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Policy Letter No 02/2008

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(DG MAP List A, B & C)

CONCRETING IN HOT WEATHER FOR MAP WORKS

1. It has been observed by visiting officers during visits to the work sites that concreting work is done during peak of the summers when temperature soars to more than 40^{o}C. It results in inferior work giving rise to number of cracks on the surface of the concrete.

2. In this connection, the attention is invited to Para 2.3.3(j) of the SP-25, wherein, it has been advised to carryout concreting work during early hours of the day. The adverse effects of hot weather concreting and its remedial measures are given in Para 2.3.4 of SP-25.

3. Concreting should be avoided when temperature is more than 40^{o}C. The ideal temperature range for concreting is from 15^{o}C to 25^{o}C generally, should therefore be carried out during the early hours of the day, in addition to high humidity level (around 90%) and absence of windy conditions. Henceforth concreting work MUST be carried out either during early hours of the day or during the evening (keeping water and aggregates cool protecting from the sun).

4. The concreting done during summer should be immediately protected against sun and hard blowing wind (approx after two to three hrs of mixing) using gunny bags etc so that water coming on top of concrete after bleeding is not evaporated before setting of concrete.

5. Curing should be started soon after setting of the concrete (approx 8 to 10 hrs after mixing) through frequent sprinkling of water on gunny bags so that concrete remains constantly wet.

6. The environment should be sensitised accordingly and this may be ensured that the instructions are complied with in letter and spirit.

7. The following precautions shall be taken while concreting in hot weather (summer) :-

(a) The most direct approach to keep concrete temperature down is by controlling the temperature of its ingredients. Aggregates and mixing water exert most pronounced effect by virtue of their quantity and specific heat respectively :-

(i) Keep aggregate under shade.
(ii) Cool aggregates by sprinkling water.
(iii) Use chilled water or mix ice (40 kg of ice m^3 of concrete).

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(b) Mix should be designed to have minimum cement content consistent with other functional requirement such as durability.

(c) Use of plasticizers / Super Plasticisers and Retarders may be beneficial during hot weather.

(d) Ambient temperature shall be below 40^{o}C at the time of placement. Concreting may be planned during morning and evening hours if ambient temperature during day time exceeds 40^{o}C.

(e) The period between mixing and delivery shall be kept to an absolutely minimum.

(f) Form work, enforcement and sub grade shall be sprinkled with cool water just prior to placement of concrete.

(g) The area around the work shall be kept wet extent possible to cool the surrounding air and increase its humidity.

(h) The speed of placement and finishing should be maximized. Sufficient men and machinery shall be employed to handle and place the concrete immediately on delivery.

(j) Immediately after compaction and surface finish, concrete shall be protected from evaporation of moisture (approx 2 to 3 hrs, after mixing). It shall be covered with wet (not dripping) gunny bags, Hessian cloth etc.

(k) Once concrete has attained some degree of hardening sufficient to withstand surface damage (approx 8 to 10 hrs after mixing), moist curing shall commence.

(l) The moist curing during hot weather shall not be less than 10 days.

(m) Cure continuously, because the volume changes due to alternate wetting and drying promote development of surface cracking.

(n) Use of RMC will help achieving most of the standards mentioned above. (Authority : SP-25-1984).

8. Executing Agencies / Consultants / Project Manager and Technical Advisors would ensure that above provisioning of policy shall be strictly adhered to. A curing register shall be maintained at site showing place, date of placement of concrete, date of curing started and last date of curing carried out. Performance feed back shall be submitted by Project Managers / Technical Advisors, if any surface cracks are observed on the surface of concrete.

(Sanjeev Gupta)
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For DG MAP

Internal

Plg Team ‘A’
Plg Team ‘B’
Contract Section

- for information and necessary action please.