

FOREST SERVICE
MAINTENANCE SPECIFICATIONS
FOR
RAGHORN CULVERT REMOVAL PROJECT
NFSR NO. 10802



U.S.D.A Forest Service, Region 1
Flathead National Forest
Glacier View Ranger District
Flathead County, Montana

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RAGHORN CULVERT REMOVAL PROJECT

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Section 800 Definitions and Abbreviations

800.1 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 Service Provider's Representative and are dated.
2. **Base course** - The layer or layers of material placed on a subbase or a subgrade to support a surface course. (See Illustration of Road Maintenance Terms.)
3. **Berm** - A curb or dike that controls roadway runoff water, or delineates traffic direction.
4. **Broad based dip** - A shallow ditch placed across the roadbed to remove water from the roadbed surface that can be driven across by high clearance vehicles; usually placed diagonal to the centerline.
5. **Catch Basin**. The area immediately adjacent to inlet invert of the culvert.
6. **Channel**. A natural waterway leading into or away from a culvert or bridge.
7. **Cross ditch**. A shallow ditch placed across the roadbed to remove water from the roadbed surface that can be driven across by full-size pickups or other high clearance vehicles; usually placed diagonal to the centerline.
8. **Culvert**. Any structure that provides a passageway, drain, or waterway under a road or embankment.
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 that was previously constructed within the roadbed surface to form a uniform depression that allows routine passage of vehicles while diverting water from the traveled way.
12. **Drainage ditch**. A ditch located parallel to and abutting the roadbed.
13. **Drainage structure**. A term identifying manufactured devices placed to control water movements.
14. **Drawings**. Illustrations showing details of required work.
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 in excess to that needed for maintenance of roadway.
17. **Foreslope**. The slope of the ditch section nearest to the traveled way.
18. **Grade**. The vertical alignment of the top surface of the road.
19. **Highway Vehicles**. Vehicles such as, passenger cars and high clearance vehicles.
20. **High Clearance Vehicles**. Vehicles such as, pickups, 4x4s, and log trucks.
21. **Hydrologic Function**. Physical properties of the occurrence and movement of water on the earth's surface and in particular that part which crosses transportation systems.

22. **Materials.** Any substances specified for use in the performance of the work.
23. **Measurement.** The process of identifying the dimensions, quantity, or capacity of an item..
24. **Nominal Dimensions or Weights.** The numerical values shown on the drawings or in the specifications as measurements for the work.
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. **Right-of-Way.** A general term denoting (1) the privilege to pass over land in some particular line (including easement, lease, permit, or license to occupy, use, or traverse public or private Lands), or (2) real property necessary for the project, including roadway, buffer areas, access, and drainage areas.
29. **Roadbed.** The portion of a road between the intersection of the subgrade and side slopes, excluding that portion of the ditch below the subgrade.
30. **Road Listing.** A preliminary listing of road locations and any established work priorities.
31. **Schedule of Items.** A schedule in the contract that contains a listing and description of maintenance items, quantities, units of measure, methods of measurement, unit price, and amount.
32. **Shoulder.** The portion of the roadway continuous to the traveled way for accommodation of stopped vehicles, emergency use, and lateral support of travel way structure.
33. **Slough or Slide.** Material deposited on the roadway that may need to be repositioned or removed.
34. **Slump.** A localized portion of the roadbed that has slipped, or otherwise become lower than the adjacent roadbed, and constitutes a hazard to traffic.
35. **Standard Specifications.** Specifications for all divisions of work.
36. **Subgrade.** Top surface of roadbed upon which the pavement structure, shoulders, and curbs are constructed.
37. **Traveled Way.** The portion of the roadway designated for the movement of vehicles, exclusive of shoulders but including turnouts and curve widening.
38. **Turnouts.** A short auxiliary lane on a one-lane road provided for passage of meeting vehicles.
39. **Unit of Measure.** The unit and fractions of units shown in the Schedule of Items.
40. **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.
41. **Waterbar.** A deeper type cross ditch, which is not intended for standard passenger vehicles.
42. **Work Schedule.** The Service Provider's current schedule for work progression.

800.2 Abbreviations

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.)

AASHTO – American Association of State Highway and Transportation Officials.

