEDULE OF ITEMS or ROAD MAINTENENCE REQUIREMENT SUMMARY there shall be no separate measurement or payment for meeting requirements of this Section. All work and materials shall be incidental to Section 811- Blading or other paid work in this contract

b. When SHOWN IN THE DRAWINGS or indicated in the SCHEDULE OF ITEMS work shall be measured by the total number of units for each item listed in the SCHEDULE OF ITEMS completed and accepted.

4. PAYMENT

The quantities measured and accepted will be paid for at the contract unit price shown in the SCHEDULE OF ITEMS.

833 CULVERT REPLACEMENT AND INSTALLATION (3/12)

1. DESCRIPTION

This work includes removal of existing culverts and bed preparation, installation and backfill of new culverts of the size and length specified in the DRAWINGS. Work also includes the construction of inlet control structures such as metal end sections, catch basins and inlet basins. Removed culverts become the property of the Contractor. Disposal will not be allowed on Government land.

2. MATERIALS

The Contractor shall furnish culverts. See Section 894 for material requirements.

3. MAINTENANCE REQUIREMENTS

a. Excavation for culverts shall be at least as wide as three diameters of the existing pipe, and long enough to provide for proper joining of the culvert. The completed bottom shall be firm for its entire length and width. The culvert shall be installed to maintain a uniform flow line from inlet to outlet ditch.
b. After the bedding is prepared and the pipe is placed, backfill material shall be placed in layers not exceeding six (6) inches loose thickness and compacted under the haunches and alongside the pipe. The material shall be readily compactable material free of frozen lumps, chunks of highly plastic clay or other objectionable material. Rocks larger than three (3) inches in greatest dimension shall not be used within one foot (1) of the pipe.
c. Backfill density shall be that obtained by compacting each layer with mechanical equipment designed for this purpose. Contractor shall apply water prior to and during blading when sufficient moisture is not present to obtain the required compaction. Compaction shall continue until visual displacement ceases.
d. Backfill and compacting shall continue until backfill is a minimum of twelve (12) inches above the top of the culvert.
e. See DRAWINGS for additional information on installation, excavation and inlet control structures.

4. MEASUREMENT

a. The quantity will be the number linear feet supplied, delivered and installed as shown in the SCHEDULE OF ITEMS.
b. Culvert removal and disposal shall be paid separately under Section 853.

5. PAYMENT

The accepted quantities will be paid for at the contract unit prices shown in the SCHEDULE OF ITEMS.

834 DRAINAGE STRUCTURE MAINTENANCE (3/12)

1. DESCRIPTION

This work consists of cleaning and reconditioning culverts and other drainage structures shown in the DRAWINGS or specified in the ROAD MAINTENENCE REQUIREMENT SUMMARY

2. MAINTENANCE REQUIREMENTS

a. Drainage structures, inlet structures, culverts, catch basins, and outlet channels shall be cleaned when required by the Government. Catch basins shall be cleaned by removing the material within the catch basin structure to top of cut bank.
b. The transition from the ditch line to the catch basin shall be cleaned a distance of ten (10) feet. Outlet channels and lead-off ditches shall be cleaned a distance of six (6) feet. Debris and vegetation shall be removed and placed so as to not enter the channel or ditch or obstruct traffic. Debris and vegetation ordered to be hauled shall be hauled to a designated disposal area in accordance with Section 832.
c. Hydraulic flushing of drainage structures is not allowed unless provided for in Project Specifications.
c. Cleaning and reconditioning is limited to the first four (4) feet of inlet and outlet determined along the top of the structure. Ordered reconditioning of culvert inlet or outlet shall be by field methods such as jacking out or cutting away damaged metal which obstructs flow. All cut edges and damage to galvanized coating shall be cleaned and treated with zinc rich coating. Damage or obstructions which are not field corrected under the requirements of this Section shall be reported to the Government.
d. Cleaning and reconditioning of channels beyond four feet shall be SHOWN IN THE DRAWINGS and listed in the Schedule of Items. Slash and debris shall be placed at locations SHOWN IN THE DRAWINGS agreed to on the ground by the Contracting Officer.

3. MEASUREMENT

a. Unless specifically shown in the DRAWINGS, SCHEDULE OF ITEMS or ROAD MAINTENENCE REQUIREMENT SUMMARY there shall be no separate measurement or payment for meeting requirements of this Section. All work and materials shall be incidental to Section 811- Blading or other paid work in this contract

b. When SHOWN IN THE DRAWINGS or indicated in the SCHEDULE OF ITEMS work shall be measured by the total number of units for each item listed in the SCHEDULE OF ITEMS completed and accepted.

4. PAYMENT

The quantities measured and accepted will be paid for at the contract unit price shown in the SCHEDULE OF ITEMS.

835 ROADWAY DRAINAGE MAINTENANCE (3/12)

1. DESCRIPTION

This work consists of providing drainage on roads that have been physically closed to traffic.

2. MAINTENANCE REQUIREMENTS

a. Access

1. The Government will provide for access through locked gates and also provide any special devices other than standard wrenches or tools, required for removal or replacement of fabricated barricades.
2. Other work associated with Contractor's access shall be the responsibility of the Contractor. The entrance shall not be left available for access to persons not associated with this contract; temporary barricades shall be used during the active performance of work.

b. Drainage

1. Upon completion of work, the roadway shall be shaped to provide for the removal of surface water, but need not be passable to vehicles. Waterbars, barriers or berms existing prior to the Contractors operation shall be repaired or reinstalled. Areas where water is ponded by existing centerline profile sags in through cuts may be left untreated.
2. Continuous blade shaping of the roadbed is not required under this specification.
3. Work to be done at staked locations shall be as indicated on the stake and/or stated in Special Project Specifications.
4. In not otherwise specified any of the following methods are acceptable for use at eroded or rutted locations.

   (a) Method A: Outsloping the roadbed at not less than one-half (1/2) inch per foot.
   (b) Method B: Insloping the roadbed at not less than one-half (1/2) inch per foot of width.
   (c) Method C: Water bar roadbed at locations staked on the ground or shown in Special Project Specifications. Construct in accordance with DRAWINGS included with the Special Project Specifications.

5. Drainage structures located in through fills and natural watercourses shall be fully functional without obstructions, including inlet and outlet channel within twenty (20) feet of the structure.
6. Culverts and other fabricated structures providing drainage from road ditches shall either be cleaned and the ditch made functional or waterbar(s) shall be provided across the roadbed. Fabricated drainage structures discharging on natural ground within three (3) feet of roadbed elevation may be removed at Government's option to provide the waterbar. Removed structures shall become Contractor's property to be removed from National Forest. Contractor-installed temporary drainage structures, if any, shall be removed and replaced with a water bar.

c. Slides, Slumps and Slough

1. Slides and slough may be left in place provided they do not potentially impound water or divert water from watercourses. Reshaping of the various surfaces shall be done as necessary to provide drainage.
2. Drainage shall be provided to effectively decrease or eliminate the entry of surface water into slides, slumps, and roadbed surface cracks. The Contractor shall place berms, waterbars or ditches as needed to intercept and remove runoff water from the roadbed. Cracks shall be surface sealed by covering over with native soil materials to prevent additional water entry and compacting with equipment tires.

d. Entrance Devices - Upon completion of work, entrance devices shall be replaced to effectively eliminate access by motorized vehicles having four (4) wheels and a width in excess of fifty (50) inches.

e. Seeding - All disturbed areas shall be seeded and fertilized in accordance with requirements set forth in Section 841 and are incidental.

