



IPNF SPECIAL PROJECT SPECIFICATION  
Snow-Way T.S.

**Section 101 - Abbreviations**

**101.02 Delete in its entirety and substitute the following:**

Pay Items &

Pay Units

"& .....	And	M.....	Metal
AC .....	Acre	MAX.....	Maximum
AL.....	Aluminum	MBF.....	One Thousand Feet Board Measure
ASP.....	Asphalt	MGALS.....	One Thousand Gallons
AVAIL.....	Available	MHD.....	Method
BARR.....	Barrier	MI.....	Mile
BKN.....	Broken	MIN.....	Minimum
BST.....	Bituminous Surface Treatment	MISC.....	Miscellaneous
CATTLEGD.....	Cattleguard	MP.....	Mile Post
CLEAR (CLG).....	Clearing	MSF.....	One Thousand Square Feet
CLEAR/GRUB.....	Clearing & Grubbing	OTBC.....	Open Top Box Culvert
CMP.....	Corrugated Metal Pipe	P M.....	Placement Method
COMP.....	Compaction	PVC.....	Polyvinylchloride
CONC.....	Concrete	RD.....	Road
CONST.....	Construction (Construct)	RECOND.....	Reconditioning
CTD.....	Coated (Coating)	RECONST.....	Reconstruction (Reconstruct)
CUSH.....	Cushion	REFL.....	Reflectorized
CY (CU YD).....	Cubic Yard	RT.....	Right
CY MI (CYM).....	Cubic Yard Mile	STMP (STP).....	Stump(s)
DIA.....	Diameter	SB.....	Self Balance
DL.....	Double Lane	SEC.....	Section
DWGS.....	Drawings	SF.....	Square Foot (Feet)
EA.....	Each	SL.....	Single Lane
EMB.....	Embankment	SLD.....	Solid
EXC.....	Excavation	ST.....	Slash Treatment
F&I.....	Furnish & Install	STA.....	Station (100 Feet)
FDN.....	Foundation	STA YD.....	Station Yard
FT.....	Foot (Feet)	STL.....	Steel
FUNC.....	Function	STR (STRUC).....	Structural
GAL.....	Gallon	SY (SQ YD).....	Square Yard
GR.....	Grade	SZ.....	Size
GRUB.....	Grubbing	T&L.....	Tops & Limbs
HDPE.....	High Density Polyethylene	TBR.....	Timber
HOR.....	Horizontal	TH.....	Thickness
HR.....	Hour	TM.....	Ton Mile
HT.....	Height	TO.....	Turnout
I.....	Install	TOL.....	Turnout Left
IN.....	Inches	TOR.....	Turnout right
INCL.....	Including (Includes)	TRS.....	Trees
IND.....	Individual	UOT.....	Utilization of timber
JCT.....	Junction	VERT.....	Vertical
L.....	Logs	W.....	Width
LBS.....	Pounds	W/.....	With
LDG.....	Loading	W/O.....	Without
LF (LIN FT).....	Linear (lineal) Foot	X-SEC.....	Cross Section
LS.....	Lump Sum	YD.....	Yard
LT.....	Left		
MAT'L.....	Material		

SPECIAL PROJECT SPECIFICATION  
Snow-Way T.S.

**Section 104 - Maintenance for Traffic**

104.01  
Roads to be  
Constructed

Delete the first two paragraphs and replace with the following:

"Road 402 shall be maintained for traffic during project work. When CMPs are installed traffic shall not be delayed more than 3 hours. The contracting officer shall be notified 7 days in advance of culvert installation to allow for public notice of possible delays. Signs shall be placed to warn of delays. Roads 402A and 2190 maybe closed during road reconstruction.

Prior to the Contractor shutting down any operations, the Contractor shall take such precautions as may be necessary to prevent damage to the project, such as approaches, crossings or intersections; and shall make provisions for normal drainage and minimization of erosion.

**CONSTRUCTION SIGNING**

The contractor shall provide, erect, and maintain all necessary barricades, suitable and sufficient signs, and other traffic control devices and shall take necessary precautions for the protection of the work and safety of the public as SHOWN IN THE DRAWINGS.

**PAYMENT**

104.06  
Basis

The following shall be added:

"Payment for construction signing and traffic control under this section shall be considered subsidiary to Pay Item 601 - Mobilization and no separate payment will be made."

