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12-12-2007

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

**DEC 11 2007**

DEPARTMENT ORDER )  
No. 66 )  
Series of 2007 12-12-07 )  
X-X-X-X-X-X-X-X-X-X )

SUBJECT: DPWH Standard Specifications  
for Portland Cement Concrete  
Pavement (PCCP) Using  
Coralline Materials as Coarse  
Aggregates, Item 314

In line with the continuing efforts to upgrade the construction technology thru the adoption of successful research studies conducted by this Bureau and in view of the need of setting standard specifications for portland cement concrete pavement, the attached **DPWH Standard Specifications for Portland Cement Concrete Pavement (PCCP) Using Coralline Materials as Coarse Aggregates, Item 314**, are hereby prescribed for the guidance and compliance of all concerned.

These specifications shall form part of the revised edition of the DPWH Standard Specifications (Volume II - Highways, Bridges and Airports).

This order shall take effect immediately.

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**HERMOGENES E. ERDANE, JR.**  
Secretary



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**DPWH STANDARD SPECIFICATIONS FOR  
ITEM 314 – PORTLAND CEMENT CONCRETE PAVEMENT USING CORALLINE  
MATERIALS AS COARSE AGGREGATES**

**314.1 Description**

This Item shall consist of Portland Cement Concrete Pavement with Coralline materials as course aggregate with or without reinforcement, constructed on the prepared base in accordance with this Specification and in conformity with lines, grades, thickness and typical cross-section shown on the Plans.

**314.2 Material Requirements**

**314.2.1 Portland Cement**

Same as Item 311 - Portland Cement Concrete Pavement, Subsection 311.2.1.

**314.2.2 Fine Aggregate**

It shall consist of natural sand, weathered beach sand, stone screenings or other inert materials with similar characteristics, or combinations thereof, having hard, strong and durable particles. It shall be washed thoroughly with fresh water and shall be made in order to remove the impurities and other chemical constituents that might have an adverse effect on the performance of the concrete pavement. The use of the conventional fine aggregate conforming to Item 311 - Portland Cement Concrete Pavement, subsection 311.2.2 is allowed. Fine aggregate from different sources shall not be mixed or stored in the same pile nor used alternately in the same class of concrete without the approval of the Engineer.

It shall not contain more than three (3) mass percent of material passing the 0.075 mm (No. 200 sieve) after washing nor more than one (1) mass percent each of clay lumps or shale.

If the fine aggregate is subjected to five (5) cycles of the sodium sulfate soundness test, the weighted loss shall not exceed 10 mass percent.

The fine aggregate shall be free from injurious amounts of organic impurities. If subjected to the colorimetric test for organic impurities and a color darker than the

standard is produced, it shall be rejected. However, when tested for the effect of organic impurities in strength of mortar when tested by AASHTO T 71, the fine aggregate may be used if the relative strength at 7 and 28 days is not less than 95 mass percent.

The fine aggregate shall be well-graded from coarse to fine and shall conform to Table 1.

**Table 1 – Grading Requirements for Fine Aggregate**

Sieve Designation	Mass Percent Passing
9.5 mm (3/8 in)	100
4.75 mm (No. 4)	95 – 100
2.36 mm (No. 8)	-
1.18 mm (No. 16)	45 – 80
0.600 mm (No. 30)	-
0.300 mm (No. 50)	5 – 30
0.150 mm (No. 100)	0 – 10

### **314.2.3 Coarse Aggregate**

It shall consist of crushed Coralline materials having hard, strong, durable pieces and free from any adherent coatings.

It shall contain not more than one (1) mass percent of material passing the 0.075 mm (No. 200) sieve, not more than 0.25 mass percent of clay lumps, nor more than 3.5 mass percent of soft fragments.

If the coarse aggregate is subjected to five (5) cycles of the sodium sulfate soundness test, the weighted loss shall not exceed 12 mass percent.

It shall have a mass percent of wear not exceeding 40 when tested by AASHTO T 96.

The gradation of the coarse aggregate shall conform to Table 2.

Only one grading specification shall be used from any one source.

**Table 2 – Grading Requirement for Coarse Aggregate**

SIEVE DESIGNATION		MASS PERCENT PASSING		
Standard Mm	Alternate U. S. Standard	Grading A	Grading B	Grading C
75.00	3 in.	100	-	-
63.00	2-1/2 in.	90-100	100	100
50.00	2 in.	-	90-100	95-100
37.5	1-1/2 in.	25-60	35-70	-
25.0	1 in.	-	0-15	35-70
19.0	3/4 in.	0-10	-	-
12.5	1/2 in.	0-5	0-5	10-30
4.75	No. 4	-	-	0-5

#### **314.2.4 Water**

Same as Item 311, subsection 311.2.4.

#### **314.2.5 Reinforcing Steel**

Same as Item 311, subsection 311.2.5.

#### **314.2.6 Joint Fillers**

Same as Item 311, subsection 311.2.6.

#### **314.2.7 Admixtures**

Same as Item 311, subsection 311.2.7.

#### **314.2.8 Curing Materials**

Same as Item 311, subsection 311.2.8.

#### **314.2.9 Calcium Chloride/Calcium Nitrate**

It shall conform to AASHTO M 144, if specified or permitted by the Engineer, as accelerator.

### **314.2.10 Storage of Cement and Aggregate**

Same as Item 311, subsection 311.2.10.

### **314.2.11 Proportioning, Consistency and Strength of Concrete using Coralline Materials Aggregates**

Same as Item 311, subsection 311.2.11 except that at least 400 kgs of cement is required per cubic meter of concrete to meet the minimum strength requirements.

### **314.3 Construction Requirements**

The Construction requirements shall be in accordance with Item 311 - Portland Cement Concrete Pavement, subsection 311.3 Construction Requirements.

### **314.4 Method of Measurement**

The area to be paid for under this Item shall be the number of square meters (m<sup>2</sup>) of concrete pavement placed and accepted in the completed pavement. The width for measurements will be the width from outside edge to outside edge of completed pavement as placed in accordance with the Plans or as otherwise required by the Engineer in writing. The length will be measured horizontally along the centerline of each roadway or ramp. Any curb and gutter placed shall not be included in the area of concrete pavement measured.

### **314.5 Basis of Payment**

The accepted quantity, measured as prescribed in Section 4, shall be paid for at the contract unit price for Portland Cement Concrete Pavement with Coralline materials as coarse aggregates, which price and payment shall be full compensation for preparation of roadbed and finishing of shoulders, unless otherwise provided by the Special Provisions, furnishing all materials, for mixing, placing, finishing and curing all concrete, for furnishing and placing all joint materials, for sawing weakened plane joints, for fitting the prefabricated center metal joint, for facilitating and controlling traffic, and for furnishing all labor, equipment, tools and incidentals necessary to complete the Item.

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Payment will be made under:

Pay Item Number	Description	Unit of Measurement
1	Portland Cement Concrete Pavement with Coralline materials as Course Aggregates (Plain)	Square meter
2	Portland Cement Concrete Pavement with Coralline materials as Course Aggregates (Reinforced)	Square meter

**REFERENCES :**

1. USE OF CORALLINE MATERIALS AS AGGREGATE IN PORTLAND CEMENT CONCRETE PAVEMENT (FINAL REPORT) BY DPWH – BRS – RDD (MAY 2007)
2. DPWH STANDARD SPECIFICATION FOR HIGHWAYS, BRIDGES AND AIRPORTS, VOLUME II (2004)