



**The Institution of Engineers (India)
Maharashtra State Centre**

Announces

Sixth Two FULLDAY Workshop

on

Repairs, Rehabilitation of Existing RCC Buildings

Water Proofing of Existing RCC Buildings

Durability of New RCC Buildings (Structures)

With practicals of rehabilitation of RCC members by polymer mortar / micro concrete, waterproofing by acrylic polymer based flexible membrane waterproofing system, pressure grouting by acrylic based cement slurry and Shah plaster.

On

Saturday 4.10.2008

and

Sunday 5.10.2008

From : 9.00 am to 5. 30 pm

At

The Institution of Engineers (India)

Maharashtra State Centre

15, Haji Ali Park, K. Khadye Marg,

Mahalaxmi, Mumbai – 400 034.

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About The Institution of Engineers (India) :

The Institution of Engineers (India), is a unique professional body encompassing 15 engineering disciplines and representing the interests of engineers on the global platform. Established in 1920 with its headquarters in Kolkata, IE(I) was incorporated by Royal Charter in 1935. It is the only professional body in India to have been bestowed this honour.

IE(I) functions amongst professional engineers, academicians and research workers and provides a vast array of technical, professional and supporting services to government, industry, as well as to the engineering fraternity. It does so through over 100 Centres spread across the country and overseas. Currently, IE (I) has over 5 lakh members.

Since 1928, IE (I) offers a non-formal engineering education programme, successful completion of which is officially recognised as being equivalent to a degree in engineering and also post-graduate diploma leading to a Master's degree. Over 60,000 candidates appear for these examinations conducted biannually at a large number of examination centres all over the country and abroad.

About Maharashtra State Centre :

The Maharashtra State Centre of the Institution was founded in 1921. It covers whole of Maharashtra & Goa State. It is the largest centre of the Institution having around 27,000 members and 9 Local centres.

The centre has a vast industrial base around and acts as catalysts to bring into their fold, large number of technical persons. The centre has been very active in promoting and diffusing the knowledge, information and technology for engineering application through programmes like - Lectures, Seminars, Symposia, Conferances, Workshops, Training Courses, Technical Journal and Paper Meetings, Site Visits, Film shows, Presentations, Competitions and Exhibitions etc.

About the workshop

Repairs and Rehabilitation of Existing RCC Buildings (Structures)

Majority of the Reinforced Cement Concrete buildings built during the last 10 to 30 years require major Rehabilitation to RCC frame members and to other RCC members.

The principal course co-ordinator is in the field of Repairs and Rehabilitation of RCC buildings since 1993. This presentation is based on the experience gained at number of buildings repaired/rehabilitated/waterproofed-with which he was associated, and also his 'Point of View' on the subject.

Reasons of Early Deterioration

The FIRST major reason of early deterioration is at architectural planning, design and construction stage.

The SECOND major reason of early deterioration of RCC buildings is it's wrong use/misuse during its service life.

The THIRD major reason of early deterioration of RCC buildings is our indifferent attitude to 'House Keeping' and 'Regular Maintenance' to buildings.

Rehabilitation is the FINAL stage of restoration (surgery)

Repairable structure must be repaired.

Replace structure by new only if this is beyond repairs.

However do replace heavily deteriorated RCC members.

Hence, it is absolutely necessary to UNDERSTAND and choose the right, sound and latest scientific methodologies for RESTORATION. We must keep away from faulty methodologies.

How does the owner/client go about?

- + Engage a competent consultant. + Next step is structural audit of the building.
- + Select an experienced and trained contractor in the methodologies specified by the consultant.
- + Ensure full time supervision, preferably by a civil engineer, engaged by the owner / client.

Structural Audit (Inspection Report)

In case of majority of the buildings investigation by the visual inspection and by hammer sounding is good enough. Non-destructive testing is necessary in very special cases.

STRUCTURALAUDIT report should contain following details.

1. Detailed covering letter with advice on each and every problem observed.
2. Detailed flat-wise report of flats.
3. Detailed methodologies with specifications/ sketches for all problems
4. Few photographs highlighting problems
5. Detailed measurement sheets of quantities worked out
6. Estimate at prevailing market prices in detailed Bill of Quantities

Methodologies for restoration

The main philosophy of Repairs, Rehabilitation should be that CRACKS should not reappear after Restoration for a reasonable period of time. Over emphasis on strength is not advised.

Buildings behave just like human beings. Once this is understood the treatment becomes easy. No mass scale treatment is advised. Treat only affected locations. Further only sound, latest scientific methodologies for restoration should be adopted.

