997. 13 DPWH
12-23-2016

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

23 DEC 2016

DEPARTMENT ORDER)
No. 235)
Series of 2016 12.23.16)

SUBJECT: Standard Specification on the Use of SF-CRETE Concrete Technology for One-Day Portland Cement Concrete Pavement

In line with the continuing efforts to upgrade the construction technology thru adoption of successful research studies, this Department has approved the use of SF-CRETE Concrete Technology for One-Day Portland Cement Concrete Pavement, subject to the specifications hereto attached. A Certificate of Conditional Approval had been issued by this Department accrediting the use of **SF-CRETE Concrete Technology for One-Day Portland Cement Concrete Pavement** in DPWH road projects from December 21, 2016 until December 20, 2021.

This order takes effect immediately.

RAFAEL C. YABUT
Senior Undersecretary
Officer-In-Charge

14.1.2 FET/JFS

Department of Public Works and Highways
Office of the Secretary
WIN6U01405

STANDARD SPECIFICATIONS ON THE USE OF SF-CRETE CONCRETE TECHNOLOGY FOR ONE-DAY PORTLAND CEMENT CONCRETE PAVEMENT

1. Description

This Specification shall use SF-CRETE Concrete Technology, for one-day Portland Cement Concrete Pavement 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.

2. Material Requirements

2.1 Cement

Cement shall conform to the applicable requirements of Item 311 - Portland Cement Pavement subsection 311.2.1. This technology may require the use of additional ultrafine cementitious materials with a computed blaine value based on particle size distribution at around 12,000 cm^2/gram.

2.2 Fine Aggregate

Fine aggregates shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.2.2, Fine aggregate of the DPWH Standard Specifications for Highways, Bridges and Airports. The aggregate raw materials should be tested in accordance to ASTMC 566, *Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying* prior to batching the 24-hour concrete. Mix design should consequently be corrected based on the moisture content test.

2.3 Coarse Aggregate

Coarse aggregates shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.2.3, Coarse aggregate of the DPWH Standard Specifications for Highways, Bridges and Airports. The aggregates used for the design should follow grading envelope in accordance with Grading C based on Table 311.2 of the DPWH Standard Specifications for Highways, Bridges and Airports. For the aggregate raw materials, it should be tested in accordance to Test Method ASTMC 566, *Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying* prior to batching the 24-hour concrete. Mix design should consequently be corrected based on the moisture content test.

2.4 Water

Water shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.2.4, Water of the DPWH Standard Specifications for Highways, Bridges and Airports.

2.5 Reinforcing Steel

Reinforcing Steel shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.2.5, Reinforcing Steel of the DPWH Standard Specifications for Highways, Bridges and Airports.

2.6 Joint Fillers

Joint Fillers shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.2.7 Joint Fillers of the DPWH Standard Specifications for Highways, Bridges and Airports.

2.7 Chemical Admixtures

Chemical admixture shall conform to Specification ASTM C 494M, Standard Specifications for Chemical Admixtures for Concrete or ASTM C 1017M, Standard Specifications for Chemical Admixtures for Use in Producing Flowing Concrete.

Chemical admixture used shall conform to ASTM C494 Type F to best attain strength requirement within twenty four (24) hours after last pouring.

2.8 Curing Materials

Curing Materials shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.2.9 Curing Materials of the DPWH Standard Specifications for Highways, Bridges and Airports.

2.9 Storage of Cement and Aggregate

Storage of Cement and Aggregate shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.2.10, Storage of Cement and Aggregates of the DPWH Standard Specifications for Highways, Bridges and Airports.