3. MEASUREMENT

a. Unless specifically shown in the DRAWINGS, SCHEDULE OF ITEMS or ROAD MAINTENENCE REQUIREMENT SUMMARY there shall be no separate measurement or payment for meeting requirements of this Section. All work and materials shall be incidental to Section 811- Blading or other paid work in this contract

b. When SHOWN IN THE DRAWINGS or indicated in the SCHEDULE OF ITEMS work shall be measured by the total number of units for each item listed in the SCHEDULE OF ITEMS completed and accepted.

4. PAYMENT

The quantities measured and accepted will be paid for at the contract unit price shown in the SCHEDULE OF ITEMS.

837 DRAINAGE DIP MAINTENANCE AND CONSTRUCTION (3/12)

1. DESCRIPTION

This work consists of separately ordered maintenance of existing drainage dips and special outlet structures on all types of roads. Included in this are rolling dips on native, aggregate, and paved roads. Work also includes the construction of dips, swales and lead off ditches where shown in the DRAWINGS or staked on the ground.

2. MATERIALS

Materials used in maintenance shall conform to the requirements of the applicable Sections for the materials within the structure.

3. MAINTENANCE AND CONSTRUCTION REQUIREMENTS

a. Special outlet structures such as aprons, culverts, and flumes shall be removed if necessary prior to maintaining the drainage dip, or the finished dip shall be oriented to the structure for alignment and gradient.
b. Hand work may be necessary to obtain a smooth surface and uniform cross section. Any special outlet structure removed shall be reinstalled to the flow line grade established by the completed drainage dip. The first thirty (30) feet of any lead-off ditch or channel shall be cleaned incidental to this Section.
c. Native material drainage dips shall be shaped to reasonably conform with the lines, grades, and cross sections shown in the DRAWINGS or staked on the ground. Removed materials shall be distributed uniformly over the downgrade road surface adjacent to the dip. Rocks shall not project more than two (2) inches above the final surface.
d. Aggregate or rock surfaced drainage dips shall be cleaned. When the Government determines the drainage dip requires shaping to conform to the DRAWINGS, existing surfacing materials shall be conserved for reuse upon completion of shaping. Conserved surfacing shall be placed and compacted with equipment prior to reinstalling any special outlet structures.
e. Compaction shall be as specified in Section 811.
f. Bituminous surfaced drainage dips shall be cleaned.

4. MEASUREMENT

a. The quantity to be measured will be the completed number of new units of the various items listed in the SCHEDULE OF ITEMS and accepted under this Section.

b. Existing dips, swales and lead off ditches are not measured separately and shall be incidental to Section 811- Blading or other paid work in this contract.

5. PAYMENT

The accepted quantities will be paid at the contract unit price shown in the SCHEDULE OF ITEMS.

838 MAINTENANCE FOR LIMITED USE (3/12)

1. DESCRIPTION

This work consists of making the roadway passable for use by full-size pickups and providing drainage from the traveled way and roadbed.

2. MAINTENANCE REQUIREMENTS

a. Timing - Maintenance shall be performed during the contract period as often as indicated by the accepted schedule or subsequently ordered by the Government. The Contractor shall commence maintenance within two (2) weeks after receipt of written order unless otherwise stated in the order.

b. Drainage

1. Drainage shall be provided at existing drainage structures. Culverts providing drainage from road ditches shall have at least two thirds of the end area usable. Culverts in live streams or natural watercourses requiring cleaning shall have the end area fully usable.
2. Cross ditches conforming to the DRAWINGS shall be placed at staked locations to provide drainage across the full width of the roadbed. Except as provided in 2.c herein, materials removed from cross ditches and cleaning of existing drainage dips shall be bermed downgrade on the roadbed. Cross ditches shall be angled and shall discharge at points of least fill height or on natural ground.

c. Intersections (See Drawing 838-2)

Intersections shown in the Road Listing for work under this Section shall be cross ditched to drain over the full width of the listed road and define the traveled way of the adjacent road. Material removed from this cross ditch shall be placed as a berm on the roadbed and traveled way away from the intersection. A second cross ditch conforming to Drawing 838-1 shall be placed within sight of the intersection when possible, but in no case more than one hundred feet (100') from the intersection.

d. Objects on Roadbed (See Drawing 838-3)

a. Upon completion, no object extending over four (4) inches above the road surface shall remain within ten (10) foot usable traveled way width. Larger objects shall be selectively removed or repositioned to provide the usable width and lateral clearance required (See Drawing 838-3). The usable width shall be centered on the roadbed or positioned away from the fill slope.
b. Logs and down trees shall be cut to provide not less than twelve (12) feet of opening for vehicle passage provided the remaining ends are in ground contact and do not interfere with drainage. The portion to be removed may be cut into chunks or left as one piece and placed in a stable position where it will not restrict drainage or vehicle passage. Limbs shall be selectively removed to provide stability or ground contact and shall be scattered down slope outside of the roadbed and drainage ways.
c. Rocks and other objects outside the ten (10) foot usable width may remain if drainage is provided from the road surfaces.

e. Slough and Slides (See Drawing 838-4)

1. Slough and slides may be left in place when surface drainage is provided for and at least ten (10) feet of width is available for vehicle passage. The roadbed immediately upgrade shall be cross ditched. Any roadside ditch between the cross ditch and the remaining materials shall be filled and shaped to drain.
2. The Contractor may reposition or ramp over slides and slough when the traveled way is less than ten (10) feet (See Drawing 838-4), providing the material is capable of supporting vehicles. Ramp profile gradient shall not exceed twelve (12) percent nor have an out slope exceeding six (6) percent. Ramped crossings shall be drained and bermed to a height of at least six (6) inches on the outside of the ramped area.

3. Slough or slide materials which are not capable of supporting a vehicle shall be repositioned on the roadbed to provide the ten (10) foot width unless the Government orders it removed under Section 832.

f. Slumps (See Drawing 838-5)

1. The roadbed immediately upgrade of slumps shall be cross-ditched (See Section A-A of Drawing 838-1).
2. Slumps at the edge of the roadbed shall not be considered a part of the usable width. Usable width may be reduced to eight (8) feet provided a berm of at least six (6) inches in height is placed on the undisturbed roadbed to divert surface water and provide a curb on the downhill side.
3. Roadbed slumps shall be ramped on both ends onto undisturbed roadbed to provide at least eight (8) foot usable width. No material shall be placed on the slumped area. Removed materials shall be bermed on the roadbed to guide vehicles to the ramp location, used to block any abutting ditches, and to divert water from entering the slump area. Ramp profile gradient shall not exceed twelve (12) percent. Areas within the slumps that could pond water shall be drained.
4. Roadbed cracks shall be sealed with native soil and wheel or tamper compacted to reduce the introduction of surface water.