**SECTION 201A - ROADWAY BRUSHING**

DESCRIPTION

- 201A.01      This work shall consist of removing limbs, residual slash, live roadside brush, and  
Work            small trees between, or obtruding into, the designated brushing limits. The brushing  
limits           shall be AS SHOWN ON THE DRAWINGS. Brushing areas shall include turnouts.  
CONSTRUCTION
- 201A.02      All brush and small trees (6 inches diameter, or less, at the point of cut) inside the  
Clearing &      brushing limits and outside the roadbed shall be cut off no higher than 4 inches  
Brushing        above ground level (6 inches for machine brushing). Should rocks or other  
obstructions    be encountered, the cutting height shall be no higher than 6 inches above the  
                     obstruction. Live trees with a diameter larger than 6 inches should be limbed to a  
                     height of 10 feet above the road surface. All brush and trees located on the roadbed  
                     shall be cut as nearly flush to the road surface as possible so stumps will not become  
                     a hazard to automobile tires.
- 201A.03      Windfalls lying within or across the brushing limits shall be limbed and cut off at a  
Windfalls      horizontal distance of 10 feet from each shoulder or at the brushing limit, which ever  
is                is  
                     least. Cut windfall material shall be disposed of as slash.
- 201A.04      No brushing debris shall be deposited in the traveled way Road Junctions and/or  
                     ditches of adjoining roads.
- 201A.06      All slash shall be scattered outside the brushing limits without damaging residual  
Slash            trees. Slash shall be defined as any material cut that has a length greater than  
Treatment      36 inches or with a diameter greater than 3 inches at any point. No material shall be  
                     deposited in streams, streambeds, culvert inlets or outlets, or drainage ways.

MEASUREMENT

- 201A.07      The method of measurement, described in Section 106, will be DESIGNATED in  
Method        the SCHEDULE OF ITEMS.

Linear measurements will be horizontal along the road centerline.

Quantities will be the number of miles (or stations) and fractions thereof along the road centerline, regardless of the amount of work required.



**Section 204 - Soil Erosion & Water Pollution Control**

DESCRIPTION

204.01  
Work

Delete in entirety and substitute the following:

"This work consists of special temporary and/or permanent construction measures as SHOWN ON THE DRAWINGS and/or listed in this specification to control soil erosion and water pollution. Such measures may include (but are not limited to) filter windrows, slash blankets, brush barriers, drainage devices, earth berms, earthen water bars, sediment basins, aggregate base/surfacing, rock ditches, riprap, seeding, mulching, and/or straw bales.

This work shall also include special construction methods SHOWN ON THE DRAWINGS to control erosion at control areas."

MATERIALS

204.02  
Requirements

Delete the 2nd paragraph and substitute the following:

"All other materials shall meet commercial grade standards and shall be approved before being incorporated into the project."

CONSTRUCTION

204.03  
Performance

Delete the 2nd paragraph and substitute the following:

"Erosion control measures shall be incorporated into the project no later than the dates specified in Table 204.1. Variations in this schedule must be approved in writing by the Engineer."

Add the following after the 3rd paragraph:

"The following construction requirements shall apply:

- a.- Earthwork. Clearing and grubbing, excavation, borrow and embankment operations shall be scheduled and performed so that grading operations and permanent erosion control measures can follow without interference or be constructed within the time periods listed in Table 204.1.

IPNF SPECIAL PROJECT SPECIFICATION  
Snow-Way T.S.

- b.- Wet Conditions. The contractor shall conduct operations so as to minimize erosion and not develop conditions that will cause erosion. Work may continue during wet conditions as long as erosion and rutting is controlled.
- c.- End of Construction Season and prior to Move-out. Any rutted areas and other damaged areas shall be smoothed, sloped and graded to drain. All temporary stream course diversion conduits and temporary culverts shall be removed and the stream returned to its natural channel. All erosion control measures required under this specification shall be functional and approved by the Engineer.

MEASUREMENT

204.04  
Method

Add the following to the first paragraph:

"Items not shown in the SCHEDULE OF ITEMS will not be measured."

PAYMENT

204.05  
Basis

Add the following:

"Other erosion control work required under this specification and not shown in the SCHEDULE OF ITEMS is considered incidental to pay items in the Section listed in Table 204.1."

TABLE 204.1

SECTION	DURATION	DESCRIPTION OF WORK	TIMING OF CONSTRUCTION
203	Permanent	<u>Culvert Catch Basins and Ditch Transitions</u>	Concurrently with culvert installation.
Incidental to 201, 203, 304, 603 or 625		<u>Special Construction Methods.</u> Specific locations and requirements shown on the drawings, and/or described in the Special Project Specifications.	As described on the drawings and/or in the Special Project Specifications.
Incidental to 203	Temporary	<u>Straw Bales/Straw Mulch.</u> As necessary to stabilize eroding areas.	Immediately upon discovery of active erosion.
304	Permanent	<u>Aggregate Base/Surfacing</u> The total length of all areas of disturbed earth (including pioneer roads and completed subgrades) on which gravel has not been placed shall not exceed the length of the disturbed site and be placed concurrently with the other work at the site.  This requirement <u>may</u> be waived by the Engineer based on a review of the Contractor's operations, methods, and progress in controlling erosion and keeping erosion control features current as described in this specification. Such waiver, if given, shall be in writing.	See description of work.
412	Permanent	<u>Dust Palliative</u>	The Forest Service will be notified 48 hours prior to application.
603	Permanent	<u>Culverts and Cross Drains</u>	concurrently with road reconstruction. Culverts in perennial streams shall be installed between 7/15 and 9/15 of the calendar year.
619	Permanent	<u>Culvert Inlet/Outlet</u>  <u>Riprap</u>	Concurrently with culvert installations in live streams:  Concurrently with culvert installations

REGIONAL SPECIAL PROJECT SPECIFICATION  
Snow-Way T.S.

