Section 2210. Macadam Stone Base

2210.01 DESCRIPTION.

A. Prior to placement of a surface course:

1. Prepare the subgrade,

2. Provide for a filter course,

3. Furnish, place, and compact a Macadam base course and a choke stone course, and

4. Apply a prime to the finished work.

B. Complete the above work according to the contract documents.

2210.02 MATERIALS.

A. Use aggregate that meets the requirements of Section 4122 for the base course and choke stone course.

B. For primer bitumen, use SS-1, SS-1H, CSS-1, or CSS-1H, meeting requirements of Section 4140. RC-70 and MC-70 may also be used after October 1, at the Contractor's option.

2210.03 CONSTRUCTION.

A. Equipment.
Use equipment meeting the requirements of Section 2001 and the following:

1. Weighing Equipment.
Apply Article 2001.07.

2. Compaction Equipment.
Apply Article 2001.05, F. In addition, a smooth faced, steel tired roller, meeting requirements of Article 2001.05, B, will be required for final rolling of the choke stone course.

3. Prewetting Equipment.
Apply Article 2001.08, A, if prewetting is to be done.

4. Spreading Equipment.
Use spreading equipment capable of spreading the base and choke stone course to the required thickness.

5. Broom.
Apply Article 2001.14.

6. Equipment for Heating and Distributing Bitumen.
Apply Articles 2001.11 and 2001.12.

7. **Equipment for Applying Water.**
   Apply Article 2001.09.

8. **Motor Graders.**
   Apply Article 2001.15.

B. Preparation of the Subgrade.
Correct and construct the subgrade with the provision for a filter course as required by the contract documents. Macadam stone base shall not be constructed on natural soil subgrade.

C. Macadam Base Course.

1. Spread base material to a width and depth so the base conforms to the desired profile and cross section. If spreading the base material in a single course, ensure the compaction equipment used will uniformly and satisfactorily compact the material for the full depth of the course. Spread the base material to maintain uniformity of the material. When a spreader does not spread to the full design width in one operation, the Engineer may require special handling of the center joint to avoid segregation.

2. Thoroughly and uniformly compact the base material immediately after it as been spread. Continue compacting until the base material is well seated and no appreciable displacement occurs when rolling.

D. Choke Stone Course.

1. The aggregate may be prewetted before delivery to the Macadam stone base. The Engineer may control the material delivery rate to reduce the time the material will remain on the base in an uncompacted condition to the practical minimum.

2. If the material is prewetted before delivery, or if water is added to the base after delivery, ensure the water is uniformly distributed throughout the material so that all particles are uniformly wet. Verify water is within 2.0% of the amount determined as field optimum to produce maximum density together with stability with the field compaction procedure. This moisture content will usually be 85 to 90% of the optimum determined according to Materials Laboratory Test Method No. Iowa 103. Maintain this moisture content in the material until base compaction is complete.

3. Spread the choke stone course as required for the Macadam base course.

4. Immediately after spreading the material, thoroughly and uniformly compact with three passes of a vibratory roller. During the compaction process, perform wetting, shaping, and edge trimming necessary to ensure proper compaction and to achieve the require profile, crown, cross section, and edge alignment. An additional final rolling with a smooth faced, steel tired roller will be required. Ensure the finished

surface is free from irregularities and loose material and has a smooth riding surface.

E. Fillets for Intersecting Roads, Drives, and Turnouts.
Construct fillets according to the contract documents.

F. Priming Base Course.
Prime the surface of the choke stone course and adjacent subgrade according to the contract documents.

G. Maintenance of Completed Base.

1. The Contractor may choose how far in advance of the course to complete the base.

2. Prior to and during subsequent construction activities, maintain the completed base to the required density and cross section, and to a smooth condition free from loose material. Do not place hauling equipment or other traffic on the completed base.

3. If the Engineer permits traffic by others authorized to do work on the project that exceeds the Contractor's self imposed limit during base construction, the Contracting Authority will pay to repair the damage (if any) caused by this traffic. The Engineer will determine the cost for repair of the damage.

H. Winter Seal.

1. Prime (as specified) all base not covered with upper base or surface the same season which it is constructed. The Engineer may require an application of a winter seal. Except as modified by the Engineer, use a winter seal consisting of the bituminous material used as the primer or tack coat applied at 0.12 gallon per square yard (0.5L/m^2), and a sand cover applied at 10 to 15 pounds per square yard (5 to 8 kg/m^2). Spread bituminous material and aggregate according to Section 2307. Winter seal the Engineer requires will be paid for according to Article 1109.03, B.

2. Except where road closure is provided in the contract documents, traffic will be allowed to use the road from the time construction is stopped until work is resumed the following season. Make required repairs to the base when construction is resumed, at no additional cost to the Contracting Authority.

2210.04 METHOD OF MEASUREMENT.

Measurement for the quantities of the various classes of work involved in the construction of accepted portions of Macadam stone base will be as follows:

A. Macadam Stone Base.
Computed in tons (megagrams) from weights (mass) of individual truck loads.

B. Choke Stone Base.
Computed in tons (megagrams) from weights (mass) of individual truck loads, including free moisture in the material at the time of delivery. Moisture added after delivery of the material to the roadbed will not be measured for payment.

C. Primer Bitumen for Macadam Stone Base.
Apply Article 2307.04, B.

2210.05 BASIS OF PAYMENT.
For the performance of the various classes of work involved in construction of Macadam stone base, measured as provided above, payment will be the contract unit price as indicated below. Payments are full compensation for furnishing all materials, including water, and for all operations involved in the construction of the base.

A. Macadam Stone Base.
Per ton (megagram) for the number of tons (megagrams) placed.

B. Choke Stone Base.
Per ton (megagram) for the number of tons (megagrams) placed.

C. Primer Bitumen for Macadam Stone Base.
Per gallon (liter) for the number of gallons (liters) measured for payment.