CONCRETE NEWS

Volume 9-No.1 August 2006

aci KUWAIT CHAPTER

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

Contents

FROM THE PRESIDENT

Sustainability, are we ready for the challenge?

The construction and operation of buildings consume the majority of the world's natural resources and energy, and contribute the bulk of landfill waste. Thus, the way we design, construct and maintain buildings has a tremendous impact on our environment and natural resources. Buildings use one-third of all the energy consumed in the US and two-thirds of all electricity. Buildings, in the US, accounts for 49% of sulphur dioxide and 25% of nitrous oxide emissions, that damage urban air. They also produce 35% of the carbon dioxide, blamed for the climate change.

In order to preserve our environment and save enough resources for the coming generations, we in Kuwait have to face the challenge of the sustainable, or green, buildings, which is to design, construct and maintain them in such a way to use a minimum of renewable energy, produce a minimum of pollution and cost a minimum, while increasing the comfort, health and safety of the people who live and work in them. In general, the utilization of the sustainable building concept, is to consider the interrelationships between a building, its components, its surroundings, and its occupants.

Life cycle design is an important integrated part of the sustainable building concept. It is sometimes referred to as "from cradle to grave design" or better yet "from cradle to grave to cradle again design", as recyclability is another important component of the sustainable building design concept.

In order to achieve sustainability in buildings and overcome expected hurdles, the following should be our objectives:

- Creating environmental awareness and understanding of the building ecosystems in Kuwait.
- Defining the different components of sustainable buildings and conduct enough research on each one to understand its effect, variation and importance in achieving sustainable buildings.
- Gaining the ability to design sustainable buildings.
- Defining the features and promoting the use of sustainable building materials.
- Creating local codes and specifications to assure or promote the sustainable buildings design.

ACI-Kuwait chapter in order to maintain its role as the driving force in adapting new concepts has selected sustainability as the main theme for its coming Second International Conference which will be held in March 2007. This will furnish the floor for researching, investigating and discussing all aspects related to proper design for sustainability, among ourselves and with international delegates. After that we will be ready for the sustainability challenge.

Dr. M. El-Hawary
President – ACI - KC

About ACI – Kuwait Chapter:

There are three main bodies of the chapter: Members, Committees and Directors.

Board Of directors

Members of the Board of Directors are elected by the Members of the Chapter after being nominated by the Nomination Committee. There are 9 members of the Board of Directors:

* *President*
* *Vice President*
* *Past President*
* *Secretary*
* *Treasurer*
* *Directors (6)*

The President and Vice president terms are limited to one year. Directors and other officers term is Three years. Two Directors will be elected every year for Three Year term.

BOARD OF DIRECTORS 2006

No	Name	Titel
1	Dr. Moetaz El-Hawary (KISR)	President
2	Dr. Bader Al-Hoti (KUWAITI TECH)	Vice President
3	Dr. Naji Al-Mutair (KFAS)	Past President
4	Eng. Ubedur Rahman Arain (GULF CONSULT)	Director / Secretary
5	Mr. Abdulwahab Rumani (KBRC)	Director / Treasurer
6	Mr. Anas A. Kassem (PARSONS BRINKERHOFF)	Director
7	Dr. Khaldoun Rahal (KUWAIT UNIVERSITY)	Director
8	Mrs. Ebtisam Al-Kazemi (NCCAL)	Director
9	Dr. Hasan Kamal (KISR)	Director

Committees

Membership Committee, the main activities for this committee are:

* Recruit new members as individuals and organizations
* Issue and Renew membership certificates.
* Publish and update chapter directory of membership.
* Facilitate members communications and communicate their concerns to the board of directors and other committees.
* Establish students chapter and run its affairs.

Membership Committee's Members 2006

No.	Name	Titel
1	Mr. Mohd. Herb Madbouly	Chairperson
2	Saeed Shamim Sulaimani	Member
3	Eng. Abdulwahab Rumani	Member
4	Ganesh Radhakrishnan	Member
5	Doaa Farid Issa	Member

Technical Committee, the main activities for this committee are:

* Identify technical topics of interest to Chapter members and make recommendations to the Chapter Board of Direction for seminars, short courses and workshops on these topics.
* Review and report to Chapter members on ACI International committee reports of relevance to Kuwait.
* Review proposed revision of ACI Standards and submit review comments to the Chapter Board of Direction for submission to ACI International.
* Promote local research and testing programs to resolve technical issues of importance for durable concrete construction in Kuwait.

