

Kolkata Metro Railway

The Metro Rail Project at Calcutta involved construction of an underground tunnel in the city. During the first phase of the construction work, the job was divided amongst a number of contractors. Numerous difficulties were experienced by the contractors working on the project especially in mass concreting by conventional methods.

The numerous construction joints and porous concrete, turned out to be a source of heavy water ingress into the tunnel. And the tunnel had to be reasonable dry for operating Metro Services on schedule and undisrupted. The heavy water ingress during construction disrupted work schedule delaying the services significantly.

The second phase overcomes the problem

With the experience gained during the first phase of the construction work, Metro Rail Authorities wanted to ensure that the second phase had a smooth sailing. Especially because the route of the RTS box in this phase passed through very densely populated areas of the city with very heavy traffic. It was impossible to carry out concreting in this phase by conventional method because of space constraint at site.

New Method of Construction

The operational problems stated above called for setting up of the batching plant about three to four Kms away from actual site. Transportation of the concrete mix to the site of placement by means of transit mixtures and agitator cars.

With this planned solution the Metro Rail authorities awarded the contract for the entire job to Mesrs. Hindustan Construction Co. Ltd who had all the resources, infrastructure techniques & Technologies available with them to handle the project.

CICO - Becomes a Partner in Progress

The concrete specifications required that the initial slump of the batching plant should be around 190 - 200 mm but not less than 150mm at the pouring point. The time estimated between making and placement of the concrete was around 1.5 hrs. to 2 hrs. This is the time when **CICO** got involved with Hindustan Construction Ltd. and set about designing a concrete mix with a super plasticiser as an admixture to provide the desired results laid down. The process of designing a concrete mix involved many critical trials and the concrete mixed design finally evolved, using **CICO PLAST SUPER** - a new generation superplasticiser based on a blend of molecular weight polymers to suit Indian conditions.

CICO PLAST SUPER is a superplasticiser with that degree of slump retention characteristics which enable a flowing concrete to placed despite a considerable time gap between mixing and placing. The significant advertising of this admixture over conventional European Superplasticiser lies in its compatibility with high ambient temp. in places like in India.

CICO-Concrete Mix Design Deliver Result

The concrete produced out of the concrete mix design with admixture of **CICO PLAST SUPER** got an initial slump of 200mm at the batching plant. After 1.5hrs the slump was 150mm at the pouring point. And the concrete was still plastic enough for placement by means of a variable discharge concrete pump at the rate of 60 CUM per hour the desired results obtained thus enabled Hindustan Construction Co. and Metro Rail Authorities to decide finally on adapting mix design with **CICO** admixture for the concreting work of the second phase.

Metro Rail Project's Second Phase Progressing Smoothly

Hindustan construction Co. has already placed 30,000 CUM out of a total of 2,00,000 CUM of concrete till date without any problems .And the construction work is going on schedule. **CICO** is proud of this achievement and becoming a partner in progress. Saving time and cost over runs for Metro Rail Authorities. Helping modern means transit system reach millions of residents of Calcutta Metropolitan city on schedule.