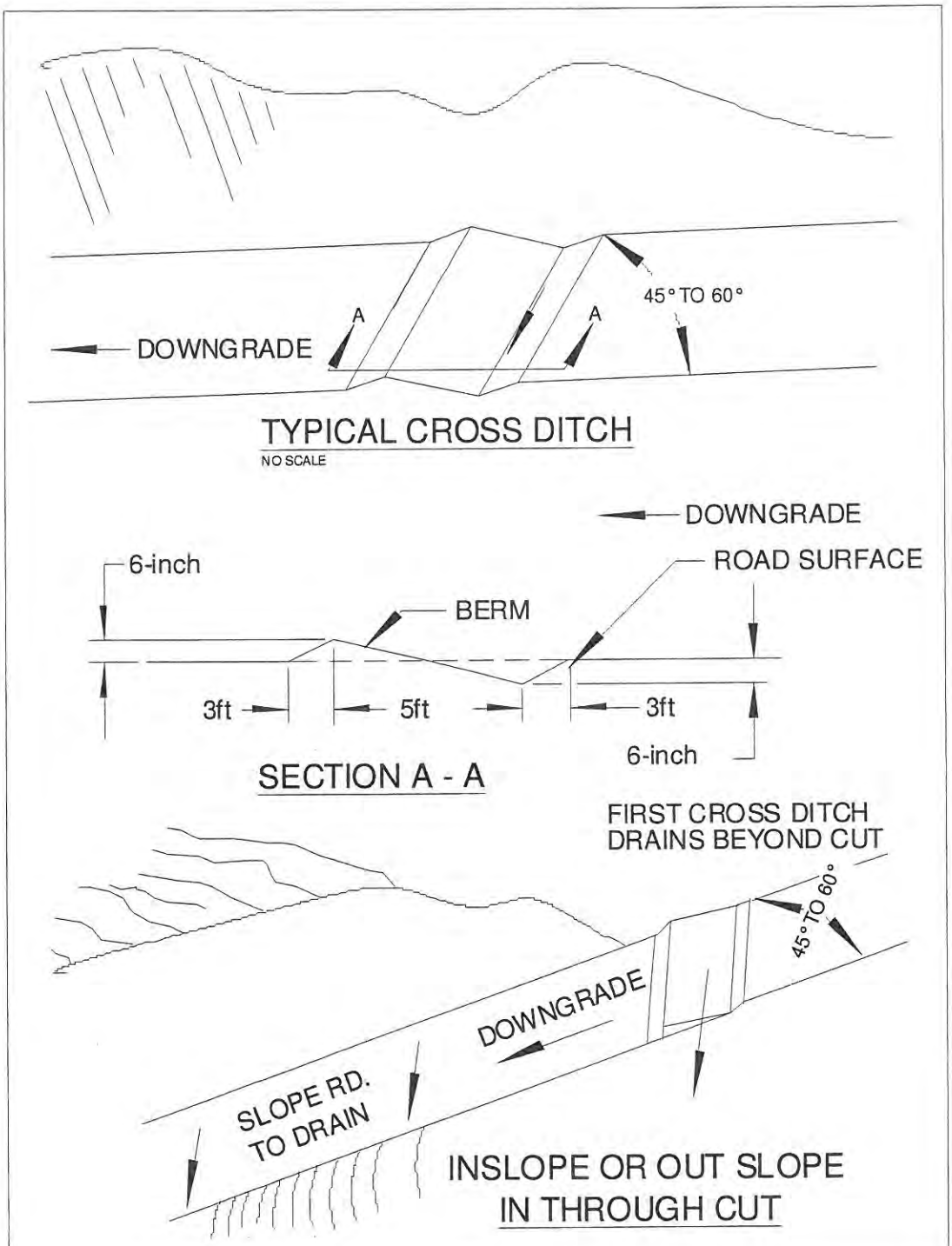
g. Cutting Vegetation

1. Trees, brush and limbs shall be cut and removed to provide at least twelve (12) feet of usable width centered on the existing usable road surface.
2. Encroaching limbs shall be removed to a height of ten (10) feet above the traveled way surface extending into the passageway from the side. Limbs extending laterally into the twelve (12) foot width shall be cut within six (6) inches of the trunk. Limbs extending down into the ten (10) foot height limitation may be cut or lopped as needed to meet the height requirement.
3. Brush and trees within the twelve (12) foot usable width corridor shall be cut parallel to and within two (2) inches of the traveled way surface.
4. Materials shall be scattered down slope outside the roadway.

3. MEASUREMENT AND PAYMENT

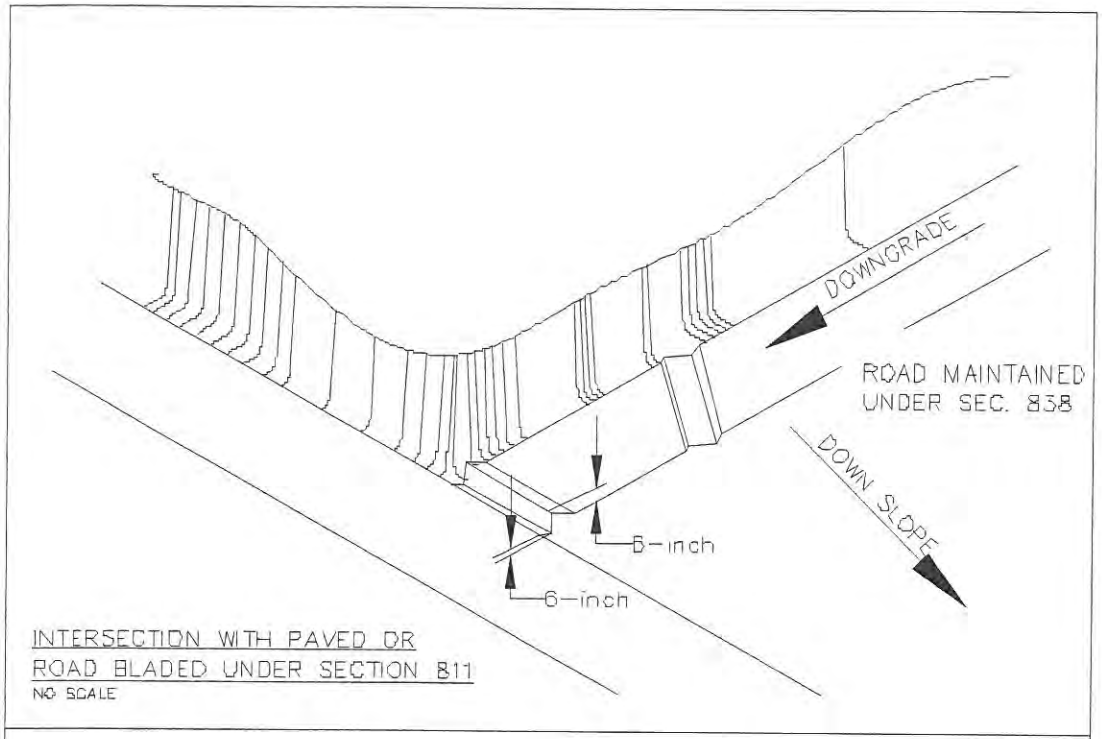
No separate measurement or payment will be made for meeting requirements of this Section. All work and materials shall be incidental to other paid work in this contract.

