

CONCRETE NEWS

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Kuwait Chapter

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from **THE PRESIDENT**

Architectural Concrete



Ahmed A. Al-Jihayem

Kuwait has lost one of its most eminent pillars in the construction industry, Mr. Hamid A. Shuaib who devoted all his life to Kuwait and the profession. Let me convey on behalf of all of you, my heart-felt sympathies to the bereaved family, friends and colleagues.

The Technical Subject I wish to speak about is Architectural Concrete. I feel that it is essential to join the structural elements with architectural features. Architectural cast in place or precast concrete panels can be custom designed in variety of shapes, sizes and finishes allowing the designer the widest latitude of self-expression, including a virtually unlimited range of colors and textures. Units may be manufactured with conventional concrete or all types of precasts.

Unique surface textures can be achieved with custom designed form liners, exposed aggregate surfaces, sandblasting, acid etching and many other concrete shapes and forms. Precast concrete panels provide flexibility in colors, textures, sizes and shapes to achieve any aesthetic expression.

I invite all architects and engineers to work together to transform concrete to be structural and architectural elements beautifying our buildings and environment.

Finally, I would like to extend my thanks on behalf of Members of the ACI-Kuwait Chapter to the President, Committees Chairperson and Board Members, who have completed their term last December for the excellent work they carried out and the time they spent. At the same time, I would also like to welcome all new members who joined their colleagues in working to upgrade the concrete product here in Kuwait.

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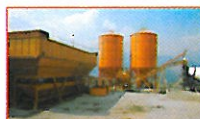
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ACI INTERNATIONAL

The American Concrete Institute (ACI), is a nonprofit international organization that promotes improved technology, technical competence, design, and construction related to concrete for the benefit of society.

ACI KUWAIT CHAPTER

The purpose of the Chapter is to further the charter objective for which the American Concrete Institute was organized, i.e. to further education and technical practices, scientific investigation and research by organizing the efforts of its members for a nonprofit, public service in gathering, correlating, and disseminating information for the improvement of the design, construction, manufacture, use and maintenance of concrete products and structures.

How the Chapter FUNCTIONS

The ACI Kuwait Chapter is approved and authorized by the Board of Directors of ACI International to advance the objectives of the Institute in the State of Kuwait. The Chapter is managed by a local Board of Directors whose members constitute the Chapter officers. Chapter membership is open to all individuals and organizations with an interest in any aspect of concrete technology. The Chapter operates through its committees, which are made up of volunteers to meet the needs of the Chapter members. The Chapter may hold several meetings each year and engage in activities that include:

- Sponsoring educational seminars, short courses or workshops.
- Holding or sponsoring certification training courses and examination.
- Publishing technical information and newsletters.
- Conducting awards programs to recognize quality, innovation and achievement.

Year 2003 Calendar of EVENTS

Exhibition Committee

"1st International Conference & 4th Exhibition"

Concreting & High Performance Concrete in Hot Weather,
December

Publication Committee

"Newsletter"

No. 1, May

No. 2, November

Social Committee

"Dinner Banquet"

Members' Dinner Party, May

Annual Award Dinner Banquet, October

"Field Visit"

Kuwait Oil Sector Complex Project, May

Waste Water Treatment Plant, September

Technical Committee

"Diwaniya"

April & November

"Seminar"

Structural Repair Using CFRP Systems, May

TBA, June

Flooring Systems for Car Parks, Industrial Plants & Food Factories,
September

"Training"

Fire Protection and Repair, September

Protection & repair of basement and roofs, January 2004

"Workshop"

Self Compacted Concrete (with live demonstration), October

Who's WHO

BOARD OF DIRECTORS

- | | |
|--|--------------------|
| 1. Mr. Ahmed A. Al-jihayem
(Al Jazera Consultants) | President |
| 2. Dr. Khaldoun Rahal
(Kuwait University) | Vice President |
| 3. Mr. Anas A. Kassem
(Parsons Brinckerhoff) | Past President |
| 4. Mr. Ubedur R. Arain
(Gulf Consult) | Director/Secretary |
| 5. Mr. Abdulwahab Rumani
(KBRC) | Director/Treasurer |
| 6. Mr. Gaby Khalaf
(M.A. Kharafi) | Director |
| 7. Dr. Moetaz El Hawary
(KISR) | Director |
| 8. Mrs. Ebtisam Al-Kazemi
(NCCAL) | Director |
| 9. Mr. Fahad S. Al-Fuhaid
(Kuwait University) | Director |

