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REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
OFFICE OF THE SECRETARY
MANILA

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DEPARTMENT ORDER) SUBJECT : **DPWH Standard Specifications for Rock Asphalt, Hot-Laid**
No. 66)
Series of 2005 (06-10-05))

Rock asphalt is one of the naturally occurring materials in the country and can be used in the construction of asphalt roads based on the completed research/technical study conducted by the Department.

As such, for the guidance and compliance of all concerned, the attached standard specifications for rock asphalt are hereby prescribed which shall form part of the DPWH Standard Specifications for Highways, Bridges and Airports, Volume II.

This Order shall take effect immediately.

HERMOGENES E. EBDANE, JR.
Acting Secretary

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DPWH STANDARD SPECIFICATIONS FOR ROCK ASPHALT, HOT LAID

1.0 Description

This item shall consist of constructing bituminous surface course composed of one or more application of natural rock asphalt, laid on the prepared base in accordance with these specifications and in conformity with the lines, grades, and typical cross section shown on the plans.

2.0 Materials Requirements

The materials used shall be natural rock asphalt from an approved source with practically unlimited deposits. The source shall show satisfactory behavior and is sufficient for a continuous operation for surfacing of roads. The materials produced each eight hour working day shall be supported with laboratory test data and the sources shall be approved by the authorized engineer. No flux or other admixture shall be used but the rock asphalt furnished shall be maintained within the specification limits given hereinafter by blending of materials from different parts of the quarry and by proper control of the crushing and screening operations.

2.1 Quality of Rock Asphalt Mixture

The rock asphalt as furnished shall contain between 8 to 13 percent of bitumen when tested in accordance with AASHTO T164-94, with less than five percent moisture content when rolled.

2.2 Composition of Rock Asphalt

The aggregate shall meet the following requirements for grading when tested in accordance with AASHTO Designation T30:

	Before Extraction	After Extraction
Passing 19.0 mm square sieve	100%	100%
Passing 9.50 mm square sieve	60-80%	75-95%
Passing 2.00 mm square sieve	20-50%	50-65%
Passing 0.425 mm square sieve	-	40-55%
Passing 0.075 mm square sieve	-	10-20%

The aggregate shall be well graded from course to fine within the above limits.

Prior to delivery of the rock asphalt, the contractor concerned shall submit to the authorized engineer an analysis of the material which he proposes to furnish. After the Job-mix formula is established, all mixtures furnished for the project shall conform hereto within the following ranges of tolerances:

Passing 2.00 mm sieve	± 10%
Passing 0.425 mm sieve	± 8%
Passing 0.075 mm sieve	± 5%
Bitumen Content	± 5%
Temperature of Mixture	± 10^0C

The Engineer shall be allowed free access to the rock asphalt quarry for the purpose of obtaining and testing whatever samples are necessary to insure compliance with these Specifications. The rock asphalt producer shall maintain a testing laboratory at the quarry which shall be staffed, equipped, and supplied for making extraction and grading tests. The Engineer shall be allowed free access to this laboratory, and in addition, shall be supplied with adequate space for making any tests which are necessary to insure compliance with the Specifications

Should a change in source of material be proposed or should a job-mix formula prove satisfactory, a new job-mix formula shall be submitted by the Contractor in writing and be approved by the Engineer prior to production.

Approval of a new job-mix formula shall require complete laboratory testing before it is recommended for use in construction.

Equipment installed and methods of operation employed at the quarry shall be such as to insure the necessary uniformity of quality and rate of production. Material failing to produce satisfactory results in the work, even when from approved sources of supply and meeting the requirements of these Specifications shall be rejected and shall not be used for further work on the specific project under way nor for any new work until the producer satisfies the Engineer that the material will produce satisfactory results.

Storage and handling of the rock asphalt shall be in such a manner as to avoid segregation or contamination with foreign materials or mixing with water.

3.0 Construction Requirements

3.1 Weather Limitations

Rock asphalt shall be placed only when the weather is not foggy or rainy and when the surface on which the mixture is to be placed is dry.

3.2 Transportation of Rock Asphalt

Transportation of rock asphalt shall be in barges, ships, railway cars, or motor vehicles in good condition, previously cleaned of all foreign matter and provided with covers, if necessary, to protect the rock asphalt from rain or contamination.

3.3 Equipment

Equipment for cleaning the foundation on which the bituminous surface is to be placed shall consist of power brooms or stiff fibre push brooms, or hand, or power driven blowers. Compressor with flat nozzle can also be used to clean the foundation.

Spreading equipment shall consist of motor graders, mechanical paver, or hand spreading tools (shovels, forks, rakes, etc., or a self-contained bituminous paver, power-propelled units, provided with an adequate activated screed or strike off assembly, heated if necessary, and capable of spreading and finishing courses of bituminous plant mix material in lane widths applicable to the specified typical section and thickness shown on the plans.