DRAWING 838-1

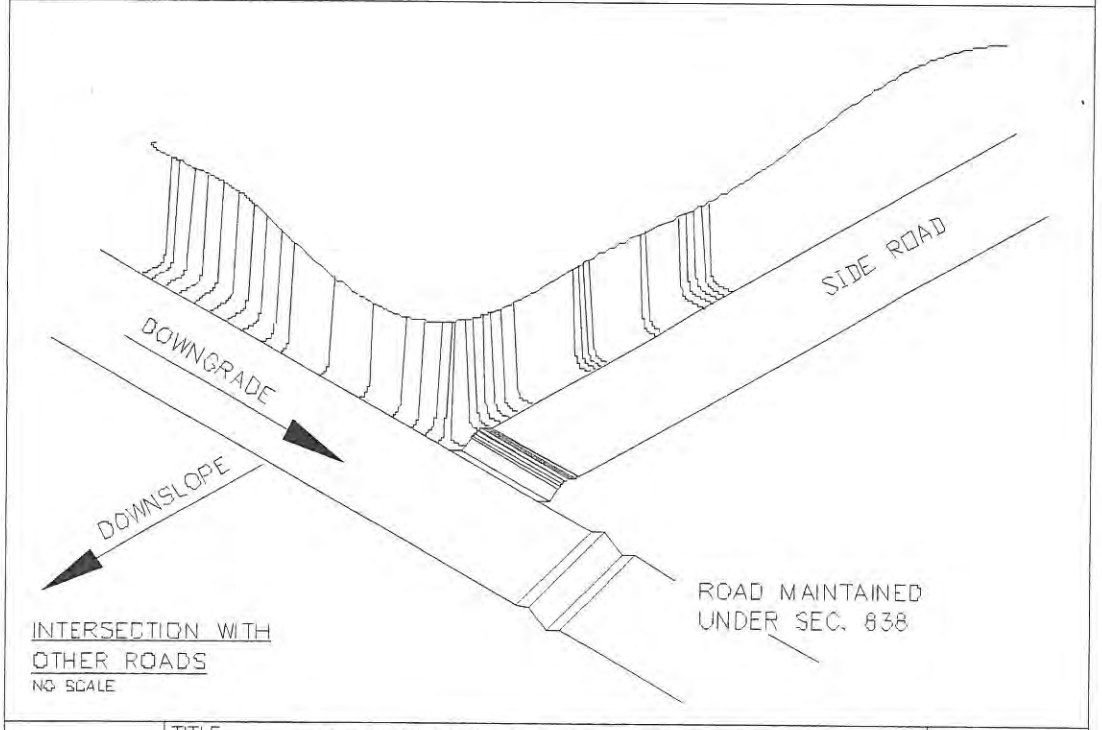


TITLE	
CROSS DITCHING OF LIMITED USE ROADS	
DRAWING 838-1	APPROVED

DRAWING 838-2



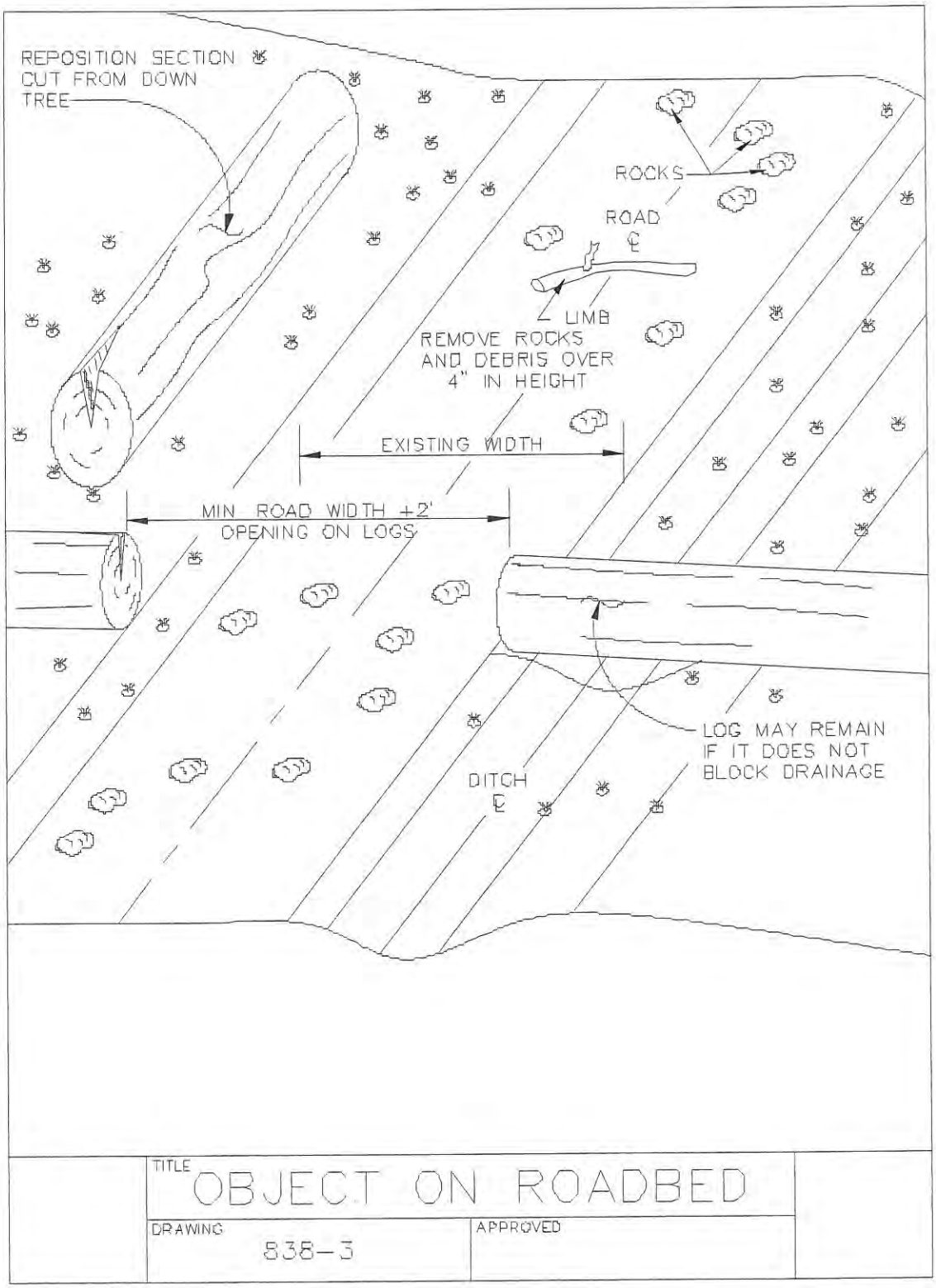
INTERSECTION WITH PAVED OR
ROAD BLADED UNDER SECTION 811
NO SCALE



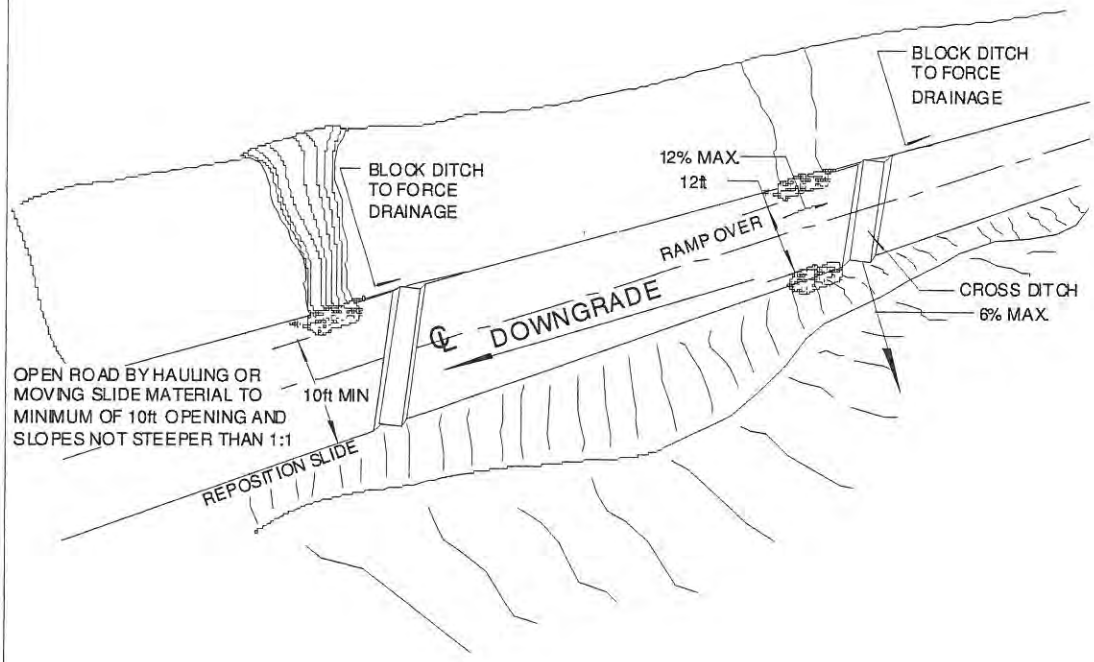
INTERSECTION WITH
OTHER ROADS
NO SCALE

TITLE	TREATMENT OF INTERSECTIONS ON LIMITED USE ROADS	
DRAWING 838-2	APPROVED	

DRAWING 838-3

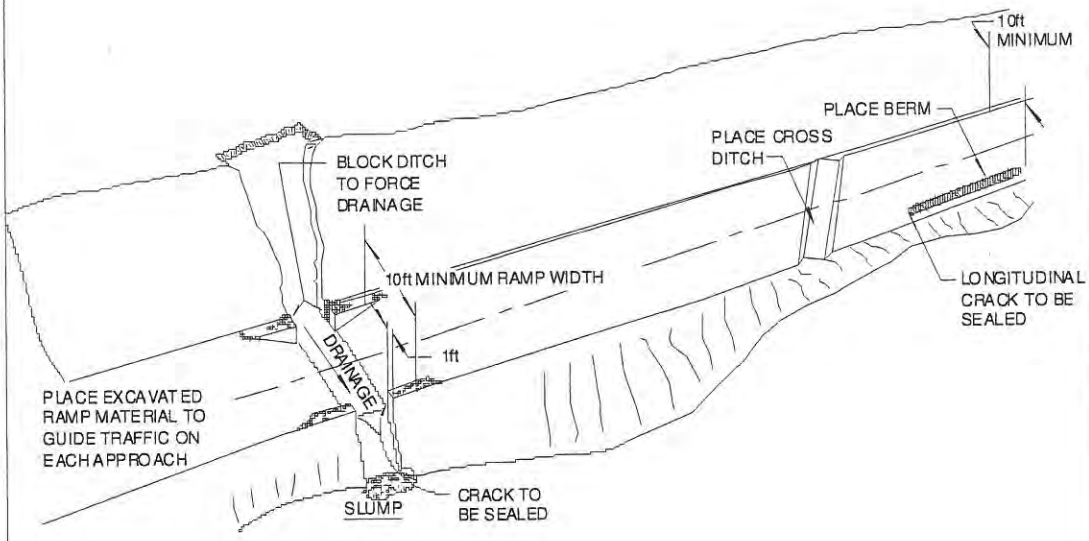


DRAWING 838-4



TITLE	
TREATMENT OF SLIDES AND SLOUGH	
DRAWING 838-4	APPROVED

DRAWING 838-5



TITLE	
TREATMENT OF SLUMPS AND ROADBED CRACKS	
DRAWING 838-5	APPROVED

842 CUTTING ROADWAY VEGETATION (3/12)

1. DESCRIPTION

This work consists of cutting all vegetative growth including trees and other vegetation less than ten (10) inches in diameter within the roadway where shown in the DRAWINGS or directed by the Contracting Officer.

2. MAINTENANCE REQUIREMENTS

a. General

1. Clearing debris shall be treated as shown In the DRAWINGS and shown in the SCHEDULE OF ITEMS.
2. Brush, trees, and other vegetation less than ten (10) inches in diameter within each area treated shall be cut to a maximum height of six (6) inches above the ground surface or obstruction such as rocks or existing stumps.
3. When work is performed under this Section, the Contractor shall remove all limbs which extend into the treated area or over the roadbed to a height shown in the DRAWINGS See Section 851 for additional requirements.
4. The width and height of the vegetation cutting shall be:

Road No.	From MileTo Mile	Width Height
All Roads	Will designated	See drawings

1. On the ground

5. Signs, markers, and other road appurtenances are designated to be retained. Other items to remain will be marked on the ground.
6. The clearing width shall be as shown in the Special Project Specifications or shown in the DRAWINGS.
7. Work may be performed either by hand or mechanically unless specifically shown in the DRAWINGS and SCHEDULE OF ITEMS. Self-propelled equipment shall not be allowed on cut and fill slopes or in ditches.
8. Damage to trunks of standing trees caused by Contractor's operation shall be corrected by Contractor, either by treatment with a commercial nursery sealer or by removing the tree as directed by the Government.
9. Mechanical brush cutters shall not be operated when there are non-Contractor personnel or occupied vehicles within a hazardous distance of immediate operating area.