CHAIRPERSONS OF THE COMMITTEES

- | | |
|---|-----------------------------------|
| 1. Dr. Naji Al-Mutairi
(KFAS) | Exhibition & Nomination Committee |
| 2. Mr. Amgad M. Saad
(FOSROC) | Membership Committee |
| 3. Dr. Khaldoun Rahal
(Kuwait University) | Publication Committee |
| 4. Mr. Ahmed A. Al-Jihayem
(Al Jazera Consultants) | Public Relation Committee |
| 5. Mr. Mohd. Harb Madbouly
(Al-Ghanim Specialities Co.) | Social Committee |
| 6. Dr. Moetaz El Hawary
(KISR) | Technical Committee |
| 7. Mr. Anas A. Kassem
(Parsons Brinckerhoff) | Nomination Committee |

CONCRETE NEWS

Mission

Concrete News is published periodically by ACI-Kuwait Chapter to share information between members, exchange technical knowledge and enhance the Chapter's position within the engineering community.

Editorial Board

- | | |
|-------------------|---------------------|
| Khaldoun Rahal | Keith Horsfield |
| Abdulwahab Rumani | Rajaarm B. Gaidhane |



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Annual General Assembly 2002



The General Assembly Meeting and Election of the Chapter for the year 2002 was held on December 29, 2002. The highlights of the meeting was the election of the Vice President, Board Members and the Nomination Committee for the year 2003, and receiving the annual accounts for the year ended 30th November 2002. The Assembly was opened by Chapter Secretary Mr. Ubedur R. Arain's opening speech. Then treasurer Mr. Abdulwahab Rumani put the account report for the year ended. After that the President Mr. Anas A. Kassem addressed the meeting. The President pointed out the goal of the Chapter to keep in mind "to develop and share technical information to improve the quality of concrete construction in Kuwait". He also highlighted how the name of the Chapter has been established in the engineering community by means of professionalism in it's activities, by the selfless efforts of dedicated members. Finally, he invited all members to become an active element to keep the goal of the Chapter.

The attending members voted and elected Dr. Khaldoun N. Rahal to the position of Vice President, and Dr. Moetaz El Hawary, Mrs. Ebtisam Al Kazemi and Mr. Fahad S. Al Fuhaid to the board of directors. Dr. Hussein Al Khaiaat, Mr. Mansoor Rao, Mrs. Hayfa Al Mudhaf, Mr. Maher A. Al Attar were selected to the members of the nomination committee. Bylaws amendment of the section no. 7 was also approved at the Assembly. The Chapter's Annual Report for the year 2002 was distributed and the Assembly was concluded with refreshments.

Technical Seminar: Structural Strengthening Innovations

The Technical Committee organized a seminar entitled "Structural Strengthening Innovations" on the evening of May 20, 2003. The event was sponsored by Degussa MBT Construction Chemicals, and the seminar was offered by Mr. Jim Wheat, Marketing Manager in the Gulf region. The count of the attendees exceeded 30, most of whom were members of the Chapter.

Concrete Diwanya

The Technical Committee organized its first "Concrete Diwanya" for this year on Tuesday April 29, 2003 in the Diwanya at the Kuwait Society of Engineers. The subject of the forum was "Hot-Weather Concreting", and was attended by more than 25 members of the Chapter. The attendees discussed the practical specifications and construction precautions required for concrete cast during hot weather, and the possible effects on the strength and durability of concrete. They also stressed on the significant increase of the rate of chemical reactions (both harmful and beneficial reactions), when the temperature is high. Attendees suggested publishing the necessary information about concrete in Arabic, in an easy-to-understand format, and to make this publication available to chapter members and people involved in the concrete industry in Kuwait.



Annual Members Dinner Party



The social committee organized a dinner banquet for the members of the Chapter on May 14, 2003 at the Sheraton Kuwait Hotel. More than sixty members attended the event and enjoyed the evening with live music and presentation of Arabic Poem by Mr. Ali Al Abdullah. Some gold pieces were given by lucky draw before dinner. The dinner Banquet was sponsored by M/S Jassim A. Y. Al Nisf & Co.



December 2003

New Date for ACI-KC International Conference and Fourth Exhibition

The ACI-KC First International Conference and Fourth Exhibition was originally planned for April 2003. In spite of the volatile political situation in the Gulf region in general and Kuwait in particular, many parties were interested in the event. More than 30 technical papers from Kuwait and the region were accepted for presentation in the conference and for publication in its proceedings. In addition, twenty local and foreign companies had arranged for participation in the Exhibition.

However, the Chapter felt that postponing the event until the political situation stabilized would ensure not only the success of the events, but more importantly, the safety and comfort of the participants. The event is now scheduled for the coming December, and is expected to be another contribution of the Chapter to the advancement of concrete knowledge and technology in Kuwait.