2.10 Proportioning, Consistency and Strength of Concrete

Proportioning, Consistency and Strength of Concrete shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.2.11, Proportioning, Consistency and Strength of Concrete of the DPWH Standard Specifications for Highways, Bridges and Airports. Except that at least 400 kgs of cement is required per cubic meter to meet a flexural strength of not less than 3.8 MPa when tested by the third-point method or 4.5 MPa when tested by the mid-point method in accordance with ASTM C 78, *Standard Test Method for Flexural Strengthof Concrete (Using Simple Beam with Third-Point Loading)* and ASTMC 293, *Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Center-Point Loading)*, respectively. This flexural strength target shall be achieved within a maximum of twenty four (24) hours after completion of concrete pouring.

Maximum allowable water-cement ratio shall be no more than 0.40. Maximum allowable dosage of SF-CRETE special admixture is at 1.2%. Concrete produced will be highly workable having a slump flow between 400 to 600 mm which will require minimum vibration. Slump shall be determined using AASHTO T 119, *Standard Test Method for Slump of Hydraulic Cement Concrete.*

3. Construction Requirements

3.1 Quality Control of Concrete

Quality Control of Concrete shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.3.1, Quality Control of Concrete of the DPWH Standard Specifications for Highways, Bridges and Airports.

3.2 Equipment

Equipment shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.3.2, Equipment of the DPWH Standard Specifications for Highways, Bridges and Airports.

To achieve smooth pavements with values for International Roughness Index (IRI) of not more than 3.0 m/km, the Contractor shall ensure that the paver control system is capable of smooth adjustments to automatically follow the surface shape (elevations and grades) required. The preferred method is laser control following a surface shape input to the onboard computer.

3.3 Preparation of Grade

Preparation of Grade shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.3.3, Preparation of grade of the DPWH Standard Specifications for Highways, Bridges and Airports.

3.4 Setting Forms

Setting Forms shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.3.4, setting forms of the DPWH Standard Specifications for Highways, Bridges and Airports. In addition to this, when any form has been badly deteriorated enough to affect the smoothness of the surface of the pavement, the form shall be replaced and not be used in any future pavement works.

The alignment and grade elevations of the forms shall be checked and corrections made by the Contractor immediately before placing the concrete. To ensure compliance to the maximum International Roughness Index (IRI) set by the Department, checking using appropriate surveying instruments shall be done at 5.0 m intervals along the top portion of the forms with a tolerance of +/- 0.001 m.

When any form has been disturbed or any grade has become unstable, the form shall be reset and rechecked. Also, when any form has been badly deteriorated

which could affect the smoothness of the surface, the form shall be replaced and not be used in any future paving works.

3.5 Conditioning of Subgrade or Base Course

Conditioning of Subgrade or Base Course shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.3.5, Conditioning of Subgrade or Base Course of the DPWH Standard Specifications for Highways, Bridges and Airports.

3.6 Handling, Measuring and Batching Materials

Handling, Measuring and Batching Materials shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.3.6, Handling, Measuring and Batching Materials of the DPWH Standard Specifications for Highways, Bridges and Airports.

3.7 Mixing Concrete

Mixing Concrete shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.3.7, Mixing Concrete of the DPWH Standard Specifications for Highways, Bridges and Airports. In addition to this, the following specifications must also be satisfied:

The operation and mixing time for pan, twin shaft and other type of central mixers shall be based on the mixer manufacturer's instructions.

Retempering concrete by adding water or by other means shall not be permitted, except that when concrete is delivered in truck mixers, additional water may be added to the batch materials and additional mixing performed to increase the slump to meet the specified requirements, if permitted by the Engineer, provided all these operations are performed within forty-five (45) minutes after the initial mixing operation and the water-cement ratio is not exceeded. Concrete that is not within the specified slump limits at the time of placement shall not be used.

3.8 Limitation of Mixing

Limitation of Mixing shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.3.8, Limitation of Mixing of the DPWH Standard Specifications for Highways, Bridges and Airports.

3.9 Placing Concrete

Placing Concrete shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.3.9, Placing concrete of the DPWH Standard Specifications for Highways, Bridges and Airports. However, unloading of concrete should be done within one hour upon arrival of trucks on site. Placing of concrete should be completed within 5 hours from the time of batching.