10. Trees within the cutting limits which are over ten (10) inches in diameter may be limbed in lieu of cutting. Limbs of trees shall be cut to within one (1) inch of the bole of the tree when limbing is done by hand. If limbing is completed mechanically, stobs longer than 1" shall be hand trimmed to within one (1) inch of the bole of the tree.
11. Cutting Vegetation Clearing Limits – See DRAWINGS for minimum clearings widths and Clearing Typical on the DRAWINGS for additional requirements.
12. Transitions between differing increments of cutting width shall be provided. Transitions shall be accomplished in a taper length of not less than fifty (50) nor more than seventy (70) feet.
13. Road Clearing Slash Treatment Method Specifications:

a) Chipping — Clearing Slash up to 6 inches in diameter shall be processed through a chipping machine. Chips shall be scattered to a loose depth not exceeding 6 inches. The remainder of the material shall be cut into three (three) foot lengths and scattered.

b) Deck — Clearing Slash 10 inches or larger in large end diameter and 10 feet or more in length shall be Decked for disposal by Forest Service by piling pieces parallel to each other at agreed upon locations.

c) Scatter — Clearing Slash shall be scattered to reduce slash concentrations with slash being generally left within 18 of the ground. Logging Slash shall be scattered into openings away from and without unnecessary damage to residual trees. All scattered logs shall be limbed, placed away from trees and positioned so they will not roll. When Scattering is specified, another method may be used by agreement. See Remove.

d) Remove — Clearing Slash shall be moved or hauled to locations shown on CONTRACT or SALE AREA MAP, shown in the DRAWINGS or as agreed and designated on the ground where it shall be piled for disposal by Forest Service. This also refers to Scatter In Units where treatments includes haul to units and scatter. See Scatter Treatment for details.

e) Pile — Clearing Slash smaller than 10 inches in large end diameter and 10 feet long shall be hand piled for disposal by Forest Service. A 3 ft wide fire line cleared to mineral soil will be constructed around and immediately adjacent to each pile.

f) Masticate — Clearing Slash <10 inches stump diameter and greater than 1 foot in height shall be masticated (shredded, mulched, chipped). See paragraph 10 above for trees greater than 10"dbh.

