

GC Member Lecture Series

A lecture series by General Council members of Dr. Fixit Institute of Structural Protection & Rehabilitation has been started with a view to avail the expertise of the GC members in the field of construction, repairs and rehabilitation etc. The following 3 lectures were organized which were attended by the employees of CC division of Pidilite Ind. Ltd as well as the Civil Engineering professionals of outside organizations.

1. April 04, 2008: Corrosion Resistant Concrete by Dr. Prabir C. Basu, Director, Civil & Structural Division, Atomic Energy Regulatory Board, Mumbai

Abstract: The corrosion process in the reinforcement is initiated when contaminant fluid such as chloride ions, moisture etc. ingress through the concrete cover and break the passive barrier provided by the alkalinity of the concrete. Therefore, the concrete is required to be engineered to prevent corrosion of concrete structures during its service life. For this purpose, the concrete should have the attributes like lower porosity, minimum cracks and high alkalinity. To achieve these attributes, proper control on Mix proportioning, construction details, curing and quality assurance has to be ensured. From the study presented in the lecture, it is concluded that the performance of concrete with mineral admixtures like fly ash, silica fume, ground granulated blast furnace slag and metakaolin improves significantly for preventing the corrosion. Among them, fly ash seems to provide the best performance.

2. April 25, 2008: Maintenance & Repair of Concrete in Structures by Prof. B. Bhattacharjee, Civil Engineering Department, I. I. T. Delhi

Abstract: Like other things in nature, concrete structures also deteriorate with time. Major factors which affect the condition of structures are quality of concrete & construction, environmental and loading conditions. The various processes of degradation in concrete are sulphate attack, acid attack, alkali aggregate reaction, carbonation and chloride ingress leading to rebar corrosion. Diagnosis of causes of distress is complex in nature as the cracks in concrete can be caused due to shrinkage, structural distress and concrete degradation. Therefore, role of condition survey/NDT becomes paramount in identifying the repair measures to be taken and thus keeping the life cycle cost of the structure to the minimum. The materials widely used for repair are special cements and mortars, polymer concrete composites and sealants. Various methods used for crack repair are epoxy injection, routing and sealing, stitching, adding reinforcement, external prestressing, drilling and plugging, flexible sealing, chemical grouting, dry pack mortar, polymer

impregnation, overlays, surface treatment and autogenous-healing.

3. May 30, 2008: Innovating Construction Project Management-Lessons from Manufacturing by Prof. M. G. Korgaonkar, Director General, National Institute of Construction Management & Research, Pune

Abstract: The Construction Lean Improvement Programme (CLIP) was created in 2003 to support the UK construction industry drive, inspired by Egan Committee report "Rethinking Construction". The philosophy of lean construction is based on the concepts of lean manufacturing pioneered by large Japanese car manufacturers. PERT, CPM and software like MS Project & Primavera are being replaced by CLIP for project monitoring. The various 'lean' principles are

- Eliminate **waste** - activities / processes that absorb resources but create no value
- Pursue **perfection** by continuous improvement
- Specify **value** for ultimate customer
- Identify process delivering customer value - **value stream**. Make value adding steps **flow** without interruption
- Let **customer pull** - make when needed, quickly
- Design / operate to deliver things **right first time**

Lean construction is pursued through number of approaches using techniques like Virtual Reality & 3D CAD, integrated design/build for cooperation between designers, constructors and suppliers and design for standardization and preassembly for high quality, cost and time savings. All members from different teams like owner, consultant, and subcontractors are called for the action plan. Supply chain management groups are roped in for seamless procurement of material by "just in" time delivery to point of use to minimize on-site storage and double handling. Project planning is being done by using 'best in class' construction methods, clear identification of critical path and the risk management. Initial planning for budgets and schedules are made through simple bar chart or key milestones. Look ahead (LA) planning for duration of five weeks is done through simple spread sheets based upon weekly work planning (WWP). Thus CLIP can be considered as most effective modern method of project management. Various case studies were presented illustrating the effectiveness of CLIP usage.