The Organizing Committee invites all interested in the concrete industry, and the members of the Chapter in particular, to contribute to the success of the event. You can submit a technical paper describing your knowledge and experience in the field of concrete technology and construction. The theme of the conference is "Hot-Weather-Concreting". Other subjects of interest are repair of concrete elements. Your company can also join the exhibition to market its services and products. Please contact Mr. T. C. Mohammed, the Chapter secretary, for further details.

Corporate NEWS

This section of CONCRETENEWS is dedicated to report the news from the Organizational members of the Chapter

Gulf Inspection International Co.,



Project Name:	Geotechnical/Geological Study for Shaikh Jaber Al Ahmed Al Sabah (Subiyah) Causeway Bridge	
Location:	Kuwait Bay	
Client:	Ministry of Public Works State of Kuwait	
Consultant:	COWI Consulting Engineers AS	
Main contractor:	Gulf Inspection Int'l Co., (GIICo.)	
Total Value:	US\$ 801,465	
Project Period:	Stage 1	July~Sept 02
	Stage 2	May/June 03

Project Scope:

Stage 1 of the project included the preliminary geotechnical investigations that established a sufficient basis for the selection of the most suitable causeway alignments. Offshore boreholes of up to 50m deep below seabed were carried out including in-situ vane shear tests, SPT, pressure meter tests and undisturbed samplings for an extensive laboratory tests. Near shore investigations included CPT with piezocone. Stage 1 has been completed successfully. Stage 2 of the project is expected to start in the near future. It includes detailed geotechnical investigation for the selected causeway alignment, and the development of the conceptual design of the bridge. Apart from deep boreholes, offshore CPTs are also proposed.

Abdul-Wahab Rumani

If you have been involved with the concrete industry in Kuwait, you must have met him and noticed not only his expertise in the subject of concrete technology and materials, but also his pleasant personality.

Abdul-Wahab Rumani, known to the members of the Chapter and to his friends by his family name "Rumani," has been in Kuwait for more than 25 years, and an active member of the ACI-Kuwait Chapter since the inception of the Chapter. He is currently the Technical Manager at the Kuwaiti British Ready-mix Company (KBRC), where he has been responsible for the production of millions of cubic meters of concrete. Rumani, who is keen on improving concrete standards, has been a pioneer in introducing state-of-the-art technologies to help improve concrete quality in the local market.

A Chemist by training, Rumani gained his experience with concrete by working as a materials technician, a materials engineer, and finally as a technical manager. He has been involved with many key projects such as the Amiri Diwan (Sief Palace), MPW/MEW Headquarters, Subiya Power Station, the Scientific Center, Al-Jaber Air Base, N'wayseeb Highway, New Oil Pier and the Jahra Ghazali Motorway.

Rumani has been actively involved with the ACI-Kuwait Chapter since the formation of the chapter in 1997. He is currently a Director and the Treasurer of the Chapter, along with being an active member of numerous committees such as the Technical Committee, Publication Committee, Membership Committee and Exhibition Committee.

Rumani believes in the goals of the chapter, which includes the dissemination of information for the improvement of the design, construction, manufacture, use and maintenance of concrete products and structures. His involvement and contributions to the Technical, Publication and Membership Committees was significant. The Chapter relies on the contribution of its volunteers such as Rumani to achieve its goals.

Rumani's professional contribution has been recognized by Who's Who Historical Society of the USA.



Abdul-Wahab Rumani

Family: Has four sons. The eldest Imran has completed his MBA in Information Systems and currently works in Kuwait. Zahid is about to complete his degree in Automotive Engineering in India. Ali has set his goals to become an astronaut (and is working on it), and the youngest Salman aspires to be a world class Cricket player.

Hobbies: Reading, and listening to music

Education: B.Sc. in Chemistry/Physics, Bombay University in 1973, and completed MBA degree course at Bharthiyar University in India.

ACI- Kuwait Chapter: One of the founding members; elected to board of Directors since inception of Chapter, Treasurer of the Chapter, member of many committees such as Technical Committee, Membership Committee, and Publication Committee. Member of editorial board of CONCRETE NEWS.

Membership in Professional Non-Profit Organizations:

- Fellow of Indian Concrete Institute
- Member of ACI International
- Member of ACI-Kuwait Chapter
- Member of the Institute of Quality Assurance (UK)

Organizations Previously Associated with:

- The Concrete Society (UK), 1993
- The Institute of Concrete Technology (UK), 1992
- The Institute of Highways and Transportation (UK), 1989
- The Institute of Asphalt Technology (UK), 1989

What Causes Cement Balls?



Q. How can we eliminate the cement balls that we've recently discovered in our concrete? This problem seemed to start after we recently installed a new batch controller on our transit-mix plant. Before that, we had operated the plant manually.