1. All masticated vegetation shall have a stump height generally no greater than 6 inches above ground level as measured on the uphill side or 6 inches above obstacles (i.e. large rocks and other non-vegetative material not suitable for mastication).

2. Unless otherwise agreed, residual masticated vegetative debris resulting from contractor's operations shall lie flat on the ground and generally not exceed 12 inches in height. Individual pieces of vegetative debris shall generally not exceed 3 feet in length.

g) Lop and Scatter — Lop and Scatter for roadway clearing typically refers to roads with minor clearing requirements where most limbing may be done by hand. In this case material may be side cast onto fill slopes beyond the road bed limits with a final slash height of eighteen (18) inches or less and no concentrations of clearing slash.

14. Materials resulting from the cutting operation in excess of one (1) foot in length or one (1) inches in diameter, shall not be allowed to remain in roadway ditches, or within water courses.
15. Limbs and chunks in excess of one (1) inches in any dimension shall be removed from the traveled way and shoulders.
16. When specified in the DRAWINGS materials may be scattered down slope from the roadbed, outside of the work area and drainages. Concentrations shall be rescattered or removed.
17. Chip material shall be removed from roadway surface by surface blading. This blading, unless indicated otherwise in the DRAWINGS and SCHEDULE OF ITEMS, is included in cost for brush removal and is separate from work specified in Section 811 – Blading.

3. MEASUREMENT

a. Unless specifically shown in the DRAWINGS, SCHEDULE OF ITEMS or ROAD MAINTENENCE REQUIREMENT SUMMARY there shall be no separate measurement or payment for meeting requirements of this Section. All work and materials shall be incidental to Section 811- Blading or other paid work in this contract

b. When SHOWN IN THE DRAWINGS or indicated in the SCHEDULE OF ITEMS work shall be measured by the total number of units for each item listed in the SCHEDULE OF ITEMS completed and accepted.

4. PAYMENT

The quantities measured and accepted will be paid for at the contract unit price shown in the SCHEDULE OF ITEMS.

851 LOGGING OUT (3/12)

1. DESCRIPTION

This work consists of ordered removal of fallen trees, snags and trees greater than ten (10) inches in diameter which encroach into the roadway or as shown in the DRAWINGS or as directed by the Contracting Officer..

2. MAINTENANCE REQUIREMENTS

a. Fallen timber, when marked with paint, shall be limbed and cut into standard log lengths shown in the Special Project Specifications. Resulting logs shall be decked at designated locations.
b. Unmarked materials shall be limbed and may be cut into lengths for handling and shall be decked outside ditches and drainage's, off of the traveled way and turnouts or at staked locations.
c. Unmarked materials and any remaining trunks from marked materials shall be cut at the toe of the fill and two feet above the top of cut slope.
d. All materials remain the property of the Government, unless otherwise stated in the contract.
e. Woody debris and slash in excess of one (1) foot in length or three (3) inches in diameter shall not remain in ditches, drainage channels, or on back slopes, traveled way, shoulders or turnouts. Accumulations of debris may be ordered hauled and paid under Section 832. Materials not ordered hauled shall be scattered down slope from the roadbed, avoiding any drainage ways or concentrations.

3. MEASUREMENT

a. The quantity to be measured will be the completed number of new units of the various items listed in the SCHEDULE OF ITEMS and accepted under this Section.

5. PAYMENT

The accepted quantities will be paid at the contract unit price shown in the SCHEDULE OF ITEMS.

853 REMOVAL OF STRUCTURES AND OBSTRUCTIONS (3/12)

1. DESCRIPTION

This work includes the salvage, remove, and/or dispose of buildings, fences, structures, pavements, culverts, utilities, curbs, gates, and other obstructions as shown in the DRAWINGS. Salvage designated materials and backfill the resulting trenches, holes, pits, or as shown in the DRAWINGS.

2. MAINTENANCE REQUIREMENTS

a. Use reasonable care to salvage all material designated to be salvaged. Salvage in readily transportable sections or pieces. Replace or repair all members, pins, nuts, plates, and related hardware damaged, lost, or destroyed during the salvage operations. Wire all loose parts to adjacent members or pack them in sturdy boxes with the contents clearly marked. Stockpile salvaged material in a designated area.

e. When culverts are to be re-used, carefully remove culvert, taking precautions to avoid damage. Store culverts to be re-laid, when necessary, to prevent loss or damage before relaying. Replace without additional compensation all sections lost from storage or damaged by use of improper methods.

f. When culverts are to be removed and replaced, remove the existing cmp down to the natural stream bottom, and remove the parts outside of a stream down to at least 12 inches below natural ground surface or finished ground line, whichever is lower. Remove portions of existing structures that lie wholly or in part within the limits for a new structure to accommodate construction of the proposed structure.

g. Remove structures and obstructions in the roadbed to 12 inches below subgrade elevation. Remove structures and obstructions outside the roadbed to 12 inches below finished ground.

h. Except in excavation areas, fill cavities left by structure removal with material to the level of the finished ground, and compact. Place and compact the type of backfill material that is consistent with adjacent undisturbed areas unless shown otherwise in the DRAWINGS, designated in the SPECIAL PROJECT SPECIFICATIONS, or approved by the CO.

i. Disposing of Material or Structures Not Designated for Salvage - Unless agreed to in writing all structures and obstructions shall be disposed of by Removal From project. Otherwise, dispose of material and structures as shown in the DRAWINGS, using one or more of the following methods:

   1. Removal From Project. Make necessary arrangements with property owners, and haul debris to suitable disposal locations as approved by the CO. Furnish a signed copy of the disposal agreement. Hazardous materials must be properly disposed of.

   2. Burning. Burn debris using high-intensity burning processes that produce few emissions. Examples include incinerating, high stacking, or pit and ditch burning. Provide a watchperson during burning operations.

      When burning is complete, extinguish the fire so no smoldering debris remains. Dispose of unburned material in accordance to Drawings or Special Project Specifications.

   3. Burying. Bury debris in trenches or pits in approved areas within the right-of-way. Do not bury debris inside the roadway prism limits, beneath drainage ditches, or in any riparian areas. Place debris with earth material in alternating layers consisting of 3 feet of debris covered by 2 feet of earth. Distribute stumps, logs, and other large pieces to form a compact mass and minimize air voids. Fill all voids. Cover the top layer of buried debris with at least 12 inches of compacted earth. Grade and shape the area.

3. MEASUREMENT

The quantity to be measured will be the completed number of new units of the various items listed in the SCHEDULE OF ITEMS and accepted under this Section.

4. PAYMENT

The accepted quantities will be paid at the contract unit price shown in the SCHEDULE OF ITEMS.

854 HAZARD REMOVAL AND CLEANUP (3/12)

1. DESCRIPTION

This work consists of removing and disposing of marked hazards such as danger trees, rocks, and stumps.

2. MAINTENANCE REQUIREMENTS

a. Removal of trees shall include the felling and subsequent treatment of danger trees designated by the Government.