The contractor, including the workforce shall be trained and accredited by supplier on proper handling, placing, and finishing the pavement using SF-CRETE Concrete Technology.

3.10 Test Specimens

Test Specimens shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.3.10, Test Specimens of the DPWH Standard Specifications for Highways, Bridges and Airports.

3.11 Strike-off of Concrete and Placement of Reinforcement

Strike-off of Concrete and Placement of Reinforcement shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.3.11, Strike-off of Concrete and Placement of the DPWH Standard Specifications for Highways, Bridges and Airports.

3.12 Joints

Joints shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.3.12, Joints of the DPWH Standard Specifications for Highways, Bridges and Airports. However, saw cutting of high-early strength concrete should be done once the concrete has attained sufficient strength and hardness so that the bond between the mortar and aggregates will not be disturbed which is typically between 10 to 14 hours upon completion of pour.

3.13 Final Strike-off (Consolidation and Finishing)

Final Strike-off (Consolidation and Finishing) shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.3.13, Final Strike-off (Consolidation and Finishing) of the DPWH Standard Specifications for Highways, Bridges and Airports.

3.14 Surface Test

The introduction of minimum values for *International Roughness Index (IRI)* as part of the basis for acceptance of newly constructed concrete and asphalt road projects requires more accurate process control on the Contractor's part. The Contractor's Quality Control Plan shall include for the Engineer's review and acceptance, a process control flow chart, and a Method Statement covering all activities in the process, describing how the activities will be managed and undertaken to deliver the specified IRI values.

International best practice indicates that factors critical to success include:

- a well-chosen concrete mixture
- reasonable grades and alignment to suit the paver
- tight level control or stringline management
- continuous supply of concrete to the paver
- consistent concrete workability

- well-maintained paving equipment
- proper operation of paving equipment
- controlled density of concrete - just the right vibration and finishing
- a skilled and dedicated team

Paved shoulders shall be subjected to surface test using a 3-m straight-edge. All areas within the carriageway shall be subjected to surface test using an approved profiling system. The profiling system shall qualify as Class 1 roughness measurement device and shall conform to the latest version ASTM E 950M, *Standard Test Method for Measuring the Longitudinal Profile of Traveled Surfaces with an Accelerometer Established Inertial Profiling Reference.*

The components of the profiling system shall be validated on regular basis per manufacturer's recommendations to ensure that the system is properly calibrated. Validation reports shall be generated, for presentation to the Engineer, confirming that the validations are current, and within tolerances specified by the manufacturer.

The acceptable International Roughness Index (IRI) for concrete pavements shall be not more than 3.0 m/km for National Primary Road, measured in 100 meter sections, at the time of completion.

Prior to any testing, the road surface for test shall be cleaned of loose or deleterious material by brooming or other approved means. Survey shall only be conducted on dry pavement surfaces only. Wide-beam lasers are recommended for textured surfaces like diamond ground, diamond grooved or tyned surfaces where they yield lower IRI values than single point or spot lasers.

Prior to data collection, a test segment with a length of 500 meters will be selected at site for repeatability test. The repeatability test shall be witnessed by the authorized representative of the Contractor and the Engineer. Five profile runs will be made on the test segment for repeatability test. The profile runs for repeatability are acceptable if the average IRI of the two wheel paths satisfy the following criteria:

a. The IRI values of each of the five (5) runs are within 1% of the mean IRI of the selected runs.

b. The standard deviation of IRI of the selected runs is within 2% of the mean IRI.

If the runs do not meet the above criteria, the Profiling Team shall determine if the variability between runs are due to operator or equipment error, and make additional runs until five (5) runs free of equipment or operator errors are obtained. Where necessary an accuracy calibration test shall be conducted in comparison with a Class 1 Profiler (SSI Walking Profiler CS8800 or similar) to resolve said errors.