Technical Committee's Members 2006

No.	Name	Titel
1	Dr. Khaldoun Rahal	Chairperson
2	Dr. Moetaz El-Hawary	Member
3	Eng. Abdulwahab Rumani	Member
4	Mrs. Ebtisam Al-Kazemi	Member
5	Dr. Hasan Kamal	Member
6	Dr. Naji Al-Mutairi	Member
7	Hanaa Mohammed Hashem	Member

Publication Committee, the main activities for this committee are:

- Publish a periodic newsletter to inform members of Chapter activities and provide general information of use to the Chapter membership.
- Print and distribute copies of technical reports to Chapter members, as well as to interested individuals and concerned bodies.
- Prepare meeting reports and Chapter news for submission to ACI International for publication in Concrete International magazine.

Publication Committee's Members 2006

No.	Name	Titel
1	Mrs. Ebtisam Al-Kazemi	Chairperson
2	Nader Bahige El-Khatib	Member
3	Mr. Anas A. Kassem	Member
4	Mr. Abdulwahab Rumani	Member
5	Rakesh Kumar Vyas	Member
6	Saeed Shamim Sulimani	Member
7	Khaled Al-Hashemi	Member

Social Committee, the main activities for this committee are:

- Organize annual recreational activities for Chapter members.
- Organize representation of the Chapter at selected national events.
- Organize field trips to major construction projects for chapter members.

Social Committee's Members 2006

No.	Name	Titel
1	Mr. Mohd. Herb Madbouly	Chairperson
2	Mrs. Ebtisam Al-Kazemi	Member
3	Hanan Al-Mutairat	Member
4	Negolas Barakat	Member
5	Saeed Shamim Sulimani	Member
6	Hanaa Mohammed Hashem	Member
7	Dana Drobiova	Member
8	Aziz Ali Hitawala	Member
9	Doa Farid Issa	Member
10	Khaled Al-Hashemi	Member

Nomination Committee's Members 2006

No.	Name	Titel
1	Dr. Khaldoun Rahal	Chairperson
2	Mr. Anas A. Kassem	Member
3	Dr. Arif Al-Durbas	Member
4	Mansoor Rao	Member
5	Nader Al-Khatib	Member

Exhibition Committee's Members 2006

No.	Name	Titel
1	Dr. Naji Al-Mutairi	Chairperson
2	Dr. Moetaz El-Hawary	Member
3	Dr. Khaldoun Rahal	Member
4	Mr. Abdulwahab Rumani	Member
5	Ahmed Al-Jihayem	Member
6	Dr. Hasan Kamal	Member

Training Committee's Members 2006

No.	Name	Titel
1	Dr. Khaldoun Rahal	Chairperson
2	Dr. Moetaz El-Hawary	Member
3	Eng. Abdulwahab Rumani	Member
4	Mrs. Ebtisam Al-Kazemi	Member
5	Dr. Hasan Kamal	Member

Mr. Anas Al Kassem is one of our chapter's active members; currently he serves on the chapter's Board of Directors and a member of the publication committee. A long-time ACI International member, Anas joined Kuwait Chapter in 1999 and a year later he was elected to the board as a director.

In 2001, Anas was elected as a vice president to become the Chapter's President in 2002.

Anas has been an active participant in chapter's functions and committees. He was a member and chairperson of the Publication Committee and the Awards Committee.

When asked why he joined the chapter, he said "I was impressed by the professionalism of the founding members of the chapter".

He stated that he enjoys most activities of the chapter particularly the Awards which he helped establish. He commented "The Awards bring out the soft side of our industry, which is generally dry and harsh. I really enjoyed presenting the Awards of Achievement to the great individuals the chapter selected".

He is a bridge engineer by training; he spent his early career years designing, inspecting and repairing bridges. For the past 6 years he has been involved to a greater extent with engineering management tasks, on which he comments "I like working on technical aspects of engineering more; but I think as a manager you can make a change in people's lives for the better if you have the right attitude; and, that is why I continue to do it despite It is consuming more than I like of my time and energy".

PRO FILE *Anas Al Kassem*

Education:

Ph.D. Qualified Candidacy «Structural Engineering» Rutgers University, New Jersey, USA 1992.

