

EMULSION BASED HALF WARM MIX TECHNOLOGY

CSIR - CRRI had developed a knowhow on the Emulsion based **Half Warm Mix** technology for construction of roads, which reduce the temperatures of production of bituminous mix and their application by significant quantum of about 80 °C by using bitumen emulsion as binder in place of bitumen. In Half Warm Mix Technology, the blended aggregates of different sizes conforming to the specification for construction of Bituminous Concrete (BC) were charged in the drum of hot mix plant. The aggregates were heated to 90 °-100 °C . The bitumen emulsion (SS-2) was heated to 60 ° -70 °C. The optimum bitumen emulsion (SS-2 grade) quantity say 9.5% by weight of mix(as optimized by designing Half warm mix in the laboratory) was added to hot aggregate (90-100°C) and mixed uniformly. The bituminous mix of temperature (80 ° - 85 °C) was obtained and the coated aggregates were discharge into the dumper (Photo1). The temperature of discharged aggregate was recorded as about 85 °C . The construction of road of a test section with Half warm mix technology was carried on NH-27 near Rajkot,Gujarat (Photo 2) and performance of the sections was found satisfactory even after 4 years.

Photo 1



Photo 2



Benefits of Half Warm Mix Process:

- (i) Protect the environment due to lowering of application temperature by 80 °C (half of application temperature)
- (ii) Conserve the energy by 60-70 % due to reducing application temperature in comparison of conventional road construction method.
- (iii) Reducing in carbon footprints in road construction
- (iv) Road construction period during the year enhanced by 2-3 months
- (v) It is safer process than conventional method as risk of health hazard of workers is reduced significantly

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