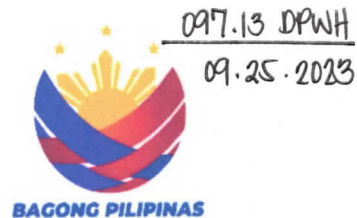




Republic of the Philippines
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
OFFICE OF THE SECRETARY
Bonifacio Drive, Port Area Manila



SEP 22 2023

DEPARTMENT ORDER)

NO. 118)

Series of 2023 * 9/25/23

**SUBJECT: DPWH Standard Specification for
ITEM 315 - BITUMINOUS CONCRETE
SURFACE COURSE WITH CRUMB
RUBBER AS ADDITIVE, HOT-LAID**

In line with the continuing efforts to support sustainable engineering and upgrade construction technology and thru adoption of successful research studies, this Department has approved the use of Crumb Rubber as additive/modifier in hot mix asphalt, subject to the specifications hereto attached.

This Standard Specification shall form part of the DPWH Standard Specifications for Highways, Bridges and Airports, Volume II and is now included in the Project and Contract Management Application (PCMA).

This Order shall take effect immediately.


MANUEL M. BONOAN
Secretary

14.1.2 MLL/JDV/RPF

Department of Public Works and Highways
Office of the Secretary



WIN3U01906

**DPWH Standard Specification for
ITEM 315 - BITUMINOUS CONCRETE SURFACE COURSE WITH CRUMB RUBBER AS
ADDITIVE, HOT-LAID**

315.1 Description

This Item shall consist of constructing a Bituminous Concrete Surface Course with Crumb Rubber on a prepared base in accordance with this Specification and in conformity with the lines, grades and typical cross-sections shown on the Plans.

315.2 Material Requirements

315.2.1 Composition and Quality of Bituminous Mixture

The mixture shall be composed of aggregate, mineral filler, hydrated lime, bituminous material and crumb rubber.

All mixture furnished for the project shall conform thereto within the following ranges of tolerances:

Passing No. 4 and larger sieves	± 7%
Passing No. 8 to No. 100 sieves (inclusive)	± 4%
Passing No. 200 sieves	± 2%
Bituminous Material	± 0.4%
Temperature of Mixture	± 10 °C

The proportion of bituminous material, on the basis of total dry aggregate, shall be from 5.0 to 8.0 mass percent while the rubber content, by weight of binder, shall be 6.2%. The exact percentage to be used shall be fixed by the Engineer in accordance with job-mix formula and other quality control requirements.

The mixture shall have a minimum compressive strength of 1.4 MPa and shall have a mass percent of air voids with the range of 3 to 5. The mixture shall also have an index of retained strength of not less than 70 when tested by AASHTO T 165, Standard Method of Test for Effect of Water on Compressive Strength of Compacted Bituminous Mixtures.

315.2.2 Bituminous Material

It shall conform to the requirements of Item 702, Bituminous Materials. The grade of the bituminous material shall be specified in the Special Provisions.

315.2.3 Aggregates

It shall conform to the applicable requirements of Item 703, Aggregates.

315.2.4 Mineral Filler

It shall conform to the requirements of Item 703A, Mineral Filler.

315.2.5 Hydrated Lime

It shall conform to the applicable requirements of Item 701, Hydrated Lime.

315.2.6 Crumb Rubber

Crumb rubber shall conform to the specified fineness of mesh no. forty five (#45).

315.3 Construction Requirements

Construction requirements shall be in accordance with the applicable requirements of Section 310.3 Construction Requirements of Item 310, Bituminous Concrete Surface Course, Hot-Laid.

The recommended mixing temperature, compaction temperature and mixing time shall be as follows:

Mixing Temperature (Binder), °C	170 ± 10
Mixing Time of Binder, min.	45
Mixing Temperature (Binder and Aggregates), °C	170 ± 10
Compaction Temperature, °C	150 ± 10

315.4 Method of Measurement

Bituminous Concrete Surface Course with Crumb Rubber shall be measured in square meter (m²). The quantity to be paid for shall be the number of square meters of the mixture placed and compacted in the accepted pavement.

315.5 Basis of Payment

The accepted quantities, measured as prescribed in Section 315.4, Method of Measurement, shall be paid for at the Contract Unit Price for Bituminous Concrete Surface Course with Crumb Rubber as Additive, which price and payment shall be full compensation for furnishing and placing all materials, including all labor, equipment, tools and incidentals necessary to complete the work prescribed in this Item.

Payment shall be made under:

Pay Item Number	Description	Unit of Measurement
315 (1)	Bituminous Concrete Surface Course with Crumb Rubber as Additive, Hot-Laid	Square meter

References:

1. *Final Evaluation Report of the Study on the Use of Crumb Rubber as an Additive/Modifier in Hot Mix Asphalt*
2. *DPWH Standard Specifications for Highways, Bridges and Airport, Volume II, 2004 Edition*
 - a. *Item 307 – Bituminous Plant-Mix Surface Course - General*
 - b. *Item 701 – Hydrated Lime*
 - c. *Item 702 – Bituminous Materials*
 - d. *Item 703 – Aggregates*
 - e. *Item 703A – Mineral Filler*
3. *American Association of State Highway and Transportation Officials (AASHTO)*
 - a. *AASHTO T 165 – Standard Method of Test for Particle Size Analysis of Soils*