**Section 304A - Aggregate Surface Course**

DESCRIPTION

304A.01  
Work

This work shall consist of furnishing, hauling, and placing aggregate surfacing on subgrade, base or stockpile site approved by the Engineer. Work may include the addition of bentonite binder as specified herein. Aggregate production shall be by crushing methods, or furnished by the Government, as shown in the SCHEDULE OF ITEMS.

MATERIALS

304A.02  
Source

Materials shall be obtained from sources or stockpiles SHOWN ON THE DRAWINGS or other approved sources. Development and utilization of government-furnished sources shall be in accordance with Section 611.

304A.03  
Gradation

Grading requirements for crushing or screening operations shall meet the requirements of Subsection 703.06. Crushing operations may require scalping, sorting, rejecting, and/or blending of material within the source prior to feeding the crusher; rejecting portions of the material during the crushing operation; reducing crusher output to manufacture sand-size material; increasing the amount of crushing and/or screening equipment; and/or conducting more than the contract minimum amount of testing, as needed to meet the requirements of Subsection 703.06.

304A.04  
Quality

All aggregate except Government-furnished stockpiles shall meet the quality requirements of Subsection 703.06 unless otherwise required in the SPECIAL PROJECT SPECIFICATIONS.

304A.05 (Reserved)

REGIONAL SPECIAL PROJECT SPECIFICATION  
Snow-Way T.S.

304A.06  
Water

Water development, hauling, and application shall be in accordance with Section 207.

304A.07  
Bentonite  
Binder

When shown in the SCHEDULE OF ITEMS, binder shall be furnished by the contractor and uniformly added by stationary plant method during the crushing or loading operation or as SHOWN ON THE DRAWINGS. The binder shall be a Sodium Montmorillonite (Sodium Bentonite), in powder form that meets the quality requirements of Subsection 703.06

The following sources in Wyoming, Idaho and Oregon have furnished bentonite that meets these requirements:

Teague Mineral Products, Adrian, Oregon, 541-339-3940

Wyo-Ben Inc, 800/548-7055 Central Oregon Bentonite, 503/477-3351

American Colloid Co. 708/392-4600

CONSTRUCTION

304A.08  
Preparation  
of Roadbed

The roadbed shall be completed in accordance with Section 203 or 306 and approved in writing by the Engineer before placing surface course.

REGIONAL SPECIAL PROJECT SPECIFICATION  
Snow-Way T.S.

304A.09  
Mixing and  
Placing

The contractor may mix the aggregate and water by any one of the three following methods unless a required method is SHOWN ON THE DRAWINGS.

- (a) Stationary Plant Method. The aggregate shall be mixed in an approved mixer. Water shall be added during the mixing operation in the amount necessary to provide the moisture content for compacting to the specified density. After mixing, the aggregate shall be transported to the jobsite while it contains the proper moisture content.
- (b) Travel Plant Method. After the aggregate for each layer has been placed with an aggregate spreader or windrow sizing device, it shall be uniformly mixed by a traveling mixing plant. During mixing, water shall be added to provide the necessary moisture content for compacting.
- (c) Road Mix Method. After the aggregate for each layer has been placed, it shall be mixed at the required moisture content until the mixture is uniform throughout.

The aggregate shall be spread in a uniform layer, with no segregation of size, and to a loose depth that shall have the required thickness when compacted. Spreading shall be done within four hours of placement. The aggregate shall be watered to prevent dusting and ravelling until final acceptance.

If the required compacted depth of any aggregate base or surface course exceeds 6 inches, it shall be placed in two or more layers of approximately equal thickness. Hauling equipment shall be operated over the surface of the previously constructed layer in a dispersed manner to minimize rutting or uneven compaction.

304A.10  
Compaction

The aggregate shall be compacted by one of the following methods as specified on the SCHEDULE OF ITEMS:

Compaction A. Aggregate shall be compacted by operating spreading and hauling equipment over the full width of each layer of aggregate.

REGIONAL SPECIAL PROJECT SPECIFICATION  
Snow-Way T.S.

Compaction B. Aggregate shall be moistened or dried to a uniform moisture content suitable for compaction. Rollers meeting the requirements of Subsection 212.02(b), (c), or (d) shall be operated over the full width of each layer until visual displacement ceases, but not fewer than three complete passes.

Compaction C: Compaction equipment shall be operated over the full width of each layer of aggregate. All but the outside one foot of width shall exceed 96 percent of the maximum density as determined by the Modified Marshall Hammer Compaction Method described herein.

"Compaction D: Compaction equipment shall be operated over the full width of each layer of aggregate. All but the outside one foot of width shall exceed 100 percent of the maximum density as determined by the Modified Marshall Hammer Compaction Method described herein.

"Compaction E: Each layer shall be compacted using density control strips. Acceptance of compaction will be based on adherence to an approved roller pattern developed as specified in Section 212. The target density will be at least the density specified for Compaction C, above.

The surface of each layer shall be bladed during the compaction operations to remove irregularities and produce a smooth, even surface. When a density requirement is specified, the density of each layer will be determined in accordance with AASHTO T191, T205 or T238; T239 or T255; and T224.

