097.13 DPWH
01-30-2008

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

JAN 29 2008

DEPARTMENT ORDER)
No. 05)
Series of 2008 01.30.08)
X-X-X-X-X-X-X-X-X-X-X

SUBJECT: DPWH Standard Specifications for Instapave System for Road Surface Treatment, Item 304A

In line with the continuing efforts to upgrade the construction technology thru adoption of successful research studies, this Department has approved the use of **Instapave System for Road Surface Treatment, Item 304A** to improve the quality of asphalt, subject to the specifications hereto attached. A Certificate of Conditional Approval had been issued by this Department, accrediting the use of Instapave Technology in DPWH Projects, from December 2007 until December 2012.

This order shall take effect immediately.

HERMOGENES E. EBDANE, JR.
Secretary

WIN8U00263

Attachment: As stated

Republic of the Philippines
Department of Public Works and Highways
OFFICE OF THE SECRETARY

CERTIFICATE OF CONDITIONAL APPROVAL

Product/Technology Accreditation

This is to certify that

INSTAPAVE TECHNOLOGY

which is exclusively supplied and contracted in the Philippines by:

Pilipinas Shell Petroleum Corporation

with office address at

156 Valero St., Salcedo Village, Makati City

is duly accredited for use in DPWH projects as thin bituminous road surface treatment, subject to its specifications (hereto attached) pursuant to the provisions of DPWH Department Order No. 189, series of 2002.

This accreditation shall remain in force until expiry date printed below, subject to compliance with the requirements of the aforementioned Department Order.

Conditional Approval No.	:	013
Date Issued	:	December 2007
Expiry Date	:	December 2012

HERMOGENES E. EBDANE, JR.
Secretary

WIN7U00247

DPWH STANDARD SPECIFICATION FOR

ITEM 304A – INSTAPAVE SYSTEM FOR ROAD SURFACE TREATMENT

304A.1 Description

This Item shall consist of a blend of Cold Seal Bitumen (CSB), aggregate, water and additives (Instapave Surface Treatment – IST) applied over a prime coated base in accordance with the Plans and Specifications.

304A.2 Material Requirements

304A.2.1 Quantities of Materials

The approximate amounts of materials per square meter and sequence of operations for Instapave Surface Treatment (IST) shall be as provided in Table 304A.1.

The quantities given in the above-mentioned table are those of aggregates having a bulk specific gravity of 2.65 as determined by AASHTO T 84 and T 85. Proportionate correction shall be made when the aggregate furnished on the job has a bulk specific gravity above 2.75 or below 2.55. In such case, the corrected amount shall be the product of the quantity shown in the Table and the ratio of the bulk specific gravity of aggregate to 2.65.

The amounts given in the said Table are approximate and the exact amounts shall be set by the Engineer. The Engineer, as necessary to fit the conditions, may vary the total amount of bituminous material per square meter, but the total amount of aggregate per square meter, after adjusting for specific gravity, shall not be changed.

Table 304A.1 – Quantities of Materials and Sequence of Operations Using Emulsified Cold Seal Bitumen

Aggregate Grading and Sequence of Operations	IST
Priming: Apply Cold Seal Bitumen Type 1 (CSB-1), L/m^2	0.90 – 2.25
Chip Course: Apply Cape Seal Bitumen Type 2 (CSB-2), L/m^2 Spread Cover Coat Aggregates (Grading B, Kg/m^2	1.20 – 2.00 11.00 – 16.00 (+/- 10%)
Fog Seal: Apply Cold Seal Bitumen Type 3 (CSB-3), L/m^2 (Diluted with water at a ratio of 1:1)	1.00
Slurry Course: Apply the mixture of Cold Seal Bitumen (CSB-3), aggregates, mineral filler, water and additives	See Note 1

Note 1 - Depends on the Job Mix Design created by the CSB source in accordance with the International Slurry Surfacing Association:

1. Technical Bulletin 111 – Outline Guide Design Procedure for Slurry Seal
2. Technical Bulletin A105 Recommended Performance Guidelines for Emulsified Asphalt Slurry Seal Surface, 1986 (Revised)
3. Technical Bulletin A143 Recommended Performance Guidelines for Polymer Modified Microsurfacing 1991

Or as approved by the Engineer.