M.Sc. «Structural Engineering» Rutgers University, New Jersey, USA 1989.

B.Sc «Civil Eng.» Florida Institute of Technology, Florida, USA 1987.

Qualifications:

Licensed Professional Engineer (PE) since 1992 in New Jersey and Pennsylvania

Family:

Very happily married to Mona for more than 18 years now with two daughters, Noor (14) and Hanna (8), both are attending the American Creativity Academy in Kuwait.

Hobbies:

Sports (any sport that involves chasing after a ball), Reading (last book read The Davincie Code by Dan Brown).

Work Experience:

1989 to Present:
Parsons Brinckerhoff (PB) , NY, USA
Started as a Junior Engineer checking calculations for bridges and cutting and pasting photographs for bridge inspection reports in NY metro area.. Currently, Principal Engineer and Area Manager for PB- Infrastructure in Kuwait. Have been sationed in Kuwait full time since 1987.

1987 to 1989:
Hardesty and Hanover, NY, USA
Junior Engineer bridge design and inspection

aci **KUWAIT CHAPTER**
Local Connection with International Links

Dr. Hasan Kamal – Technical Committee – Chairperson.

SEMINAR

The Technical Committee of the ACI –Kuwait Chapter has arranged a technical seminar entitled "Sustainability and Concrete Structures", presented by Prof. Moetaz El-Hawary, the President of ACI-Kuwait Chapter. The seminar was held in the Kuwait Society of Engineers on Tuesday, May 9th ,2006.

As the sustainability and green structures are now the focus of interest, due to global environmental problems and diminishing natural resources, international and local developments in this field along with codes, design requirements, maintenance, durability, recycling and other sustainability aspects were addressed in this seminar. Some of the points discussed in this seminar are mentioned in brief in the article entitled "From the President" in this issue.

Dr. Moetaz El-Hawary presenting the seminar.

Audience.

EVALUATION OF INDIGENOUS RAW MATERIALS FOR IMPROVING THE QUALITY OF CLINKER FOR CEMENT INDUSTRY

Suad Kh. Al-Bahar[1], Tilak V. Bogahawatta[1], Abdullah Kh. Al-Enezi[1], Sadikah Gh. Ali[1], Hassan Kh. Kamal[1], Sharifa B. Al-Fadala[1], Ruba T. Al-Foraih[1], Montaha H. Bahbahani[1], Abdul Salam al-Hazza[1], Homoud Al-Hamdan[2], Ibrahim Zaki[2]

Kuwait Institute for Scientific Research[1] and Kuwait Cement Company[2]

Abstract

The construction industry in Kuwait depends heavily on concrete as the main construction material. This situation has placed increasing demands on Portland cement, the primary component of concrete. At present, the Portland cements used in Kuwait are imported either as clinker or as finished products. The high transportation costs involved in importing clinker and Portland cement adversely affect the cost of concrete structures. Local production of Portland cement utilizing local raw materials will be a significant step towards meeting the local demand and controlling the increasing cost of building materials. Also the expected high quality of locally produced Portland cement will enhance the durability of concrete structure.

The primary objectives of this basic research study are to identify local raw materials, which are suitable for the production of Portland cement (Attiogbe et al., 2000) and to quantify and qualify their suitability for clinker production.

Project Description

The project was undertaken in three phases. Phase I involved review of all available reports and studies on utilization of raw materials in Kuwait, (Abu-Eid, 1994). Also this phase involved preliminary investigation of sand, clay and limestone based on previous reports and studies. Phase II involved detailed explorations and sampling of raw materials, based on the investigation of Phase I. Phase III, involved utilization of the selected raw materials that proven most suitable (based on the investigation of Phase II) for trial formulation of clinker mixtures and firing. In every phase of the project, the research activities involved surface and subsurface sampling and borehole drilling explorations. The work involved material characterization, geological and mineralogical classifications, and chemical and microstructure analysis. Results of material quantity estimations were presented in topographic and contour maps utilizing the lasted technologies of GIS and mathematical modeling (Fig. 1). The research tasks were undertaken in close cooperation between Kuwait Institute for Scientific Research (KISR), and Kuwait Cement Company (KCC). Trial tests of mix clinkerization were performed at KCC plant facilities.