304A.11  
Stockpiling

If shown in the SCHEDULE OF ITEMS or if the contractor elects to produce and Stockpiling stockpile aggregate prior to placement, the aggregate shall be handled and stockpiled in accordance with the following requirements. Aggregate stockpile sites shall be prepared by clearing and disposing or treating of all trees, stumps, brush, and debris in accordance with Section 201. The area for each stockpile shall be reasonably uniform in cross section and drain. The floor shall be compacted with at least 3 passes of a vibratory steel roller. A four-inch minimum thickness of crushed aggregate cushion material shall be placed on the prepared stockpile area. The crushed aggregate used for cushion shall meet the specified gradation requirements for the ½-inch sieve.

REGIONAL SPECIAL PROJECT SPECIFICATION  
Snow-Way T.S.

The Engineer will approve the stockpile site preparation, aggregate cushion placement, and initial cross section survey prior to stockpiling.

After placement of the aggregate cushion, the contractor shall establish a control survey outside the perimeter of the proposed stockpile, and perform an initial cross section survey on the cushion material surface. The control survey shall have horizontal accuracy of one half degree, and vertical accuracy of 0.1 foot, and be tied to a nearby benchmark. Reinforcing steel stakes (1/2 by 24 inch) shall be driven at each point of intersection on the survey. Cross sections shall be done at 25 foot or closer intervals along the long axis of the stockpile. The Contractor shall use the initial cross section survey locations for cross sectioning the completed stockpile. The Engineer may approve other methods of survey. All survey information will be given to the Engineer for verification in accordance with Subsection 160.05(b).

The completed stockpiles shall be neat and regular in form and shall be made to occupy the smallest feasible areas. The height of the piles or their average depth shall not be less than 20 feet unless approved by the Engineer. The side slopes shall be constructed at a slope ratio between 1-1/4 and 1-1/2 to 1. No material shall be allowed to "cone" down over the next lower layer. Each completed layer after leveling shall not exceed 5 feet in thickness. Construct stockpile layers by spreading aggregates with trucks or other approved pneumatic-tired equipment. Do not push aggregates into piles.

304A.12

Modified Marshall

Hammer Compaction Method

1. Scope
  - 1.1 This method of test is intended for determining the maximum density of aggregate surfacing material that is compacted in a four-inch mold with a Marshall hammer.
2. Apparatus
  - 2.1 Molds - The four-inch diameter mold shall meet the AASHTO T99 apparatus requirements.
  - 2.2 Compaction Hammer - The 10-pound hammer shall meet the requirements shown in AASHTO T245.
  - 2.3 Compaction Base - A block of concrete weighing not less than 200 pounds supported by a relatively stable foundation, or a sound concrete floor.

REGIONAL SPECIAL PROJECT SPECIFICATION  
Snow-Way T.S.

- 2.4 Balances, Scales, Drying Oven, Sieves, Mixing Tools, and Containers must meet AASHTO T99 requirements.
- 2.5 Straight edge ruler capable of reading 1/16 inch or smaller.
3. Sample - A representative field sample weighing at least 50 pounds.
4. Procedure
  - 4.1 Dry the field sample in air or by use of a drying apparatus such that the temperature does not exceed 140° F. Separate the sample over a ¾-inch sieve and record weights of the plus and minus ¾-inch materials. Calculate the percent plus ¾ inch and discard the plus ¾-inch material afterwards.
  - 4.2 Dampen all the ¾-inch minus material to approximately 4 percent below optimum moisture.
  - 4.3 With the collar attached to the mold and base, measure the inside height from the base inside the mold to the top of the attached collar, to the nearest 1/16-inch (height will be used in the volume calculations in Section 5).
    - 4.4 Weigh mold with attached collar and base. Compact material in the mold in 3 layers, with 40 blows per layer. Total thickness of the 3 layers should be close to 5 inches. **Do not remove collar!!**
    - 4.5 Weigh mold, collar and base with compacted sample and calculate the wet weight of the sample.
    - 4.6 To the nearest 1/16 inch, measure the vertical distance from the top of collar down to the surface of the compacted sample in four places approximately 90° from each other. Average the four measurements and record (the average measurement will be used in the volume calculations in Section 5).
    - 4.7 Extrude all material from mold and dry it all to constant weight at 230°± 9° F to determine percent moisture content; do not re-use material.
    - 4.8 Add and mix the following amount of water to remainder of the dampened sample:  
amount of water added = (remaining wet sample weight) x 1.5%
    - 4.9 Repeat steps 4.4 thru 4.8 until one of the following conditions exists:
      - a. A decrease or no change in the compacted wet density (lb/cf). Wet density will have to be calculated after each trial using the height of sample (see Section 5).
      - b. Excess free moisture exudes from the base of the mold during compaction.

REGIONAL SPECIAL PROJECT SPECIFICATION  
Snow-Way T.S.

