

No. PL-50 (8)/74-A-NH VI

Dated the 9 March, 1978

To

All State Chief Engineers/Addl. Chief Engineers of the State PWDs and Union Territories dealing with Roads

Sub: Use of Portland Pozzolana Cement in Highway Bridges

The production of Ordinary Portland Cement (OPC) has fallen short of the demand in the country. To meet the increasing demand, the Ministry of Industry has tried to maximise the production of cement by fuller utilisation of the installed capacity in the country by allowing the production of Portland Pozzolana Cement (PPC). This has resulted in a sizable reduction in the OPC now available for use on highway bridges.

2. So far, the use of PPC for concrete work in bridges has not been permitted. This has been because of some apprehensions regarding the properties of concrete made with PPC, as already brought out in a circular issued by this Ministry (Circular letter No. RM-29(3)/75 dated 16.9.75).

3. The matter has recently been again reviewed and in order to utilise the existing production of Portland Pozzolana Cement strictly conforming to IS:1489, it has been decided to permit the use of such PPC on components of bridges where plain concrete work is involved and where reinforcement is not taken into account in the design of the member. However, all such concrete works shall be carried out under the strict control subject to the following:-

- (a) Portland Pozzolana Cement shall only be factory made and strictly conforming to IS : 1489. Mixing of pozzolana with Ordinary Portland Cement at site shall not be permitted.
- (b) All such cements shall be tested for ascertaining the quality of cement conforming to the standards laid down in IS : 1489. In this connection, reference is also invited to the requirements spelt out in Ministry's Circular letter No. NH. VI-50 (20)/77 dated 15.12.1977. Any cement falling short of the prescribed standards shall not be used on the works.
- (c) Before taking any supply of Portland Pozzolana Cement from any factory, the following should also be insisted upon:
 - (i) Manufacturer's certificate that the cement conforms to the requirements of IS : 1489 and also stating the type of pozzolana used in the finished cement.

The distinguishable identification marks put on the cement bags which would help in identifying these bags from other types of cement for purposes of storages and use.
- (d) All such PPC shall be stored separately from Ordinary Portland Cement so as to ensure that both the cements do not get mixed up for use on the works.
- (e) All concrete made from Portland Pozzolana cement need long period of wet curing. This aspect will depend upon the Pozzolanic material used in the manufacture of cement. However, at site adequate wet curing shall be ensured for attaining the design strength of the concrete, which shall be ascertained either by resorting to pre-testing or as advised by the manufacturers in this regard.
- (f) Since the initial increase in strength of concrete made from Portland Pozzolana Cement is slower than that made from Ordinary Portland Cement, it is essential to allow for a larger period of curing before the centering and supporting shutters are removed. It is suggested that pre-testing be resorted to ascertain this period of curing in order to ensure that 75% of the design concrete strength is achieved before the centering and supporting shutters are removed. However, this curing period shall not be less than that specified for concretes made from Ordinary Portland Cement.

4. In order to ensure that the Cement Controller makes available the necessary quantity of Portland Pozzolana Cement and Ordinary Portland Cement for use on highway bridges, it is suggested that in future all indents for cements should clearly mention the requirements of Portland Pozzolana Cement and Ordinary Portland Cement separately, the latter being primarily meant for use in R.C.C. and prestressed concrete members of the bridge.