ASTM – American Society for Testing and Materials.

EPA – Environmental Protection Agency.

FAR – Federal Acquisition Regulation System.

FED SPEC – Federal Specifications.

FP-03 – Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects.

FSSS- Forest Service Supplemental Specifications

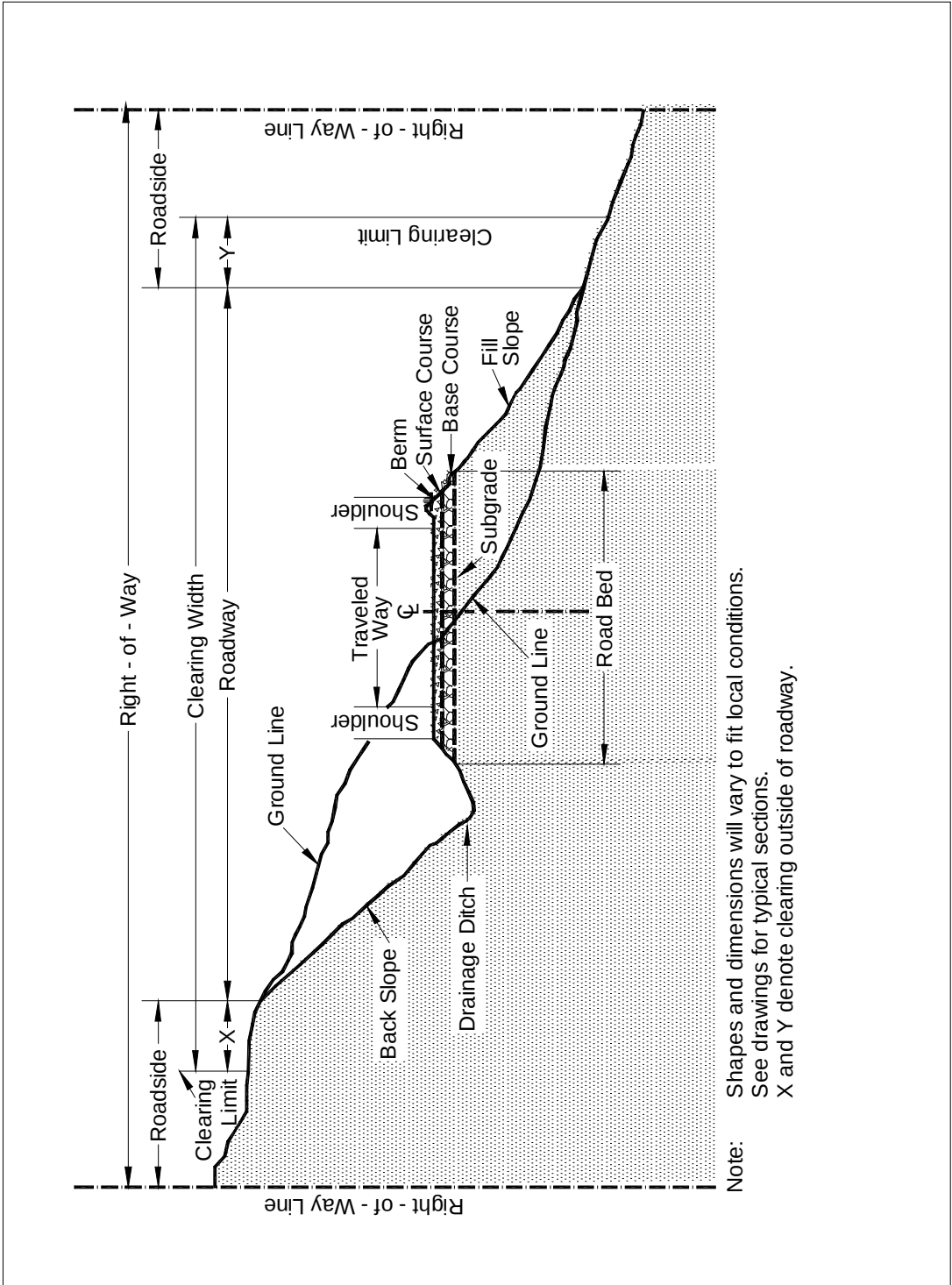
MSHA – Mine Safety Health Administration.