5. Calculations

Volume (V) of Individual trial or sample:

$$V(\text{ft}^3) = (\text{Mold Cross Sectional Area}) \times (\text{material height}) / (1728)$$

$$V(\text{ft}^3) = (3.1416) \times (2")^2 \times (\text{material height}) / (1728)$$

V in cubic feet (cf) = 0.00727 x material height in inches

Material = (height from Sec 4.3) - (ave measurement from Sec 4.6)  
height

$$\text{Wet Density in pounds per cubic foot (lb/cf)} = \frac{\text{Wet Weight (lbs) from Sec 4.5}}{V(\text{cf})}$$

$$\text{Dry Density in pounds per cubic foot (lb/cf)} = \frac{\text{Wet Density (lb/cf)}}{1 + \frac{\% \text{ Moisture}}{100}}$$

6. Moisture Density Relationship - See this section in AASHTO T99.  
Add the following:

- (a) Optimum moisture content may also be the point at which moisture exudes from the mold during compaction.
- (b) Maximum density shall be adjusted for the plus 3/4" material contained in the field sample, but not used in the test. The adjustment shall be made by the following formula:

$$\text{Adjusted Max Density} = (\text{Maximum Density}) + (0.125)(\text{Percent Plus } 3/4")$$

7. Report - The report shall include the following:

- (a) The optimum moisture content as a percentage to the nearest whole number.
- (b) The maximum dry density in pounds per cubic foot to the nearest whole number.
- (c) The percent plus 3/4-inch sieve size material in the original field sample.
- (d) The adjusted maximum density in pounds per cubic foot using the formula from Section 6(b).

REGIONAL SPECIAL PROJECT SPECIFICATION  
Snow-Way T.S.

304A.13  
Thickness  
and Width  
Requirements

The thickness and width of the compacted aggregate shall conform to the dimensions SHOWN ON THE DRAWINGS. Measurements on the compacted aggregate thickness shall meet the following criteria:

- (a) The maximum variation from the specified thickness shall be 1 inch.
- (b) The average thickness measurement for any one-mile road segments shall be within ¼-inch of the specified thickness.

No compensation will be made for correcting widths or thicknesses that do not meet these requirements. For actual quantity contracts, a reduction in payment may be made for aggregate widths or thickness that exceed the criteria shown above.

MEASUREMENT

304A.14  
Method

The method of measurement as described in Section 106 will be DESIGNATED in the SCHEDULE OF ITEMS.

Aggregate quantities will include binder. The quantity of Sodium Bentonite Binder used for payment shall be adjusted to 0 percent moisture content by AASHTO T 265.

PAYMENT

304A.15  
Basis

The accepted quantities will be paid for at the contract unit price for each pay item shown in the SCHEDULE OF ITEMS, except payment for crushed aggregate will be determined by the Weighted Pay Factor (WPF) method shown below. The weighted pay factor will be based on gradation and size ratio test result data after all binder and fillers have been added. If the WPF is equal to or greater than 0.70, the unit price for payment will be determined by multiplying the unit price in the contract by the WPF. If the WPF is less than 0.70, no payment will be made.

REGIONAL SPECIAL PROJECT SPECIFICATION  
Snow-Way T.S.

$$\text{WPF} = (A) \frac{\text{Sum of: } [(\text{Component Pay Factor}) \times (\text{Component "F" Factor})]}{\text{Sum of: ("F" Factors)}}$$

(A) = 1.0, if the "mean" of the Percent Passing the maximum sieve size is  $\geq 98\%$  and  $\leq 100\%$ . If the "mean" is  $\geq 90\%$  and  $< 98\%$ , (A) equals the "mean" expressed as a decimal. If the "mean" is  $< 90\%$ , (A) = 0.0 and no payment will be made.

The Component Pay Factor will be determined by SPS 106.07

<u>Component</u>	<u>"F" Factor</u>
Maximum Size Sieve	Not Applicable
% Passing all sieves but No. 4 and No. 200	5 each
No. 4 Sieve	15
No. 200 Sieve	35
Maximum Difference between Size Ratios	35

If the entire quantity of aggregate is stockpiled in accordance with Subsection 304A.11, the standard deviation used for computing the Pay Factor in Subsection 106.07 will be one-half the standard deviation of the test data.

<u>Pay Item</u>	<u>Pay Unit</u>
304A(01)    Crushed Aggregate, Type Grading _____, Compaction _____ .	..... C.Y.
304A(02)    Crushed Aggregate, Type Grading _____, Compaction _____ .	..... TON
304A(03)    Placing Aggregate, Compaction _____ .	..... C.Y.
304A(04)    Placing Aggregate, Compaction _____ .	..... TON
304A(05)    Placing Aggregate, Compaction _____ .	..... L.S.
304A(06)    Stockpiled Aggregate, Type Grading _____ .	..... C.Y.
304A(07)    Stockpiled Aggregate, Type Grading _____ .	..... TON
304A(08)    Sodium Bentonite Binder, Powdered Form, Corrected to 0.0% Moisture. ....	..... TON

REGIONAL SPECIAL PROJECT SPECIFICATION  
Snow-Way T.S.

When materials are produced and furnished by the Forest Service, the note "Government furnished materials" will be added to the description of the pay item. This applies only to pay items 304A(03), 304A(04), and 304A(05).

**Section 306 - Reconditioning Existing Road**

DESCRIPTION

- 306.01 Delete "scarifying and" from the text.  
Add: "and catch basins" following "outlets"

CONSTRUCTION

- 306.02 Delete the first two paragraphs including (a) and (b) of the second paragraph  
Performance and replace with the following:  
"Scarification of the traveled way and shoulders is not required. Any rock protruding less than two inches may be left in place. Rock protruding in excess of two inches shall be removed or the tops blasted. Resulting holes in the roadway or shoulders shall be backfilled with compacted suitable material."