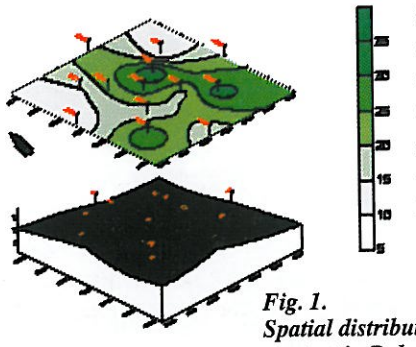

Fig. 1.
Spatial distribution of maximum clay content in Bahra area.

Phase I.

In this phase, surface and subsurface explorations were carried out in various locations of Kuwait for exploration of limestone, clay, and sand. Total depths of 355m of exploratory boreholes were drilled and 120 surface samples were gathered. Chemical analysis by XRF and XRD was performed on 300 samples (Fig. 2).

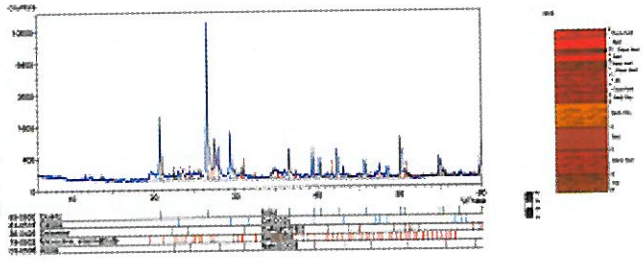

Fig. 2.
XRD analysis performed on selected clay samples.

Phase II. Based on Phase I investigation, three sites were recommended and selected for detailed subsurface explorations (Fig. 3). Al-Ahmadi quarry, Had Al-Himarah, and Al-Khairan were selected as potential locations for limestone. Bahra area was selected as potential location for clay and partially for sand. Phase II encountered drilling of 47 boreholes at a total depth of 1000 m. Atotal of 850 samples were prepared for chemical analysis. Boreholes drilled in limestone locations were very to difficult recover and often covered by a sand layer of a thickness ranging from 10-12 m. In addition they often found intermingled with hard cherty rock layers, which are difficult to be separated, and of a high percentages of dolomite as in MgCO3 and MgO.

In other locations limestone is found within longitudinal oolitic ridges and was estimated to be 525 thousand meter cubic, equivalent to 1.15 million tones, which considered not economical for utilization.

Clay was found in a 1.5 meter square area in Bahra area in the north of Kuwait, it has maximum clay content of 10-36%, which can be used in raw mix compositions to partially or completely substitute bauxite (aluminum oxide) and sand. The total volume of clay content in Bahra area under investigation is 45 million tones, which is enough to use for practically more than 40 years (Al-Bahar, 2003).

Fig. 3. Subsurface explorations by borehole drilling.

Phase III. For the implementation of Phase III and based on results of exploratory drilling program and chemical analyses in phase II, Bahra area was approved to be as a suitable location for mining clay materials. It was agreed to utilize the Bahra clay to completely replace sand. Based on ordinary Portland cement (OPC) and sulphate resistant cement (SRC) mixes, numbers of raw mix were designed by incorporating Bahra clay and completely replacing the sand, decreasing the percentage of bauxite and iron ore used in the original clinker mix. The testing program was based mostly on the grindability and burnability tests. Laboratory-prepared clinkers (Fig. 4), were assessed for their grindability and burnability when Bahra clay completely replaced the sand in the original clinker mix, (Al-Bahar, 2004).

Fig. 4.
SEM of laboratory prepared Clinker Sample.

Conclusions and Recommendations

Investigations of raw materials and explorations have concluded that Bahra area contains a suitable raw material for complete replacement of sand in the original clinker mixtures used by KCC. The trial grindability and burnability tests proved that Bahra clay utilization has improved fineness of the raw mix and clinkerization during firing in the laboratory furnace. Economic benefits of incorporating Bahra clay in raw mixes reflected in the quality of clinkers produced and in overcoming some of the problems encountered in the production of OPC clinker. Also the incorporation of Bahra clay allowed some production cost saving by substitution of the imported bauxite and iron ore used in the original clinker mixtures to compensate for the deficiency in the aluminum and ferrous oxides. Grinding efficiency was notably appreciable with raw mixes containing Bahra clay, which require coarser fineness in the region of 10-12% residue on 170 mesh. Such raw mixes have the potential to produce clinkers for OPC and SRC cements of acceptable quality conforming to the standard requirements and specifications with respect to residual free lime, total alkalis and sulphates. In order to enable KCC to implement the research findings with the ultimate aim of replacing sand with Bahra clay, KISR advised gradual replacement program whereby the raw mix processing, kiln operation and firing and product quality are closely monitored.