MUTCD – Manual of Uniform Traffic Control Devices.

NBS – National Bureau of Standards.

OSHA – Occupational Safety and Health Act.

Illustration of Road Maintenance Terms.



Section 801 Quantity Measurement Terms

1. U.S. Customary Units of measure are used in conjunction with these specifications.
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, which are measured by the feet, 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 one hundred feet, or a precise location along a survey line.
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. The term "ton" means 2000 pounds. 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.
7. 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.
8. 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 the length will multiply width treated and converted to a standard 10,000 square yard or acreage value of the surface area treated.
9. Measure square yard with horizontal longitudinal and traverse measurements.
10. The term "lump sum" when used in the Schedule of Items means the complete unit as required by or described in the contract.
11. Measurement will be made of each item or unit of work, as shown in the Schedule of Items, completed and accepted in accordance with the contract provisions, specifications, and drawings.

807 EQUIPMENT RENTAL

807.01

Service Required

Furnishing and operating equipment.

807.02

Performance Standards

- A. Equipment will be weed free before it is used on National Forest System lands.
- B. Make equipment available for inspection and approval before use. Contractor shall notify the Government 24 hours in advance of needed inspection. Furnish the equipment specified below:

Hydraulic Excavator

- 1. Tracked, Crawler-Type
- 2. Minimum flywheel horsepower: 85 to 110 SAE/ISO net horsepower
- 3. Year of Manufacture: 1985 or newer
- 4. Bucket equipped with "hydraulic thumb"
- 5. Bucket Capacity: 1.0 to 2.0 cubic yard
- 6. Minimum Reach: 20 feet
- 7. No Fluid Leaks

807.03

Location of Work

Location of work is as specified on roads listed on the ROAD LISTING, SHOWN ON THE PLANS, or as ordered by the Contracting Officer.

807.04

Measurement

- A. The accepted quantities will be paid at the established hourly rate, rounded to the nearest half (1/2) hour, that the equipment is in operation.
- B. Non-operable equipment or equipment dependent on another piece of non-operable equipment will not be paid for.
- C. Hours of operation shall be the same as for the Service Provider's regular work shift, unless otherwise directed in writing by the Contracting Officer.
- D. Moving of equipment will be paid at the established hourly rate.

807.05

Payment

The accepted quantities will be paid at the contract price per unit of measurement for the Section 807 pay items listed in the schedule of items. Payment will be full compensation for the work prescribed in this Section.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
807(1) Equipment, Type _____	Hour
807(2) Hydraulic Excavator	Hour
807(3) Backhoe	Hour
807(4) Grader	Hour
807(5) Crawler Tractor	Hour
807(6) Dump Truck	Hour
807(7) Brush Cutter	Hour
807(8) Drilling Rig	Hour
807(9) Roller	Hour
807(10) Trailer	Hour

Acceptable Quality Levels

Description	Major Defect	Minor Defect	Allowable Defects		Required Action	
			Major	Minor	Major	Minor
Weed free equipment	Equipment not weed free.	N/A	0	N/A	Equipment rejected until it can be made weed free	N/A
Maintenance of Equipment	Equipment not capable of operating at least 90% of the time	N/A	0	N/A	Replace defective equipment	N/A
Equipment meets all state and federal regulations	Does not meet state and federal regulations	N/A	0	N/A	Bring equipment up to state and federal regulations or replace equipment	N/A
Equipment leaks	Equipment leaks in sensitive areas or leaks that are large and not typically inherent in the specific equipment	Small leaks inherent in the specific type equipment	0	0	Replace equipment and restore affected site as directed by the Contracting Officer	Place absorbent pads under equipment when not operating.
Equipment will be operated by a fully trained, qualified, and competent operator at all times.	Operator not fully trained, qualified, and competent.	N/A	0	N/A	Stop equipment operation until a fully trained, qualified, and competent operator is available. Repair any damage done by incompetent operator as directed by the Contracting Officer	N/A

833 DRAINAGE STRUCTURE INSTALLATION OR REMOVAL (8/07)

833.01

Service Required

Install or remove drainage structures including culverts, water-bars, drivable drain dips, and cross ditches.

