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No. RM-29 (3)/75 *Dated the 16th September 1975*

To

The Cement Controller and Joint Secretary to the Government of India, New Delhi

Sub: Use of Portland-Pozzolana cement in bridges

Please refer to the circular letter No. CC/CO/25 (3)/73/12804, dated the 7th September, 1974 on the above mentioned subject.

It may please be noted that though the 7-days strength for both Ordinary and Pozzolana cement has been proposed to be the same, 3-days strength of the Pozzolana cement has not been specified in IS Code. It has also been stated in para 0.2 of "Foreword" of the latest draft IS:1489-1975 for this cement that "the addition of Pozzolana does not contribute to strength at early ages" In view of that it is not clear how it has been stated in your letter that the impediment in this respect is removed now. It is also noted from the "Foreword" that the "strength similar to ordinary Portland cement can be expected in general only at later ages provided the concrete is cured under moist conditions for a sufficient period". This may also be considered as one of the impediments for general use particularly for bridges where the work is required to be completed faster without any doubt about the development of strength. Moreover, this type of cement is still to be accepted in IS/IRC-Codes for general use for all types of structures/Bridges.

The full performance data on the aspects listed below are essential before this cement can be used in reinforced cement concrete and prestressed cement concrete bridges:-

i) Bond strength of steel with concrete;
ii) Shrinkage of concrete;
iii) Creep of concrete;
iv) Modulus of rupture;
v) Young's modulus;
vi) Shear capacity;
vii) Tensiles strength; and
viii) Corrosion of steel.

The designs of RCC and P.S.C. bridges, which are mostly the types adopted for Highway Construction, in this country, are based on the specific values of the above aspects which can be determined based on performance data only. But the sufficient data in this regard are not available for Portland Pozzolana cement. Till such time, sufficient data for this cement are available, and the same examined, the use of Portland-Pozzolana cement in R.C.C. and P.S.C. bridges will have to be deferred. This may be kept in view while introducing this cement for general use particularly for Highway bridge construction. These points should be brought out so that the users it usefully knowing these limitations.

Copy forwarded for information and neccessary action to the Chief Engineers/Principal Engineers of States/Union Territories incharge of Highway, Director (Civil), I.S.I. and C.A. I.