   1. Trees and snags felled away from and at right angles to the road centerline and resting entirely beyond the roadside limits of five (5) feet beyond roadway slopes shall be limbed to provide ground contact over two-thirds (2/3) or more of its length. When the ground contact condition cannot be met, additional bucking will be done to achieve the two-thirds (2/3) contact control. Trees and snags falling cross slope shall be limbed and bucked into manageable lengths, and re-oriented at right angles to the road centerline.
   2. Trees or snags falling into the roadway shall be limbed, bucked, and decked off of the roadbed.
   3. All materials remain the property of the Government unless otherwise provided in the contract.
   4. Woody debris and slash in excess of one (1) foot in length or one (1) inches in diameter shall not remain in ditches, drainage channels, or on back slopes, traveled way, shoulders or turnouts. Large accumulations of materials may be ordered hauled under 832. Materials not ordered hauled shall be hand piled or scattered down slope from the roadbed, avoiding any concentrations or drainage's.

b. Marked rocks and stumps shall be removed.

   1. Resulting holes outside the roadbed shall be back filled with native materials and mounded to drain after settlement.
   2. Removed rocks and stumps shall be hauled to the disposal site designated in the contract.

3. MEASUREMENT AND PAYMENT

No separate measurement or payment will be made for meeting requirements of this Section. All work and materials shall be incidental to other paid work in this contract.

862 MAINTENANCE OF TRAFFIC GATES AND BARRIERS (3/12)

1. DESCRIPTION

When required this work consists of cleaning and restoring existing traffic gates and appurtenances, and the installation of new gates and road barriers.

2. MATERIALS

a. The Government may furnish replacements for damaged or defective gates components which can be replaced. Government-furnished materials and location are shown in the DRAWINGS.
b. Paint, welding materials, tools, fasteners, cleaning materials, and other materials shall be incidentally furnished by Contractor.
b. New gates – Contractor shall supply, deliver and install new gates at locations shown in the DRAWINGS, Gates shall be fabricated to dimensions and materials shown in the DRAWINGS.
c. Road barriers - Contractor shall supply, deliver and install new road barriers at locations shown in the DRAWINGS.. Barriers shall be fabricated to dimensions and materials shown in the DRAWINGS..

3. MAINTENANCE REQUIREMENT

a. Loose fasteners on the rigid gates shall be tightened. Ruptured welds shall be rewelded and localized cracks welded.
b. Each gate must be cleaned and painted with a commercial rust inhibitor paint. Color shall be as shown in the DRAWINGS.
c. The Contractor shall inspect the gates and report remaining deficiencies to the Government.
d. Government will furnish component replacements as follows:

    1. Components will be available at the local Ranger District Monday through Friday, between the hours of 8:00 a.m. and 4:30 p.m. except on legal holidays. Contractor shall give 48 hours notice before obtaining materials.
    2. Contractor shall be responsible for loading and transport of the furnished components and removal and disposal of old components.

3. MEASUREMENT

a. When gate maintenance is required measurement shall be the all work required for the maintenance of each gate listed in the SCHEDULE OF ITEMS.

b. When new gate installation is required measurement shall be for all work required for the supply, delivery and installation of each gate listed in the SCHEDULE OF ITEMS that is completed and accepted.

4. PAYMENT

The quantities measured and accepted will be paid for at the contract unit price shown in the SCHEDULE OF ITEMS.

881 MOBILIZATION (3/12)

1. DESCRIPTION

This Section consists of one or more mobilizations of personnel, equipment, supplies, and incidentals to the project site, or sites listed in the Schedule of Items.

2. MEASUREMENT

When the contract establishes separate work periods within the contract time any additional mobilization included as a Bid Item will be retained until the actual work period.

3. PAYMENT

a. Progress payments will be made on the basis of the Bid Items contained in the SCHEDULE OF ITEMS as follows:

   1. When five (5) percent of the estimated contract amount in the work period is earned, fifty (50) percent of the amount of mobilization will be paid.
   2. When twenty-five (25) percent of the estimated contract amount in the work period is earned, one hundred (100) percent of the amount for mobilization will be paid.
   3. The total sum of all payments under this Section shall not exceed the total contract amount.
   4. The contract amount for mobilization shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals involved in mobilization.
   5. Payment shall be as shown in the SCHEDULE OF ITEMS.

882 EQUIPMENT MOVING (5/97)

1. DESCRIPTION

This Section provides for the ordered movement of equipment under this contract to accomplish timely maintenance when needs develop outside the Work Schedule. Nothing herein shall conflict with Mobilization which may be provided for in the Contract.

2. REQUIREMENTS

a. The Contractor's current Work Schedule, will be the basis for equipment moving.
b. Equipment moving to accomplish the Work Schedule is considered incidental and separate payment, therefore, will not be made. Changes from the Work Schedule ordered by the Government will be paid in accordance with this Section. Moves made at the election of the Contractor will not be paid.

3 MEASUREMENT AND PAYMENT

No separate measurement or payment will be made for meeting requirements of this Section. All work and materials shall be incidental to other paid work in this contract_

891 WATER SUPPLY AND WATERING (3/12)

1. DESCRIPTION

This work consists of providing facilities to furnish an adequate water supply, hauling and applying water, including times outside normal work hours.

2. MATERIALS

Suitable and adequate water sources and use restrictions are designated in the SALE AREA MAP or CONTRACT MAP. If the Contractor elects to provide water from other than designated sources, the Contractor shall be responsible to obtain the right to use the water including any cost for royalties involved. The rate of applications shall be based on the gallons per mile ordered by the Government.

3. EQUIPMENT

a. Mobile watering equipment shall have watertight tanks of known capacity. If tank capacity is not known, it shall be measured and certified by the Contractor prior to use.
b. Positive control of water application is required. Equipment shall provide uniform application of water without ponding or washing.
c. An air gap or positive anti-siphon device shall be provided between the water source and the vehicle being loaded if the vehicle has been used for other than water haul if the source is a domestic potable water supply, or the water is used for tank mixing with any other materials.
j. The designated water sources may require some work prior to their use. Such work may include cleaning ponded areas, installing temporary weirs, or sandbags, pipe repair, pump installation or other items appropriate to the Contractor's operations. Flowing streams may be temporarily sandbagged or a weir placed to pond water. Contractor shall obtain written approval on improvements for sandbags or weirs prior to placement.
k. Drafting devices must have screens with sieve holes 2 mm or less and avoid drafting from the deepest part of the pool. Drafting sites will be constructed so that oil, diesel fuel, or other pollutants will not enter the stream.

4. MEASUREMENT

a. Unless specified in the Schedule of Items, development of water supply sources shall be incidental to work ordered. If in the Schedule of Items, measurement for development of water supply sites will be the number of sites ordered and accepted. When the Contractor elects to furnish water from other than the site designated, the elected source will be measured as a water supply site.
b. Unless specified in the SCHEDULE OF ITEMS as watering for a specific Section of these specifications, measurement of water haul and application will be incidental. If indicated in the SCHEDULE OF ITEMS, measurement shall be M-GALLONS (1,000 gallons) using calibrated tanks, distributors, or accurate water meters furnished by the Contractor. Hauling shall be incidental. In no case will payment be made for more gallons than ordered by the Government.

5 PAYMENT

No separate measurement or payment will be made for meeting requirements of this Section. All work and materials shall be incidental to other paid work in this contract

892 BITUMINOUS PRODUCTS (5/97)

1. ASPHALT CEMENTS

Asphalt cement shall meet the requirements of AASHTO M 20 for penetration graded asphalt cement and to AASHTO M 226 for viscosity graded asphalt cement.