We've always monitored slump and mix consistency closely. Also, since the problem has started, we have been very diligent in checking that our drivers rotate their drums for the required 100 revolutions on each load. Thinking that our mixer fins were causing the problem, we brought every driver over the weekend to clean out every mixer. Then the mechanics measured every fin to be sure that they were within manufacturers' tolerances. Yet we still have this problem.

Also, we often notice color variations when we produce integrally colored concrete. But even with uncolored concrete, customers report that some areas of the hardened concrete are darker gray than others.

Do you think that this is an equipment failure, a driver problem, or some batching problem?

A. From your description, the cement balling and concrete discoloration don't appear to be the result of a mechanical or driver problem. Most respondents suggested that the cause had to do with the batching sequence. They recommend that you turn your attention to the timing of the discharge of ingredients into the mixer.

The key to eliminating cement balling is keeping the cement from contacting the mix water directly in the drum. Cement has a high affinity for water. So upon contact with water, the dry cement powder acts like a sponge and globs up. The balls form as these globs roll against the inside drum surface.

The key to prevention is to program a material-loading sequence that deposits the cement and the coarse aggregate into the drum at the same time. Whatever your plant feed limitations are, you must avoid placing the cement in a pool of water in the drum. You can do this by adjusting the loading rates of all of the materials.

Check your cement loading rate. If the discharge rate is set too fast, it can cause the cement to ball up. Sometimes the batching technician in older operations thinks that the plant's initial setup is constrained by an older and slower cement delivery system and will program the sequence to start up the auger or blower earlier in the batching process.

Also, you might want to check at what point the aggregate and cement come together in the drum. One producer reported that installing an extension "boot" to the cement outlet can keep cement and coarse and fine aggregate separate. His plant operator has found that this separation is even more important if the sand is wet.

Repair and upgrade of structures using FRP fabrics

By
Moetaz El-Hawary



Application of CFRP. research work performed in kuwait

Due to deterioration, overloading, accidents or other reasons, structural members may require repair to restore and enhance their structural behavior and loading carrying capacity. Structural members may also require rehabilitation due to change in the required type of service, architectural changes that require alteration to the structural system or just to prolong their service life. Many techniques and materials are available for repair and rehabilitation. The use of different types of plates or sheets has been used by engineers, especially in heavily damaged beams. The strengthening by steel plate bonding has been performed since 1970. Glass fiber plates were also used for repair and were either bonded using epoxy, bolted or both to prevent peeling. The use of plates was then mostly replaced by FRP laminates which are manufactured as sheets or strips by pultrusion. In this process, fiber strands are impregnated in an epoxy resin bath and are shaped by being pulled through a die. Afterwards they are hardened in oven. The commonly used fibers are Glass, Carbon, or more recently Aramid fibers. The glass fibers have a tensile strength of 2000 to 4000 MPa while the tensile strength of carbon fibers is about 3000 MPa. In comparison, steel strength is 500 to 2000 MPa. The Modulus of Elasticity of the fibers is comparable to that of steel. The resulting sheets possess many advantages such as:

- Easy to handle: These strips may be up to 500m long and can be rolled up.
- Light weight: They can be fixed in place by hand or by very light equipment, and they don't affect the structure's dead weight.
- High tensile strength: CFRP laminates have a tensile strength in the range of 3000 N/mm².

- Excellent resistance to fatigue
- Resistance to chemicals and corrosion.
- Thin sheets: They don't alter the overall dimensions of the concrete members.
- Clean application, there is no need to close the structure (bridge or tunnel for example) completely for the repair work to take place.

The only disadvantage of FRP laminates sheets or strips is that they are unidirectional and that the interlaminary strength is much less than that in the fiber direction. This problem, however, was overcome by the introduction of FRP fabrics or textile which possess the same strength in both directions. The research work on FRP laminates includes that on ductility of strengthened beams; importance of adequate anchorage system; effect of CFRP on concrete confinement; use of FRP in seismic repair and the use of CFRP in resisting impact and blast. ACI Committee 440 report contains some details regarding the use of FRP in concrete structures. FRP laminates may also be prestressed to help in arresting and reducing existing cracks, in which case mechanical fixation should be used along with epoxy bonding. FRP may also be used as strands for internal reinforcement replacing steel bars in reinforced concrete structures.

The use of bidirectional CFRP and GFRP fabrics is rather new and the related research is still limited. More research is needed to shed the light on the actual behavior of structural members repaired using FRP fabrics along with the verification of the effectiveness and advantages of this repair method.



KUWAIT CHAPTER THANKS OUR ORGANIZATIONAL MEMBERS.

Their support and willingness to share knowledge is appreciated.

Your Organization Logo could be here!



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