If the IRI values from the profile runs (for repeatability) meet the above criteria, three (3) runs per lane per site should be conducted for acceptance measurement. The IRI value for the lane shall be the average IRI of the two wheel paths for the three (3) runs combined.

If the IRI value of the whole concrete pavement meets the required value regardless if there are areas found to have exceeded the required IRI value, no correction shall be required, provided that the areas with exceedance have an IRI value within the tolerance limit of 0.5 m/km.

However, if the IRI value of the whole concrete pavement falls beyond the prescribed IRI of 3.0 m/km for National Primary Roads and exceeds the allowable tolerance, the Contractor may opt to undertake corrective action, otherwise, no payment shall be made. The alternatives of diamond grinding to permit correction of the IRI, reduced payment or remove and replace shall also be considered by the Implementing Office, provided that the design thickness is not compromised. Correction by diamond grinding shall be done with approved equipment.

After the correction has been undertaken by the Contractor, further IRI survey will be conducted to validate if the pavement irregularities had been eliminated. Only one IRI survey will be done after the corrective action takes place. If the IRI value of the whole asphalt pavement meets the prescribed IRI value of 3.0 m/km for National Primary Road and any 100 m sections exceeding the prescribed value are within the allowable tolerance after correction, no reduction in payment will be made; otherwise, no payment shall be made.

As soon as the concrete has hardened sufficiently, and achieved 14-day design strength, the pavement surface shall be tested with a 3-m straight-edge (shoulder) or approved profiling system (all areas within carriageway). Areas showing high spots of more than 1.5 mm but not exceeding 9 mm in 3 m shall be marked and immediately ground down with approved diamond grinding equipment.

Diamond grinding shall be done with approved equipment. Grinding shall be done using diamond blades mounted on a self-propelled machine designed for grinding and texturing pavement. The equipment shall have an automatic grade control that will grind a strip of minimum 0.45 m width. Grinding equipment that causes ravelling, aggregate fractures, or deterioration at joints and cracks shall not be permitted. The grinding operation shall produce a pavement surface that is true in grade and uniform in appearance. The grinding depth for corrective action must not compromise the design depth of the pavement. Project data such as design thickness, actual thickness, coring data and field survey will serve as reference in the determination of the grinding depth. Where the departure from correct cross-section exceeds 10.5 mm, the pavement shall be removed and replaced by and at the expense of the Contractor.

Any area or section so removed shall be not less than 1.5 m in length and not less than the full width of the lane involved. When it is necessary to remove and replace a section of pavement, any remaining portion of the slab adjacent to the joints that is less than 1.5 m in length, shall also be removed and replaced.

3.15 Curing

Curing shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.3.15, Curing of the DPWH Standard Specifications for Highways, Bridges and Airports. However, curing time shall be

within 24 hours or when the concrete has achieved sufficient strength to be opened to traffic.

3.16 Removal of Forms

Removal of Forms shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.3.16, Removal of Forms of the DPWH Standard Specifications for Highways, Bridges and Airports. Forms for concrete shall remain in place undisturbed for up to twenty four (24) hours after concrete pouring or if the concrete has achieved sufficient strength to satisfy saw-cutting requirement whichever is earlier (see Section 3.12, Joints of this specification).

3.17 Sealing Joints

Sealing Joints shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.3.17, Sealing joints of the DPWH Standard Specifications for Highways, Bridges and Airports.

3.18 Protection of Pavement

Protection of Pavement shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.3.18, Protection of Pavement of the DPWH Standard Specifications for Highways, Bridges and Airports.