2. LIQUID ASPHALTS

Liquid asphalts shall meet the requirements of the following specifications:

Rapid Curing Liquid Asphalts	AASHTO M 81
Medium Curing Liquid Asphalts	AASHTO M 82
Slow Curing Liquid Asphalts	AASHTO M 141

3. EMULSIFIED ASPHALTS

Emulsified asphalts shall meet the requirements of the following specification:

Emulsified Asphalt (Anionic)	AASHTO M 140 (ASTM D 977)
Emulsified Asphalt (Cationic)	AASHTO M 208* (ASTM D 2397)

Delete footnote "d"

4. BITUMINOUS DUST PALLIATIVES

Bituminous dust palliatives shall meet the requirements listed in Table 892.06.

5. CERTIFICATE OF COMPLIANCE

a. In accordance with the requirements of Contract Section E-3, the following format is established.

Consignee_____ Designation_____
Contract Number_____ Date_____
Identification (Truck No. Car No., Etc.)_____
Type and Grade_____ With Additive (%, brand)_____
Loading Temperature_____ Net Weight_____
Net Gallons_____

b. The shipment of bituminous material identified above and covered by the bill of lading complies with Government Standard Specification as modified by Special Project Specifications applicable to this project.

Producer _____
Signed _____
(Producer's Representative)

6. APPLICATION TEMPERATURES

Bituminous materials shall be applied within the temperature ranges indicated in Table 892.06.

TABLE 892.06 - Application Temperatures

Application Temperature Range # (Degrees F)		
Type & Grade of Material	**Spray Min./Max.**	**Mix Min./Max.**
RT 1-2-3	60-130	60-130
RT 4-5-6	85-150	85-150
RT 7-8-9	150-225	50-225
RT 10-11-12	175-250	175-250
RTCB 10-11-12	60-120	60-120
RC-MC-SC 70	105-185	90-155
RC-MC-SC 250	140-225	125-200
RC-MC-SC 800	175-265	160-225
RC-MC-SC 3000	215-290	200-260
DO-1-2-3	80-125	
DO-4	80-175	
Emulsified Asphalts:		
RS-1, SS1, SS-1H, & CRS-1, CSS-1, CSS-1H	75-130	70-160
RS-2, MS-2, CR-2, & CMS-2S, CMS-2	110-160	70-160
DO-6-7-8	50-140	
Asphalt Cement (All Grades)	400 Max.	250-325
As required to achieve viscosity of 75-150 seconds. Saybolt-Furol or as required to achieve a Kinematic viscosity of 150-300 centistrokes.		

7. EQUIPMENT

The Contractor shall provide equipment for heating and applying the bituminous material. The bituminous distributor shall be self-powered and mounted on pneumatic tires. It shall be equipped with a pump and a circulating spray bar. The unit shall include a tachometer, pressure gauges, accurate volume measuring devices such as a visual volume dial or gauge calibrated to the tank, and a tank thermometer, All equipment shall be standard, commercial types, of proven performance.

8. WEATHER LIMITATIONS

Bituminous dust palliative treatment shall be applied only when the surface to be treated contains sufficient moisture to get uniform dispersion of the dust palliative when the road surface and atmospheric temperature are 50 degrees F or more and rising, or above 60 degrees F if falling; and when the weather is not foggy, rainy, or stormy.

893 AGGREGATE MATERIALS (3/12)

1. GENERAL MATERIAL REQUIREMENTS

1. Gradations for aggregates are included in below where the aggregates are not provided by the Government.
2. The inclusion of aggregate gradations does not constitute a warranty by the Government that commercial sources in the area are producing the gradation indicated. Aggregates commercially produced to meet State or County gradations and specifications for similar materials will be considered an equal alternate to the gradation in the contract provided the following quality requirements are met. Contractor shall provide testing and certification of supplied materials.

2. AGGREGATE FOR HOT BITUMINOUS PLANT-MIX

a. Coarse Aggregate - Coarse aggregate (retained on the No. 8 sieve) shall be crushed stone or crushed or natural gravel and shall conform to the quality requirements of AASHTO M 63. Gradation shall conform to the provisions of the Special Project Specifications.

b. Fine Aggregate - Fine aggregate (passing the No. 8 sieve) shall be manufactured and conform to the quality requirements of AASHTO M 29 (ASTM D 1073). It shall be of such a gradation that when combined with the other required aggregate fractions in the proper proportion, the resultant mixture will meet the gradation required.

Table 893-1. - Aggregate gradation requirements for hot asphalt concrete pavement.

Sieve Size (inch)	% by Weight Passing Designated Sieve (AASHTO T27 and T-11)			
	Grading Designation			
	A	B	D	F
2	-	-	-	-
1 ½	100	-	-	-
1	97-100	100	-	-
¾	-	97-100	100	-
½	-	76-88	97-100	-
3/8	53-70	-		100
No. 4	40-52	49-59	57-69	33-47
No. 8	25-39	36-45	41-49	7-13
No. 30	12-22	20-28	22-30	-
No. 50	8-16	13-21	13-21	-
No. 200	3-8	3-7	3-8	2-4

3. AGGREGATE FOR SPOT SURFACING

a. Crushed Aggregate for Base Course. Crushed aggregate for base course shall be crushed stone, slag or gravel, and shall be free of organic matter and other deleterious substances.

b. Crushed aggregate for base course shall meet the following quality requirements:

Resistance (R-Value), AASHTO T 190 . . . 78 Minimum Sand Equivalent, AASHTO T 176 . . 25 Minimum Durability Index, Coarse and Fine,AASHTO T 210 . . . . . 35 Minimum

c. Crushed aggregate for base course shall meet the requirements of Table 893-2 below, for the grading shown in the SCHEDULE OF ITEMS.

Table 893-2.—Crushed aggregate grading requirements for base course:

	GRADING A	GRADING B
Sieve	**1 ½" Max**	**¾" Max**
2-inch	100	-
1 1/2-inch	90-100	-
1-inch	-	100
3/4-inch	50-85	90-100
No. 4	25-45	35-60
No. 30	10-25	10-30
No.200	2-9	2-9

Aggregate gradation shall conform to the provisions of the Special Project Specifications and AASHTO M 147.

d. When crushed gravel is used, not less than 50 percent by weight of the particles retained on the No. 4 sieve shall have at least one fractured face.

e. Gradations of each designated size of aggregates shall be obtained by crushing, screening, and blending processes as may be necessary.

f. Materials otherwise meeting the requirements of this subsection will be acceptable whenever the gradations of such materials are within the tolerances corresponding to the selected sieve sizes required by the these specifications and whenever such materials produce a compacted course meeting density requirements as specified in Specification Section 811(2)(d).

894 CULVERT PIPE MATERIALS (3/12)

1. METALLIC-COATED CORRUGATED STEEL PIPE

Pipe, special sections (such as elbows) and coupling bands shall conform to AASHTO M 36M and AASHTO M 218, M 274, or M 289 for the dimensions and thicknesses specified. The thickness for steel pipe shall be as follows:

Diameter	Thickness
18"	.064
24"	.064
36"	.064
48"	.079

2. DUAL WALL POLYETHYLENE PIPE

Polyethylene pipe 18 in. to 48 in. in diameter shall conform to ASTM 894 and minimum cell class, ASTM D 3350, 334433C or 335434C.

Watertight joints shall conform to ASTM D 3212.

3. WATERTIGHT GASKETS

Gaskets for rigid pipe shall conform to AASHTO M198, type A or B.