833.02

Performance Standard

Drainage structure installation is complete when culverts, water-bars, drivable drain dips and cross ditches have been installed to the lines and grades specified, and drainage structure removal is complete when designated culverts, water-bars and cross ditches have been removed and culverts have been properly disposed of.

833.03

Location of Work

As specified on roads listed on the ROAD LISTING, SHOWN ON THE PLANS, or as ordered by the Contracting Officer.

833.04

Measurement

Measurement under this Section will be made by the total number of units for each item listed in the SCHEDULE OF ITEMS completed and accepted.

A. Mile: Work activity will be measured along the centerline of the road regardless of the number of lanes.

B. Linear Foot: Work activities by the linear foot will be measured using standard survey methods rounded to the nearest one (1) foot. Culvert bands are incidental to the installation.

C. Each: Quantity is the actual number of units completed and accepted as listed in the SCHEDULE OF ITEMS.

833.05
Payment

A. The accepted quantities will be paid at the contract price per unit of measurement for the Section 833 pay items listed in the schedule of items. Payment will be full compensation for the work prescribed in this Section.

<u>Pay Item</u>	<u>Description</u>	<u>Pay Unit</u>
833(1)	_____ Inch corrugated metal pipe, _____ Inch thickness for steel, _____ Inch thickness for aluminum or _____ Inch thickness for Plastic	Linear Foot
833(2)	Culvert Removal	Each
833(3)	Water-bar Installation	Each
833(4)	Water-bar Installation	Mile
833(5)	Water-bar Removal	Each
833(6)	Water-bar Removal	Mile
833(7)	Cross Ditch Installation	Each
833(8)	Cross Ditch Installation	Mile
833(9)	Cross Ditch Removal	Each
833(10)	Cross Ditch Removal	Mile
833(11)	Drivable Grade Dip Installation	Each
833(12)	Drivable Grade Dip Installation	Mile

Acceptable Quality Levels

Description	Major Defect	Minor Defect	Allowable Defects		Required Action	
			Major	Minor	Major	Minor
Culvert size	Culvert is smaller than the designated diameter shown on the drawings.	Culvert is larger than the designated diameter shown on the drawings.	0	1	Remove culvert and replace with designated size	Accept if culvert fits the geometry of the road but pay at designated size otherwise replace
	Culvert is shorter than the designated length shown on the drawings.	Culvert is longer than the designated length shown on the drawings.	0	0	Replace or add section to fit geometry of road.	Remove excess culvert and treat cut end, or harden fill slope to prevent erosion and pay for ordered length
Grade and alignment of culvert	More than 10% deviation from original lines and grades.	10% or less deviation from original lines and grades.	0	1 per unit	Remove and replace culvert	Repair if greater than 1 minor defects
Sag or depression in road after placement of culvert and backfill material	Greater than 2 inch depression in traveled way	2 inch or less depression in traveled way	0	1 per unit	Furnish, place and compact designated material to repair depression.	Repair if greater than 1 minor defects
Removed culvert or pieces left on National Forest System Lands	Culverts or pieces of culvert left on National Forest System Lands	N/A	0	N/A	Remove from National Forest System Lands	N/A
Water-bars and cross ditches	More than 10% deviation from original lines and grades.	10% or less deviation from original lines and grades.	0	1 per unit	Rework	Rework if greater than 1 minor defects
Sedimentation	Operations cause or allow sediment to leave site.	N/A	0	N/A	Cease operations until sediment is controlled	N/A
Work Area Management	Not following approved safety plan which may include signs, flaggers, and other temporary traffic control measures	Not following approved safety plan which may include signs, flaggers, and other temporary traffic control measures	0	0	Suspend work until in compliance	Suspend work until in compliance

841 VEGETATION TREATMENT

841.01

Service Required

Apply vegetative treatments including seed, mulch, fertilizer or other products in designated areas.

841.02

Performance Standard

Treatment is complete when ordered quantities of vegetative treatment products have been applied to designated disturbed soil areas.

Apply seed, fertilizer and mulch according to section 625 and 713 included with these specifications.

836.03

Location of Work

As specified on roads listed on the ROAD LISTING, SHOWN ON THE PLANS, or as ordered by the Contracting Officer.