3.19 Concrete Pavement - Slip Form Method

If the Contract calls for the construction of pavement without the use of fixed forms, the following provisions shall apply:

1. Grade

   After the grade or base has been placed and compacted to the required density, the areas which will support the paving machine shall be cut to the proper elevation by means of a properly designed machine. The grade on which the pavement is to be constructed shall then be brought to the proper profile by means of properly designed machine. If the density of the base is disturbed by the grading operation, it shall be corrected by additional compaction before concrete is placed. The grade should be constructed sufficiently in advance of the placing of the concrete. If any traffic is allowed to use the prepared grade, the grade shall be checked and corrected immediately before the placing of concrete. Slip form paver requires a guidance system. The preferred method is laser control following a surface shape input to the onboard computer. Where the alternative of guide wires are to be used, they should be properly tensioned, installed parallel to the edges of the construction at both sides of the work area and maintained at fixed height and tension in order to meet the maximum IRI set by the Department. Checking using appropriate surveying instruments of the guide wire elevations shall be done at 5.0 m intervals with a tolerance of +/-0.001 m.

2. Placing Concrete

The concrete shall be placed with an approved slip-form paver designed to spread, consolidate, screed and float-finish the freshly placed concrete in one complete pass of the machine in such a manner that a minimum of hand finish will be necessary to provide a dense and homogenous pavement in conformance with the Plans and Specifications. The machine shall vibrate the concrete for the full width and depth of the strip of pavement being placed. Such vibration shall be accompanied with vibrating tubes or arms working in the concrete or with a vibrating screed or pan operating on the surface of the concrete. The sliding forms shall be rigidly held together laterally to prevent spreading of the forms. The forms shall trail behind the paver for such a distance that no appreciable slumping of the concrete will occur, and that necessary final finishing can be accomplished while the concrete is still within the forms. Any edge slump of the pavement, exclusive of edge rounding, in excess of 6 mm shall be corrected before the concrete has hardened.

The concrete shall be held at a uniform consistency, having a slump of not more than 40 mm. The slip form paver shall be operated with as nearly as possible a continuous forward movement and that all operations of mixing, delivering and spreading concrete shall be coordinated so as to provide uniform progress with stopping and starting of the paver held to a minimum. If, for any reason, it is necessary to stop the forward movement of the paver the vibratory and tamping elements shall also be stopped immediately. No tractive force shall be applied to the machine, except that which is controlled from the machine.

3. Finishing

The surface smoothness and texture shall meet the requirements of Subsections 3.13 and 3.14.

4. Curing

Unless otherwise specified, curing shall be done in accordance with one of the methods included in Subsection 3.15. The curing media shall be applied at the appropriate time and shall be applied uniformly and completely to all surfaces and edges of the pavement.

5. Joints

All joints shall be constructed in accordance with Subsection 3.12.

6. Protection Against Rain

In order that the concrete may be properly protected against rain before the concrete is sufficiently hardened, the Contractor will be required to have available at all times, materials for the protection of the edges and

surface of the unhardened concrete. Such protective materials shall consist of standard metal forms or wood planks having a nominal thickness of not less than 50 mm and a nominal width of not less than the thickness of the pavement at its edge for the protection of the pavement edges, and covering material such as burlap or cotton mats, curing paper or plastic sheeting materials for the protection of the surface of the pavement. When rain appears imminent, all paving operations shall stop and all available personnel shall begin placing forms against the sides of the pavement and covering the surface of the unhardened concrete with the protective covering.

7. Guide Wires

For flat terrain, guide wire shall be supported at 10.0 m intervals. For, curves and tie-ins to existing pavement, guide wires shall be supported at 5.0 m intervals.

3.20 Acceptance of Concrete

The strength level of the concrete will be considered satisfactory if the averages of all sets of three (3) consecutive strength test results equal or exceed the specified strength, fc' and no individual strength test result is deficient by more than 15% of the specified strength, fc'. A set shall consist of a minimum of three (3) concrete beam specimens.