304A.2.2 Bituminous Materials

Bituminous material, CSB-1, CSB-2, and CSB-3 (or derivatives) all straight or modified Bitumen emulsions shall conform to the requirements of Items 702 and must also conform to the minimum specifications stated in Table 304A.2. Slurry Coarse Mix based on Note 1 shall also conform to the performance specifications set in ISSA Technical Bulletin or must meet the minimum performance properties shown on Table 304A.3.

Table 304A.2 – Properties of Cold Seal Bitumen

Properties	Test Method	CSB-1	CSB-2	CSB-3*
Viscosity, Saybolt Furol @ 25^{0}C, seconds	ASTM D244	15 - 50	100 – 200	15 – 50
Storage Stability, Settlement (24hrs), %mass	ASTM D244	1.0 max	1.0 max	1.0 max
Cement Mixing Test, Percentage of Break, %mass	ASTM D244	2.0 max	–	–
Sieve Test, Sample Retained, %mass	ASTM D244	0.10 max	0.10 max	0.10 max
Particle Charge Test	-	Negative	Positive	Positive
Residue by Evaporation, %mass	ASTM D244	60 min	65 min	60 min
Examination of Residue Obtained by Evaporation: - Penetration Number @ 25^{0}C, dmm - Ductility @ 25^{0}C, cm - Solubility in Trichloroethylene, %mass	 ASTM D6 ASTM D1113 ASTM D2042	 40 – 90 40 min 97.5 min	 100 – 250 40 min 97.5 min	 40 – 90 40 min 97.5 min

* - CSB-3 may be set to achieve specific conditions such as quick set, quick traffic, latex modified or polymer modified emulsions or as approved by the Engineer.

Table 304A.3 – Slurry Coarse Mix Performance Properties

Properties	Test Method	Slurry Coarse
Mix Time (minutes) controllable, min	ISSA TB– 113	3
Consistency Test (cm), range	ISSA TB– 106	2.0 – 3.0
Wet Stripping (% Retained),	ISSA TB – 114	95%
Wet Tract Abrasion Loss, 1 hour soak (Wear Value)	ISSA TB – 100	806 g/m^2
Wet Cohesion: 30 mins Minimum set, kg-cm 60 mins Minimum set, kg-cm	ISSA TB– 139	 12 20

304A.2.3 Aggregates

The aggregates shall be cleaned, crushed stone, crushed slag, or crushed gravel. Only one type of aggregate shall be used in a project unless alternative types are approved. The gradation for the Cover Coat Aggregates shall conform to Table 304A.4. The gradation for the aggregates to be used in the slurry coarse shall conform to Table 304A.5 and shall be chosen based on the type of application or as approved by the Engineer (or as indicated in Note 1).

Table 304A.4 – Cover Coat Grading Requirements

Sieve Designation		Mass Percent Passing
Standard mm	Alternative U.S. Standard	
25.0	1"	-
19.0	¾"	-
12.5	½"	100
9.5	3/8"	85 – 100
4.75	No. 4	10 – 30
2.36	No. 8	0 – 10
1.18	No. 16	0 – 5
0.300	No. 50	-

Table 304A.5– Slurry Coarse Aggregate Requirements

Sieve Designation		Mass % Passing		
Standard, mm	Alternative US Standard	Type I	Type II	Type III
9.5	3/8"	100	100	100
4.75	No.4	100	90 – 100	70 – 90
2.36	No.8	90 - 100	65 – 90	45 – 70
1.18	No.16	65 – 90	45 – 70	28 – 50
0.60	No.30	40 – 65	30 – 50	19 –34
0.33	No.50	25 – 42	18 – 30	12 – 25
0.15	No.100	15 – 30	10 –21	7 – 18
0.075	No.200	10 – 20	5 – 15	5 – 15

The aggregate shall have a mass percent of wear not exceeding 40 when tested by AASHTO T 96. When crushed gravel is used, not less than 50 mass percent of the particles retained on the 4.75 mm (No. 4) sieve shall have at least one fractured face. When crushed slag is used, it must be of uniform density and quality and shall have a density not less than 960 kg/m^3 (60 lb/cu.ft.) as determined by AASHTO T 19.

304A.3 Construction Requirements

304A.3.1 Rates of Application/Spreading of Asphalt and Aggregate

The rates of application/spreading of asphalt and aggregate shall be within the range given in Table 304A.1. These quantities are given as guide only and will vary considerably according to the type and condition of the surface, the grading, type, shape and absorbency of the aggregate, the weather condition and the traffic. The actual quantities to be used for surface treatment shall be determined by the Contractor in accordance with the design methods for one-size aggregate given in the Asphalt Institute Manual (MS-13), Asphalt Surface Treatment. The proposed design shall be subject to the approval of the Engineer.

