## STUDY ON THE USE OF DURUS STRUCTURAL FIBERS IN PORTLAND CEMENT CONCRETE PAVEMENT (PCCP)

Durus structural fiber is revolutionizing concrete construction. By adding Durus to the concrete mix, the synthetic fibers eliminate the need of additional steel reinforcement with the benefits of increased performance, reduced cost, and health and safety advantages. Concrete mix with Durus is more flexible, has a greater resistance to plastic shrinkage cracking and is easier and safer to use compared to the traditional steel reinforcement. Using Durus fibers will enhance the toughness of concrete with no risk of the corrosion of steel reinforcement. Hence, the finished product has all the strength of traditional steel reinforced concrete, with a 3-dimensional matrix of fibers achieving a more flexible and high performance solution.

In order to determine effectiveness of Durus structural fiber to resist plastic shrinkage cracking and improve the performance and strength properties of hardened concrete pavement the Department of Public Works and Highways through the Bureau of Research and Standards constructed a pilot research project incorporating the use of Durus structural fiber in PCCP. The project is implemented in Bacolor, Pampanga by the DPWH Pampanga First District Engineering Office, Region III.

The BRS personnel together with the DPWH Pampanga First District Engineering Office, and Tertex International Philippines' representatives conducted final inspection of the newly constructed pilot project on August 10, 2017. During the final inspection, concrete core specimen representing different trial sections and lanes were obtained and found conformance to the required thickness of 0.3m. On the other hand, surface distresses such as hairline transverse and temperature cracks, and pockmarks were noted on the completed pilot project.

Hereafter, the proponent shall give a warranty period of at least one (1) year in accordance to Department Order 189 series of 2002.

Skid Resistance values on all test locations met the required minimum value of 55 for motorway, truck and class 1 road and trafficked roads carrying more than 2000 vehicles per day as recommended by the UK Department for International Development Overseas Road Note 18. On the other hand, Texture depth using Sand Patch Test five (5) out of six (6) test blocks passed/met the recommended required value of not less than 0.50 mm. as per UK for bituminous/concrete pavement. During the conduct of crack mapping, several surface defects were noted such as temperature and transverse cracks, spalling, pockmarks and broken block of the PCCP.

The results of the monitoring of the pilot project for the period of first three (3) months from the completion date exhibited satisfactory testing results. However, surface distresses occurred on the completed PCCP and therefore recommended to continue monitoring the first small-scale pilot project.

As recommended, second small-scale pilot project will be implemented by DPWH Bataan First DEO along Angeles-Porac-Floridablanca-Dinalupihan Road in Dinalupihan, Bataan. The construction and monitoring of the latter will supplement the first small-scale pilot project's monitoring results.