REGIONAL SPECIAL PROJECT SPECIFICATION  
Snow-Way T.S.

**Section 412 - Dust Palliative Treatment**

Delete this entire specification and substitute the following:

DESCRIPTION

412.01

Work

This work shall consist of furnishing, sampling and applying dust palliative to a road surface. Road surface preparation requirements are DESIGNATED IN THE SCHEDULE OF ITEMS.

MATERIALS

412.02

Requirements

The type of material shall be as shown on the SCHEDULE OF ITEMS and shall meet the specified requirements shown below:

Magnesium or Calcium Chloride Brine

Chloride brines shall consist of water and magnesium and/or calcium chloride. The chemical composition, percent by weight brine, shall be as follows:

Chloride Concentration (Sum of Magnesium & Calcium Chloride)

Magnesium Chloride product 28.0 % minimum

Calcium Chloride products 36.0 % minimum

Sulfate 4.3 % maximum

Nitrate 5.0 % maximum

(Test method R1-412/Cl must be used. It is available upon request from USDA Forest Service, Regional Materials Engineering Center, P.O. Box 7669, Missoula, Montana 59807)

The pH shall be between 4.5 and 10.0. The temperature of the material shall be 40°F or above when it is applied.

Calcium Chloride Flake

The chemical composition as shown below shall be determined by ASTM E 449-79 on a percent-by-weight basis:

Calcium Chloride (CaCl<sub>2</sub>) 77% Minimum

Total Alkali Chlorides (as NaCl) 3% Maximum

Calcium Hydroxide (Ca(OH)<sub>2</sub>) 0.3% Maximum

Particle size shall be as follows: 100% pass the 3/8" screen, 80 to 100% pass the #4 screen, and 0 to 5% pass the #30 screen

REGIONAL SPECIAL PROJECT SPECIFICATION  
Snow-Way T.S.

Lignin Sulfonate

Lignin Sulfonate shall be the residue produced by the acid-sulfite pulping of wood. The cation shall be ammonium, calcium, or sodium. Lignin sulfonate shall be supplied as a uniform mixture and shall be miscible with an equal weight of water. The undiluted material shall conform to the following requirements:

pH (AASHTO T200)	4.5 minimum
Viscosity at 77 °F (AASHTO T202)	20.5 poise maximum
Total Lignin Solids Concentration (Test method R1-412/LS must be used for Total Lignin Solids Concentration. It is available upon request from USDA Forest Service, Regional Materials Testing Laboratory, P.O. Box 7669, Missoula, Montana 59807)	48 Percent Minimum

The solids must meet the following requirements:

Lignin Sulfonate	50 percent minimum
Reducing Sugars	25 percent maximum

The temperature of the material during application shall be between 40 and 140°F.

Clarified Dust Oil DO-4

Clarified Dust Oil shall conform to the following requirements:

Flash Point (AASHTO T48)	200°F min.
Kinematic Viscosity @ 100°F (AASHTO T201)	20-100 cSt
Water (AASHTO T55)	0.2% maximum
Asphaltenes (ASTM D3279)	0 - 5%
Saturates (R1-412/DO-4)	10% minimum
Volume of Oil Distillate @ 550°F (AASHTO T59)	5% max.
Viscosity of Residue by Distillation at 100°F (AASHTO T201)	400 cSt max.

Test Method R1-412/DO-4 is available from USDA Forest Service, Regional Materials Laboratory, P.O. Box 7669, Missoula, MT 59807

The material temperature during application shall be above 85°F.

REGIONAL SPECIAL PROJECT SPECIFICATION  
Snow-Way T.S.

412.03  
Certificate  
& Sampling

(a) Certification with Shipments. When each load of dust palliative is delivered, the contractor shall furnish the Engineer with one copy of the Bill of Lading and a fully executed Certificate of Compliance containing the applicable information shown in Figure 412-1. A separate Certificate of Compliance will not be required if the standard Bill of Lading contains the applicable information required by the certificate.

(b) Sampling. Sampling of dust palliative may be required to validate certifications furnished by the contractor. When sampling is directed by the Government, the actual samples shall be obtained by the contractor. The Engineer will be given the opportunity to witness sampling. All liquid delivery equipment shall be constructed to permit sampling in conformance with AASHTO T40 test procedure.

CERTIFICATE OF COMPLIANCE

Consignee .....	Destination .....
Transportation ID (Truck No., etc) .....	Date .....
Percent Concentration by Weight:	Magnesium Chloride: ..... %
Calcium Chloride : ..... %	Lignin Sulfonate: ..... %
Net Weight Total Shipment .....	Net Gallons @ 60°F.....
Specific Gravity @ 60°F .....	
This shipment of ..... identified above and covered by this Certificate of Compliance complies with Forest Service Specifications applicable to Contract Number _____.	
Producer .....	Signed ..... (Producer's Representative)

Figure 412 - 1. -- Sample Certificate of Compliance

REGIONAL SPECIAL PROJECT SPECIFICATION  
Snow-Way T.S.