Raw Mixes of Good Reactivity and Burnability:

1. OPC raw mix composition:
   - Limestone- 78.40%
   - Bahra clay- 16.10%
   - Bauxite - 3.75%
   - Iron ore - 1.75%

Residue - 170 mesh: 8.85%; 70 mesh: 0.13%

2. SRC raw mix composition:
   - Limestone- 77.80%
   - Bahra clay- 17.00%
   - Bauxite - 2.10%
   - Iron ore - 3.10%

Residue - 170 mesh:12.00%; 70 mesh: 0.52%

Acknowledgement

The project team is grateful for the financial support given by Kuwait Foundation for the Advancement of Sciences and Kuwait Cement Company, which contributed to the advancement of a leading construction industry in Kuwait such as the cement industry.

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Farewell Dinner

Board of Directors With Eng. Amgad Saad.

Eng. Ebtisam El-Kazemi, Dr. Moetaz, Eng. Amgad, Dr. Naji and Eng. Rumani

Dr. Moetaz El-Hawary – President Giving the honoring Armor to Eng. Amgad

The social committee held a farewell dinner party on 08/04/2006 at Al-Marsa Restaurant of Meridian Hotel in the honor of one of the most active members, Eng. Amgad Saad, of the ACI-KC.

The farewell dinner was organized to present the chapter appreciation on the occasion of his departure from Kuwait to his home in Egypt.

As a member of the ACI-KC he was elected as a board member, social committee chairperson, membership committee chairperson, member of technical committee and member of Translation sub-committee of concrete guides.

The committee and all ACI-KC members wish him a good luck.

Open Day

The social committee organized a trip to Al-Shaab Sea Club, on **Friday, 26th May 2006.** Where all the companions enjoyed the show, the Beach, the swimming pools, the tennis and the gardens.

Competitions were held and gifts were distributed among winners.

We all send our thanks to all the administration members of Al-Shaab sea club in making great efforts to come out with the enormous social event we had.

Eng. Mohammad Harb gave a gift to Dr. Moetaz

Eng. Ebtisam giving a gift to Mrs. Elizabeth from KBRC.

Kids activities in the garden.

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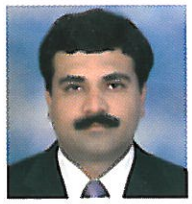
Durability of Concrete



By Rakesh Kumar Vyas
B.E. Civil (Hons) Gold Medalist
QA/QC Manager (RMC)-Mushrif Trading & Contracting Co.

Definition: Durability of hydraulic Cement concrete is defined as its ability to resist weathering action, chemical attack, abrasion or any other process of deterioration. Durable concrete will retain its original form, quality, and serviceability when exposed to its environment.

Criteria for Durability:

1. Freeze-Thaw
2. Scaling
3. Abrasion
4. Chloride Permeability
5. Carbonation
6. Water Absorption

Importance:

The concrete durability problem in the Arabian Gulf region was first reported by fookes and Collies in 1975.Since then there have been many studies at different institute to quantify concrete quality and identify causes of concrete deterioration in the Arabian Gulf Region.

In the Arabian Gulf Region, a hot desert climate prevails, which is described as severely corrosive. Maximum daily temperature reach 45 to 50 o C during summer with a daily variations of 20oC most of the year. Relative humidity usually records between 40 and 80 %, with variations between 20 to 100 % within the same day in some month. Soil and groundwater contamination can go up to 600,000 mg/l chloride and 6000 mg/l sulphate. These points focus our concern for durability of concrete.

Causes of Concrete Deterioration:

Deterioration of Concrete due to Physical Causes- Such as Surface Wear (Arasion,Erosion,cavitation), Cracking (Due to Volume changes, due to extreme temperatures, due to structural over & cyclic Loading)

Deterioration of Concrete due to chemical reaction.