836.04

Measurement

Measurement under this Section will be made by the total number of units for each item listed in the SCHEDULE OF ITEMS completed and accepted.

A. Mile: Work activity will be measured along the centerline of the road regardless of the number of lanes.

B. Acres: Work activity will be measured to the nearest one-tenth (0.1) acre.

841.05

Payment

A. Item 841 is incidental to item 833(3). No separate payment will be made for item 841.

841.06

Acceptable Quality Levels

Description	Major Defect	Minor Defect	Allowable Defects		Required Action	
			Major	Minor	Major	Minor
Seed Mix	Seed mix is not as specified	N/A	0	N/A	Reject and replace	N/A
Mulch	Mulch is not as specified	N/A	0	N/A	Reject and replace	N/A
Fertilizer	Fertilizer is not as specified	N/A	0	N/A	Reject and replace	N/A
Weeds	Does not conform to Federal, State, and Local seed and noxious weed acts and laws.	N/A	0	N/A	Reject and replace	N/A
Application	Less than 80% of the designated area is treated	Between 80% and 100% of the designated area is treated	0	0	Rework	Rework
Work Area Management	Not following approved safety plan which may include signs, flaggers, and other temporary traffic control measures	N/A	0	N/A	Suspend work until in compliance	N/A

881 MOBILIZATION / EQUIPMENT MOVING

881.01

Service Required

- A. Mobilization of personnel, equipment, and material to the project site.
- B. Moving of equipment outside the established work schedule as ordered.

881.02

Performance Standards

- A. Make equipment available for inspection before it is used on National Forest System lands. Contractor shall notify the Government 24 hours in advance of equipment mobilizing to the project.
- B. Moving is complete, when the contractor has moved from the present work site to the ordered work site and returned to the previous location.
- C. Equipment will be clean and weed free before it arrives on National Forest System lands.

881.03

Location of Work:

As specified on roads listed on the ROAD LISTING, SHOWN ON THE PLANS, or as ordered by the Contracting Officer.

881.04

Measurement:

Measurement under this Section will be made by the total number of units for each item listed in the SCHEDULE OF ITEMS completed and accepted.

- A. Mile: Work activity will be measured along the shortest feasible route to the nearest one (1) mile, from the starting location of the move, to the ordered work site.
- B. Each: Quantity is the actual number of units completed and accepted as listed in the SCHEDULE OF ITEMS.

881.05
Payment

- A. The accepted quantities will be paid at the contract price per unit of measurement for the Section 881 pay items listed in the schedule of items. Mobilization is complete when all equipment, personnel, and materials are moved to the project site and work has been started. Payment will be full compensation for the work prescribed in this Section.

<u>Pay Item</u>		<u>Pay Unit</u>
881(1)	Mobilization	Lump Sum
881(2)	Mobilization	Each
881(3)	Equipment Moving	Miles

881.06

Acceptable Quality Levels

Description	Major Defect	Minor Defect	Allowable Defects		Required Action	
			Major	Minor	Major	Minor
Weed free equipment	Equipment not weed free.	N/A	0	N/A	Equipment rejected until it can be made weed free	N/A
Ordered Movement of Equipment	Equipment not moved within designated time	N/A	1	N/A	Reduce unit cost by 5% for 1 hour amount of time over designated time	N/A
Equipment meets all state and federal regulations	Does not meet state and federal regulations	N/A	0	N/A	Bring equipment up to state and federal regulations or replace equipment	N/A
Equipment leaks	Equipment leaks in sensitive areas or leaks that are large and not typically inherent in the specific equipment	Small leaks inherent in the specific type equipment	0	N/A	Replace equipment and restore affected site as directed by the Contracting Officer	Place absorbent pads under equipment when not operating.

625 - Turf Establishment

Description

625.01 This work consists of soil preparation, watering, fertilizing, seeding, and mulching.

Seeding and mulching methods are designated as dry or hydraulic.

Construction Requirements

625.03 General.

Apply turf establishment to portions of waterbars, slopes, ditches, waste areas, and other disturbed areas as soon as possible after being constructed to template lines unless otherwise specified in writing by the Contracting Officer; or during windy weather; or when the ground is excessively wet, frozen, or snow covered.

