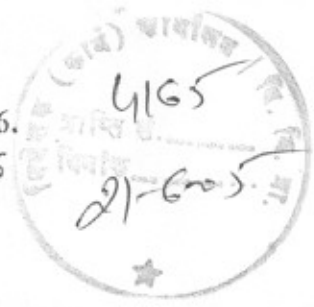


DELHI DEVELOPMENT AUTHORITY
OFFICE OF THE CHIEF ENGINEER(HQ)

No. F 73(36)2003(QC/CB) 164 Dated: the 14th June, 06.
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2016



Q.C. CIRCULAR-NO. -171

Sub: Repairs of defective concrete items/structures.

Concrete has remained as one of the very widely and extensively used construction materials. It has traced a very long path from ordinary volume batched site concrete to a highly sophisticated ready mixed high performance concrete.

It is necessary on our part to cast the concrete structures strictly to required dimensions, shape, line and levels so as to ensure that the structure behaves in the manner it has been assumed to behave during the design. But, it has been observed that adequate attention is not being paid at site to maintain the dimensions, shape, line and level strictly in accordance with the design and drawings. The main reason is use of sub-standard form work, poor control on production and placement of the concrete. Whenever the observations are raised by the Q.C. Cell on such issues, it is replied by the field formations that the defects have been rectified by using micro concrete. The micro concrete as perceived by them is simple site mixed concrete with slightly richer cement and smaller size stone aggregate of 10mm size.

When we undertake any repair work, it is necessary to use the concrete which attain high early strength and is also shrinkage free, but in

Handwritten notes and signatures at the bottom left of the page:
D. Singh (w)
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AE II

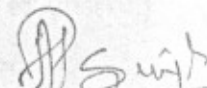
case of the so called micro-concrete prepared at site as pointed out above, the same is not true.

Technically speaking the micro concrete is a mixture of pre-batched, pre-packed cementitious binder, graded fine aggregates, flow control agents and shrinkage compensating admixtures. These components are accurately blended in the matrix and manufactured under controlled factory conditions. At the site, predetermined quantity of water is added to the dry powder before it is mixed using either a paddle mixer or a pan mixer. Cleaned coarse aggregates are added to the wet mix while mixing process is continued. The resultant material will be free flow, non shrink, high early strength, self compacting micro concrete. Since a very low water cementitious ratio is used, a high strength of the order of 60 Mpa is achievable in 28 days. The typical properties of micro concrete are furnished in table below:

Max ^m size of aggregates	12.5 mm
Expansion characteristics	Unrestrained expansion 1 to 4%
Co-efficient of thermal expansion	$10-12 \times 10^{-6}/^{\circ}\text{C}$
Fresh wet – density	2100 – 2200 Kg/m
Typical W/C rates	0.16
Work ability	Free Flow Consistency
Compressive strength in	24 hrs ----- 20 Mpa
	7 days ----- 30 Mpa
	28 days ----- 60 Mpa

Such micro-concrete can be obtained from reputed manufacturers and should be used in under strict supervision not below the rank of Asstt. Engineer.

It is enjoined upon all the Ex. Engineers to please ensure that the repair to defective work in concrete is done by using factory made micro concrete of reputed make, rather than going for ordinary site mixed-material. No payment on this account shall be admissible as the defect is supposed to be rectified by the contractor at his own risk and cost.


(A.P. Singh) 14.6.55
Chief Engineer(QC)/DDA

Copy to:

1. All Chief Engineers/DDA.
2. All Superintending Engineers/DDA.
3. All Ex. Engineers/DDA.
4. S.E.(QC) and All Ex. Engrs.(QC)/DDA.
5. PS to VC/DDA, for information of the latter.
- ✓ 6. PS to EM/DDA, for information of the latter.


Chief Engineer(QC). 14.6.55