The Contractor shall furnish the Engineer a certified vendor's certificate in duplicate immediately upon delivery of asphaltic material to the site.

The Contractor shall provide weighing equipment on the site to control the application of aggregates. The weighing equipment shall have an approved multiple beam type scale with indicator and other necessary dials for accurately weighing the aggregate. The scale shall be protected by a weatherproof house with a floor area not less than 10 m^2. The Contractor shall, at his own expense, have the scale tested and approved by the Department of Public Works and Highways.

304A.3.2 Equipment

The equipment for Priming, Chip Coarse and Fog Sealing must conform to Subsection 304.3.2, Equipment.

The Equipment for the Slurry Coarse shall be specifically designed and manufactured to lay slurry. The material shall be mixed by a self-propelled, slurry seal-mixing machine of either truck mounted or continuous run design. The machine shall be able to accurately deliver and proportion the aggregate, CSB 3, mineral filler, control setting of additive and water to a revolving mixer and to discharge the product on a continuous flow basis.

The mixture shall be spread uniformly by means of a conventional surfacing spreader box attached to the mixer and equipped to agitate and spread

the material evenly throughout the box. The machine must be able to lay based on the specifications stated in Design Mix and approved by the Engineer.

304A.3.3 Application of Bituminous Material

It shall conform to Subsection 304.3.3, Application of Bituminous Material.

304A.3.4 Spreading of Aggregate

It shall conform to Subsection 304.3.4, Spreading of Aggregates.

304A.3.5 Control of Traffic

It shall conform to Subsection 304.3.5, Control of Traffic.

304A.4 Method of Measurement

The surface treatment shall be measured by square meter (m^2). The quantity to be paid for shall be the number of square meters of the treatment placed in the accepted base or pavement.

304A.5 Basis of Payment

The accepted quantities, measured as prescribed in Section 304A.4, shall be paid for at the contract unit price for Instapave Surface Treatment, which price and payment shall be full compensation for furnishing and placing all materials and for all labor, equipment, tools and incidentals necessary to complete this Item.

Payment will be made under:

Pay Item Number	Description	Unit of Measurement
304 A	Instapave Surface Treatment (IST)	Square Meter

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
BUREAU OF RESEARCH AND STANDARDS
EDSA, QUEZON CITY

23 November 2007

MEMORANDUM

FOR : **Hon. HERMOGENES E. EBDANE, JR.**
Secretary
This Department

THRU : **RAUL C. ASIS**
Assistant Secretary

SUBJECT : Conditional Approval to Use Instapave Technology as Road SurfaceTreatment

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Relative to the above subject, may we inform you of the following:

1. Instapave is a technology used for improving road surface condition. It was introduced to BRS by Pilipinas Shell Petroleum Corporation for evaluation sometime in 2005.
2. A series of laboratory tests were conducted at the BRS and Shell Laboratories to verify the physical and chemical properties of the materials to be used in the Instapave technology. Laboratory study yielded positive result.
3. To verify the performance of the said technology under local conditions such as temperature, humidity and road usage, two (2) small-scale trials were constructed. The first pilot trial was constructed in April 2006 along Irawan-Tagburos Road, Sta. Lourdes, Puerto Princesa City, Palawan while the second small-scale trial was constructed at Buot St., Carmen, Cebu in February 2007.
4. Performance of the two (2) small-scale trials were monitored for a period of six (6) months. Ocular inspection conducted by BRS personnel as well the results of the non-destructive field tests showed that both pilot trials exhibited satisfactory performance.
5. A price/cost comparison with the conventional method of pavement preservation, like asphalt overlay, indicates a considerable savings if Instapave technology is utilized.
6. Pursuant to Department Order No. 189, series of 2002 (Annex 1), the subject technology is now eligible for issuance of a Certificate of Conditional Approval subject to the corresponding specifications whenever it is used as road surface treatment.

Attached is the Certificate of Conditional Approval for the Use of Instapave technology as road surface treatment, for your consideration and approval.

ANTONIO V. MOLANO, JR.
Director IV

Recommending Approval:

RAUL C. ASIS
Assistant Secretary

Approved:

HERMOGENES E. EBDANE, JR.
Secretary
07 Dec