Rollers for compacting the surface shall be of the self-powered tandem or 3-wheeled type weighing not less than 8 tons, and pneumatic-tired rollers loaded so as to give a minimum compression of 28 kilograms per centimeter of tire tread width.

3.4 Preparation of Base

A Prime Coat or Tack Coat shall be applied prior to spreading the rock asphalt. Such work shall be as provided and paid for under Item 301, Bituminous Prime Coat, and 302, Bituminous Tack Coat.

If shown on the plans and provided for in the bid schedule, a leveling course of gravel, crushed rock or crushed gravel shall be applied prior to application of any rock asphalt. Such work shall be as provided for under Item 201, Aggregate Base Course.

Immediately prior to placing the rock asphalt, the base shall be cleaned of all earth, loose, or foreign material. The existing surface shall be swept until the embedded larger aggregate is exposed or in the case of a previously constructed asphalt surface, until the surface is free of mud or other covering.

Placing shall commence at the point or points farthest from the delivery points for the rock asphalt and shall progress continuously towards such delivery point unless otherwise ordered by the Engineer. Hauling over material already placed will not be permitted until the material has been compacted thoroughly in the manner specified hereinafter.

3.5 Preparation of Bituminous Materials and Aggregates

The preparation shall be in accordance, whenever applicable, with Subsections 307.3.4 and 307.3.5, respectively. Mixing of aggregates and bituminous materials shall be in accordance with Subsection 307.3.6.

3.6 Spreading, Laying, Compacting and Finishing

Rock asphalt shall be uniformly spread on the prepared foundation in an amount which will result in the required depth after compaction. Spreading and compaction shall be in one or more layers depending on the maximum size of the aggregate.

The rock asphalt shall be deposited in piles along the road in an amount sufficient to make the required depths after compaction and in such a manner as to avoid contamination with earth or other foreign materials.

The rock asphalt shall be distributed by shovels or by satisfactory mechanical means in a uniform layer. If the equipment is available and competent operators are provided, the rock asphalt may be spread by means of a mechanical self-powered paver or by self-propelled, rubber-tired motor graders.

3.7 Rolling

After spreading, the rock asphalt shall be rolled by wobbly or pneumatic-tired rollers for initial compaction to prevent creeping of the pavement, followed by tandem or three-wheeled steel rollers of at least 8 tons weight. Rolling shall start at the sides of the pavement and proceed longitudinally toward the center of the pavement, overlapping on successive trips by at least one-half the width of the rear wheels in the case of steel rollers and at least two wheels for wobbly rollers. At least ten passes by the wobbly roller followed by two passes of the three-wheeled steel roller are required for the necessary initial compaction considered sufficient to produce a surface which will prevent water from entering into the bituminous layer. Alternate trips of the roller shall be slightly different in length. On super elevated curves, rolling shall begin at the low sides and progress towards the high sides. Further rolling shall be continued until the minimum compaction shall not be less than 97% of the density of the laboratory compacted specimen and all roller marks are eliminated. The motion of the roller shall be at all times slow enough to avoid displacement of the rock asphalt. If any displacement occurs, it shall be corrected at once by the use of rakes and fresh rock asphalt where required. The roller shall not be allowed to stand on pavement which has not fully compacted. To prevent adhesion of the rock asphalt material to the roller, the wheels shall be kept thoroughly moistened with water, but an excess of water will not be permitted.

3.8 Hand Tamping

Along curbs, headers, and similar structures and at all places not accessible to the roller, or in such position as will not allow thorough compaction with the roller, the rock asphalt shall be thoroughly compacted with lightly oiled hand tamper, weighing not less than 11 kilos and having a tamping surface area of not more than 322 square centimeters.

3.9 Opening to Traffic

The pavement shall not be opened to traffic after compaction unless the pavement is sealed in accordance with Item 303, Bituminous Seal Coat and as called for in the bid schedule.

4.0 Method of Measurement

The area to be paid for shall be the number of square meter of rock asphalt placed and accepted in the completed pavement. The producer's certified invoices may be accepted for the quantity furnished in each shipment provided such quantities are checked by measurement of water displacement of the shipping vessel or by volume measurement converted to weights by means of unit weight determinations.

5.0 Basis of Payment

The square meter determined as provided above shall be paid for at the contract unit price for Rock Asphalt which price and payment shall be full compensation for the preparation of all materials, for furnishing, hauling, and placing all materials, and for all labor, equipment, tools and incidentals necessary to complete the item.

Pay Item No.	Description	Unit of Measurement
1	Rock Asphalt	Square meter