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

625.06 Fertilizing.

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

(a) Dry Method. Apply the fertilizer with approved power driven seeders, drills, fertilizer spreaders or other mechanical equipment. Hand operated methods are satisfactory on areas inaccessible to mechanical equipment.

Fertilizer. The fertilizer shall be a slow release organic fertilizer applied at a rate of 100 pounds per acre by dry method with an N-P-K formulation of:

<u>Nutrient</u>	<u>Percent</u>
Nitrogen, N	<u>16 %</u>
Phosphorus, P205	<u>16 %</u>
Potassium, K	<u>16 %</u>

625.07 Seeding.

Apply seed mix by the following methods.

(a) Dry method. Apply the seed with approved power driven seeders, drills, or other mechanical equipment. Hand-operated seeding methods are satisfactory on areas inaccessible to mechanical equipment.

(b) Hydraulic method. Use hydraulic-type equipment capable of providing a uniform application using water as the carrying agent. Add a tracer material consisting of either wood or grass cellulose fiber mulch to the water. Apply the tracer material at a rate of 400 pounds per acre to provide visible evidence of uniform application. Add the seed to the water slurry no more than 30 minutes before application. Seed by hand areas inaccessible to seeding equipment.

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

Common Name	Species	Pure Live Seed (Lbs / Acre)	% by weight
1. Blue wildrye (Native)	Elymus glaucus	5	21
2. Mountain brome (Native)	Bromus marginatus	9	38
3. Bluebunch wheat grass (Native)	Pseudoroegneria spicata	4	16
4. Slender Wheatgrass (Native)	Elymus trachycaulus	6	25
Total		24 / acre	100

Seed Certification

Certified, blue-tagged seed shall be used where a name variety or cultivar is specified. Blue tags that are removed to mix or spread the seed will be saved and provided to the Forest.

All seed purchased will be certified free of seeds from weeds listed on the current "All States Noxious Weeds List."

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

$$x = \frac{(5 \text{ lbs Pure Seed per Acre})}{(0.90 \times 0.85)} = 6.55 \text{ (lbs commercial seed per acre)}$$

where: purity = 90%; germination = 85%.

625.08 Mulching.

Mulch material shall be weed free straw and shall be applied at a uniform rate to adequately cover the seed. The weed free straw shall be from a grain crop such as barley straw, wheat straw or oat straw.

Mulch will be applied at the rate of 1 Ton per Acre.

625.09 Protecting and Caring for Seeded Areas

Protect and care for seeded areas until final acceptance. Repair all damage to seeded areas by reseeding, refertilizing, and remulching. Apply supplemental applications of seed, mulch, fertilizer, lime, or ammonium nitrate.

625.11 Measurement.

Section 625 items are incidental to item 833(3).

Section 713. — ROADSIDE IMPROVEMENT MATERIAL

713.01 Fertilizer. Furnish standard commercial grade dry formulated fertilizer conforming to the standards of the Association of Official Analytical Chemists International, applicable State and Federal regulations, and required minimum percentages of available nutrients. Supply the fertilizer in new, clean, sealed, and properly labeled containers with name, mass, and guaranteed analysis of contents clearly marked.

Liquid fertilizer containing the minimum percentage of available nutrients may be used.

713.02 Seed. Conform to the Federal Seed Act, the Federal Noxious Weed Act, and applicable State and local seed and noxious weed laws. Do not use wet, moldy, or otherwise contaminated or damaged seed. Furnish each seed type in separate sealed container. Clearly label each container with the following:

- (a) Name and type of seed;
- (b) Lot number;
- (c) Net mass;
- (d) Percent of purity, germination, and hard seed;
- (e) Percent of maximum weed seed content;
- (f) Seed Origin;
- (g) Noxious weeds present;
- (h) Other crop seed;
- (i) Inert matter;
- (j) Name and address of seed distributor; and
- (k) Mixture percent of each component.

Inoculate legume seed with approved cultures according to the manufacturer's instructions.

713.03 Mulch.

(a) **Straw.** Furnish certified weed free straw from oats, wheat, rye, or other grain crops that is free from mold or other objectionable material. Furnish straw in an air-dry condition suitable for placing with mulch blower equipment.