Concrete deemed to be not acceptable using the above criteria may be rejected unless the Contractor can provide evidence, by means of core tests, that the quality of concrete represented by failed test results is acceptable in place. At least three (3) representative cores shall be taken from each member or area of concrete in place that is considered deficient. The location of cores shall be determined by the Engineer so that there will be at least impairment of strength of the structure. The obtaining and testing of drilled cores shall be in accordance with MSHTO T 24, *Standard Method of Test for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.*

Concrete in the area represented by the cores will be considered adequate if the average strength of the cores is equal to at least 85% of, and if no single core is less than 75% of, the specified strength, fc'.

If the strength of control specimens does not meet the requirements of this Subsection, and it is not feasible or not advisable to obtain cores from the structure due to structural considerations, payment of the concrete will be made at an adjusted price due to strength deficiency of concrete specimens as specified hereunder:

Deficiency in Strength of Concrete Specimens, Percent (%)	Percent (%) of Contract Price Allowed
Less than 5	100
5 to less than 10	80

10 to less than 15	70
15 to less than 20	60
20 to less than 25	50
25 or more	0

The concrete pavement shall have an IRI value tolerance of 0.5 m/km. If the IRI value of the whole concrete pavement falls beyond the prescribed IRI of 3.0 m/km for National Primary Road and exceeded the allowable tolerance, and the Contractor opts not to undertake any corrective measure, no payment shall be made. The concrete pavement shall only be considered accepted if it meets the specified IRI value at the time of completion.

If the correction had been undertaken by the Contractor, IRI Survey will be conducted to validate if the pavement irregularities had been eliminated. Only one IRI survey will be done after the corrective action takes place. If corrective measure had been made and the IRI value of the whole concrete pavement meets the prescribed IRI of 3.0 m/km for National Primary Road, no reduction in payment will be made. If the IRI value of the whole concrete pavement still falls beyond the prescribed IRI of 3.0 m/km for National Primary Road and any 100 m sections exceeding the prescribed value and within the allowable tolerance after correction no reduction in payment will be made; otherwise no payment shall be made.

3.21 Opening to Traffic

The Engineer will decide when the pavement may be opened to traffic. The road will not be opened to traffic until test specimens molded and cured in accordance with ASTM C31,*Standard Practice for Making and Curing Concrete Test Specimens in the Field* have attained the minimum requirements in Subsection 2.10 hereof.

If such tests are not conducted prior to the specified age the pavement shall not be operated to traffic until 24 hours after the concrete was placed. Before opening to traffic the pavement shall be cleaned and joint sealing completed.

3.22 Tolerance in Pavement Thickness

Tolerance in Pavement Thickness shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.3.22, Acceptance of Concrete of the DPWH Standard Specifications for Highways, Bridges and Airports.

4. Method of Measurement

Method of Measurement shall conform to the applicable requirements of Item 311 – Portland Cement Concrete Pavement, subsection 311.4, Method of Measurement of the DPWH Standard Specifications for Highways, Bridges and Airports.

5. Basis of Payment

The accepted quantity, measured as prescribed in Section 4, Method of Measurement, shall be paid for at the contract unit price for One-Day Portland Cement Concrete Pavement which price and payment shall be full compensation for furnishing all materials, for mixing, placing, finishing 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 Specification.

Payment will be made under:

Pay Item Number	Description	Unit of Measurement
	One-Day Portland Cement Concrete Pavement	Square Meter

Republic of the Philippines
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
CENTRAL OFFICE
Manila

Certificate of Conditional Approval

Product Accreditation

This is to certify that

SF – CRETE Technology

(One – Day Portland Cement Concrete/ Early Strength Concrete)

Supplied by:

Holcim Philippines, Inc.

7/F, Venice Corporate Center, McKinley Hill, Fort Bonifacio, Taguig City, 1634

is duly accredited for use in DPWH for one (1) day concrete pouring projects 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 its compliance with the requirements of the aforementioned Department Order.

Conditional Approval Number	:	**0022**
Date Issued	:	**December 21, 2016**
Expiry Date	:	**December 20, 2021**

RAUL C. ASIS
Undersecretary for Technical Services