Methodologies for attending to each and every problem observed are perfected by the principal course coordinator and are made available in study material. We will discuss all the above aspects in detail during the programme with help of photos, sketches.

Waterproofing To Existing RCC BUILDINGS

There is hardly a building which does not have leakage, seepage or dampness problem.

Is there no permanent solution to this problem?

Yes! There is permanent solution to this problem.

We have to construct buildings to durability parameters. We are going to discuss all these parameters.

Approach / Diagnosis

First check up if leakage is

All round the year or,

Is observed only in the monsoon or,

Is observed during changing of the tiles of the floor/during repairs and rehabilitation work/during renovation work or, Is from plumbing lines/ house drain.

Sources of leakage

There are innumerable sources, which cause leakage/seepage/dampness in a building. RCC frame structure buildings deteriorate (corrosion of reinforcement bars resulting in cracking/spalling of cover concrete) due to many reasons but leakage/seepage/dampness is the main reason.

It is necessary to attend to all the sources of leakage scientifically to keep the building in healthy condition.

Water proofing system advised are:

(i) Cementitious Acrylic polymer based flexible membrane waterproofing system:

This is the best system available as on date. This becomes part and parcel with the structure and is monolithic without any joints. This has generally the same properties (except that this flexible membrane has additional hairline crack bridging ability) as that of concrete on which it is applied.

Further, it is claimed that this system has chloride resistance, sulphate ion resistance, good carbon-dioxide diffusion resistance coupled with its waterproofing qualities and, as such, acts further as a protective coating against concrete and re-bar deterioration.

This flexible membrane system alone, once understood and mastered takes care of all areas of waterproofing in a building. For example, basements, service ducts, lift machine room top slabs,

sunken slabs, water tanks, swimming pools, terraces, chajjas, toilet blocks, entrance canopies, headroom slabs, damp proof course, flower vases etc.

(ii) **By organo silane 4 to 6 nanometers size.**

Durability of New RCC Buildings (Structures)

Many experts from all over the world have generally defined a DURABLE BUILDING / STRUCTURE as its ability to withstand the deterioration, which is caused under the influence of environment throughout its desired life, without the need for undue maintenance.

Simple and straight forward definition of durable building as given by principal course coordinator is a building – in which there is no LEAKAGE-SEEPAGE- DAMPNESS and that its DUCTS were plumbing lines are housed are accessible easily for the life time of the building for inspection, regular maintenance, repairs and later for complete replacement if required.

There is hardly a Flat/Gala/Building/ Bungalow /Tower where there is NO LEAKAGE -SEEPAGE – DAMPNESS. **Many suffer from leakage from toilets of top storey flats.** Leakage spoils paint/ decor. This brings in sickness to occupants. **This is the main cause of deterioration of RCC FRAME MEMBERS which is the back bone of the building resulting in collapses.** This is a serious problem faced by us.

Can we not build houses without LEAKAGE/SEEPAGE/DAMPNESS ? Is this difficult? NOT AT ALL! Only change of attitude is necessary. We need to incorporate durability parameters/specifications into the tender document itself. During the course we are going to discuss the entire ACTION PLAN to build houses durable.

Lodging & Transport :

Participants have to make their own arrangements for lodging and transport in Mumbai. However, limited accommodation for outstation participants may be arranged in Institution's guest rooms on payment, as per institution rates.

Sponsors :

Valued sponsors are welcome to support this workshop as detailed below. The sponsors will have privilege of complimentary delegates, display their products, place banners and or distribute gift articles to the participants.

Sponsors : Rs. 15,000/-
Co-sponsors : Rs. 10,000/-
Table Space : Rs. 5,000/-

Who should Attend :

Owners / Users, Civil Engineers, Architects, Builders, Contractors, Supervisors / Society Office Bearers from Top Management Executives to grass root level staff.

Apply on plain paper / letter head with necessary details :

Registration Charges :

Rs. 1000/- for Housing Society Office Bearers / for members of Engineering and architectural Institutes
Rs. 1200/- for non members
Rs. 700/- for Students

A discount of Rs.100/- will be given to all those who register on or before 30.09.08. The fee is payable in advance by cash / crossed cheque / draft in favour of 'The Institution of Engineers (India), Maharashtra State Centre'.

Registration Charges are inclusive of Study Material. For more details please contact centres office on 24923650 / 2494 2943 or

Principal course co-ordinator :

Jayakumar J. Shah

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