CONSTRUCTION

412.04  
Weather  
Limitations

All dust abatement materials shall be applied only when the surface to be treated contains appropriate moisture to get adequate penetration and absorption of dust abatement materials. Application during a light rain is acceptable provided the material penetrates the road surface, and does not flow to low areas or off the road surface.

Chloride brines and Lignin materials shall be applied only when the temperature is 40°F or higher and the ground is not frozen.

To accelerate the penetration and absorption of calcium chloride flake materials, the road surface may be dampened prior to or after the flake application.

Clarified Dust Oil shall be applied only when the road surface and atmospheric temperature is 50°F or more and rising or above 60°F and falling.

412.05  
Equipment

The distribution equipment shall be so designed, equipped, maintained, and operated such that the dust abatement material may be applied uniformly on variable widths of surface. Application shall be at readily determined and controlled rates from 0.10 to 0.50 gallons per square yard with uniform pressure and application. The allowable variation from the specified application rate shall not exceed 10% of the specified rate for individual distributor loads, and 2% of the specified rate for the entire project.

For liquid products the following requirements shall apply: (1) The spray pattern from each nozzle on the spray bar shall be uniform across the spray bar; (2) Distribution equipment shall include accurate volume measuring devices or a calibrated tank, a thermometer for measuring temperatures of tank contents, and a hose and nozzle attachment for applying material to areas inaccessible to the spray bar.

Calcium Chloride Flake shall be spread with equipment that evenly distributes the material across the required road width. The weight of flake in distribution vehicles trucks shall be accurately determined prior to application. The relative weight of material placed shall be easily determined during application.

REGIONAL SPECIAL PROJECT SPECIFICATION  
Snow-Way T.S.

412.06  
Preparation  
of Road  
Surface

One or more of the following preparation and application methods shall be followed as DESIGNATED IN THE SCHEDULE OF ITEMS.

Method 1. Apply the dust palliative directly to the previously prepared surface.

For Method 2 and 3 the road surface shall be processed by blading below the elevation of ravelling, washboarding, and pot holes. The top two inches of surfacing material shall have a moisture content greater than 5 percent. After processing, the surface shall be shaped by blading to the required cross section SHOWN ON THE DRAWINGS. The prepared surface shall be approved in writing by the Engineer prior to treatment.

Method 2. A layer of loose cushion material approximately 1 inch in depth shall be developed for the full width of traveled way and kept in as loose a condition as possible prior to applying dust palliative. After the dust palliative has penetrated and pickup of material will not occur, the surface shall be compacted as SHOWN ON THE DRAWINGS, or compacted over the full treated width with either roller(s) or loaded truck(s).

If the one-inch layer of cushion material becomes compacted by traffic prior to treatment, a one-inch thickness shall be cut from the surface and bladed into a berm on the shoulder. Just prior to applying the dust palliative, the material in the berm shall be bladed to a uniform depth across the full width of the previously watered surface. The loose material shall have a moisture content greater than 5 percent just prior to applying dust palliative. After application, compact as specified above.

Method 3. Approximately 1 inch of the surface material shall be bladed into a berm on the shoulder. The initial application shall then be made on the existing surface. As soon as practical, but no more than 1 hour after application, the material in the berm(s) shall be bladed to a uniform depth across the previously treated surface and watered, if necessary, to meet the 5 percent minimum moisture content. The second application shall then be applied. Compaction shall be performed as specified in Method 2.

REGIONAL SPECIAL PROJECT SPECIFICATION  
Snow-Way T.S.

412.07  
Application  
of Dust  
Palliative

Dust palliative application rates and width of road surface to be covered shall be as SHOWN ON THE DRAWINGS. For liquid products the rate is expressed as gallons per square yard and for Calcium Chloride Flake, the rate is expressed in pounds per square yard. If the actual application rate is less than specified, the dust abatement material left over will be applied at locations and application rates designated by the Engineer. If the application rate used by the contractor is greater than specified and additional material is required to complete the project coverage, the additional material shall be furnished and applied at the Contractor's expense.

The Engineer may field test Chloride brines and Lignin materials prior to application to make sure that the products meet the minimum concentrations specified. Acceptance of the material will be based on the concentration shown on the manufacturer's certificate, or on results of laboratory quality assurance tests done by the Forest Service on samples taken from distribution or hauling vehicles.

Uniform distribution shall be obtained at all points. For liquid products the spray pattern from each nozzle on the spray bar shall be uniform across the spray bar. For flake products, the coverage will be uniform on the road surface. Overlapping or skipping between spread sections shall be corrected. Accidental spillage and areas with excess dust palliative that are hazardous to traffic shall be covered with additional road surfacing material at the contractor's expense. The surface of adjacent structures and trees shall be protected from spattering or marring. Dust palliative material shall be discharged only in approved areas, and shall not be allowed to flow into ditches or stream courses.

412.08  
Maintenance  
& Opening  
Traffic

The treated road surface shall be open to traffic within two hours following treatment. Traffic control and the prevention of vehicle undercoating is the contractor's responsibility. If dust abatement material is picked up by vehicles, the contractor shall apply road surfacing blotter material, and if necessary apply more dust abatement material to repair the damage. No compensation will be made for blotter or the additional dust abatement material to correct these problems. Reductions in payment may be made where traffic control and repair of the treated surface are not adequate.

REGIONAL SPECIAL PROJECT SPECIFICATION  
Snow-Way T.S.

MEASUREMENT

412.09

Method

The method of measurement, as described in Section 106, will be DESIGNATED in the SCHEDULE OF ITEMS.

PAYMENT

412.10

Basis

The accepted quantities will be paid for at the contract unit price for the pay item shown in the SCHEDULE OF ITEMS, with the following exceptions:

If laboratory quality assurance tests indicate that the minimum Calcium or Magnesium Chloride concentrations applied to the road surface were not as specified in Section 412.02, the Forest Service may reduce payment by multiplying the pay factor as calculated below, times the contract unit price for Item 412(07), 412(08), 412(13), 412(14), Item 412(15) or Item 412(16), times the accepted quantity. No payment will be made for brine concentrations below 20 percent.

Magnesium Chloride Brine Pay Factor =

$$1.0 - \frac{(28\% - \text{Concentration Applied})}{(8\%)}$$

Calcium Chloride Brine Pay Factor =

$$1.0 - \frac{(36\% - \text{Concentration Applied})}{(16\%)}$$

If laboratory quality assurance tests indicate that the minimum Lignin concentrations were not as specified in Section 412.02, the Forest Service may reduce payment by multiplying the pay factor as calculated below times the contract unit price for Item 412(09) or Item 412(10), times the accepted quantity. No payment will be made for concentrations below 24 percent.

$$\text{Lignin Pay Factor} = 1.0 - \frac{(48\% - \% \text{Concentration Applied})}{(24\%)}$$

If laboratory quality assurance tests on Clarified Dust Oil indicate that the maximum limits for viscosities, or asphaltenes were exceeded, the Forest Service may reduce payment by multiplying the lowest pay factor as determined below,

REGIONAL SPECIAL PROJECT SPECIFICATION  
Snow-Way T.S.

times the contract unit price for Item 412(05) or Item 412(06), times the accepted quantity.

Original Kinematic Viscosity Pay Factor = 100/Original Viscosity Asphaltene  
Pay Factor = (5 percent)/(percent Asphaltenes) Residue Viscosity Pay Factor = 400/Residue Viscosity

When each hauling/distribution vehicle cannot be readily weighed to determine quantities, the actual weight of material in full vehicles shall be determined at the start of the project. Thereafter, the number of vehicle loads applied to the road surface can be used for quantity determination, provided each load is full, each load is completely emptied on the project, and material lost from the load is deducted. The Engineer may direct the additional check weighing of loaded and empty vehicles at any time.

<u>Pay Item</u>	<u>Pay Unit</u>
412(05) Clarified Dust Oil DO-4 Preparation Method _____	_____ TON
412(06) Clarified Dust Oil DO-4 Preparation Method _____	_____ GAL
412(07) Magnesium Chloride Brine @ 28% minimum Concentration Preparation Method _____	TON
412(08) Magnesium Chloride Brine @ 28% minimum Concentration Preparation Method _____	GAL
412(09) Lignin Sulfonate Solution @ 48% minimum Concentration Preparation Method _____	TON
412(10) Lignin Sulfonate Solution @ 48% minimum Concentration Preparation Method _____	GAL
412(13) Calcium Chloride Brine @ 36% minimum Concentration Preparation Method _____	TON
412(14) Calcium Chloride Brine @ 36% minimum Concentration Preparation Method _____	GAL
412(15) Magnesium Chloride Brine @ 28% minimum Concentration or Calcium Chloride Brine @ 36% minimum Concentration, or Preparation Method _____	L.S.
412(16) Calcium Chloride Flake @ 77% minimum Concentration Preparation Method _____	TON

SPECIAL PROJECT SPECIFICATION  
Snow-Way T.S.

Section 601 - Mobilization

**DESCRIPTION**

601.01      Add the following to this subsection:  
Work

Preparatory work shall include cleaning of all equipment used at the project site. The contractor(s) is required to clean all construction equipment prior to entry on the project site. This cleaning shall remove all dirt, plant parts and material that may carry noxious weed seeds into the area. Only construction equipment inspected by the Forest Service will be allowed to operate within the project area. All subsequent move-ins of equipment shall be treated the same as the initial move-in. Truck beds and dump boxes hauling to the project site must also be cleaned prior to entering the work area.

IPNF SPECIAL PROJECT SPECIFICATION  
Snow-Way T.S.

**Section 603 - Metal Pipe**

MATERIALS

603.02                   Delete the second sentence, last paragraph, and add:  
Requirements

"Pipe should not be ordered until culvert locations are DESIGNATED ON THE GROUND and the correct lengths are determined."

CONSTRUCTION

603.06                   Replace the last sentence of the first paragraph with the following:  
Joining Pipes

"Dimpled bands shall not be used unless approved by the Engineer in writing."

603.08                   At the end of the second paragraph, after "Method A or B," add:  
Backfilling

"or C"

After Method B, add:

"Method C - Compaction shall be obtained by a minimum of two passes with a mechanical tamper, approved by the Engineer, for each 6-inch layer (loose thickness) of backfill unless otherwise SHOWN ON THE DRAWINGS."