Deterioration of Concrete due to Corrosion of Embedded Steel (Electrochemical Process)

Deterioration of Concrete due to exposure in Seawater

Factors Affecting the Durability of Concrete:

1- Structural Design | 2- Study of Environment | 3- Concrete Specification | 4- Concrete Cover around the reinforcement | 5- Concrete Mix Design | 6- Workability and Cohessiveness of Mix | 7- Production of Concrete | 8- Placing & Compaction of Concrete | 9- Curing of Concrete | 10- Maintenance and usage in service life

List of Standard Test Procedure for Durability of Concrete

In general the standard test procedures are identified to ascertain performance for High Performance Durable concrete.

	Performance Characteristic	Standard test method
1.	Strength	Aashto t 22,astm c39, bs 1881 part 116
2.	Elasticity	Astm c 469
3.	Scaling Resistance	Astm c 672
4.	Freeze/Thaw Durability	Aashto t 161 astm c 666 proc. A
5.	Abrasion Resistance	Astm c 944
6.	Shrinkage	Astm c 157
7.	Creep	Astm c 512
8.	Chloride Permeability	Aashto t 277 astm c 1202
9.	Water Permeability	Din 1048: part 5
10.	Petrographic Examination of Hardened Concrete	Astm c 856
11.	Water Absorption	Bs 1881 part 122
12.	Porosity (Absorption of water by immersion under vacuum)	Rilem cpc 113
13.	Chloride and Sulphate content	Bs 1881 part 124

Durability of Concrete by the use of Mineral Admixture & Slag addition:

Mineral admixtures are finely divided siliceous materials which are added to concrete to improve its durability properties in relatively large amounts, generally in the range of 5 to 15% -Silica Fume, 20-30% FlyAsh, 40-70% GGBS by weight of Portland cement.
It can be added as a replacement or addition in single, double or triple blended in concrete in combination with the Portland cement to improve its durability properties.
The common types of mineral admixtures, which are being used in Arabian Peninsula with technical track records, are: 1 Silica fume 2 Fly ash And Ground granulated blast furnace slag.

1 - Silica Fume:

Silica fume is a by product of the manufacture of silicon and
Ferrosilicon alloys from high-purity quartz and coal in a submerged-arc electric furnace.
Its addition improves:
a) Increase the strength
b) Reduction in the permeability
c) Decrease the chloride diffusion coefficient
d) Increase the electrical resistivity Transmission Electron micrograph
e) Increase resistance to sulphate attack
f) Reduce bleeding and improve the cohesiveness of mix

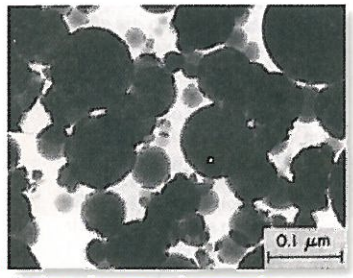
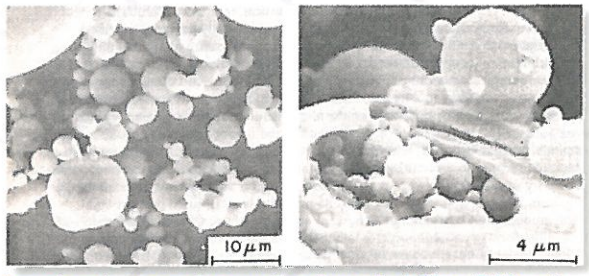


Fig a)
Transmission electron micrograph of condensed silica fume

2 - Fly ash:

Fly ash, known also as pulverized-fuel ash, is the ash precipitated electro-statically or Mechanically from the exhaust gases of coal-fired power stations. Its addition improves:
a) Slower rate of hydration
b) Reduce bleeding and improve the
Cohesiveness of mix
c) Reduce the permeability of mature concrete.
d) Improves sulphate resistance
e) Improves resistance to freezing and Thawing
f) Reduce chloride ingress



Scanning electron micrographs of a typical Class F Fly ash
Fig a) Spherical & Glassy particles;Fig b) a plerosphere

3 - Ground Granulated Blast Furnace Slag:

The slag is a waste product in the manufacture of pig iron
and is a mixture of lime, silica and alumina. When dry ggranulated blast furnace slag is interground with Portland cement clinker Or by dry blending of Portland cement powder and ggbs, it becomes Portland blast furnace slag cement. Its addition improves:
a) Slower rate of hydration.
b) Reduce bleeding and improve the Cohesiveness.
c) Decrease the chloride diffusion coefficient.
d) Higher resistance of chloride ingress.
e) Improves long term strength.
f) Eliminate the risk of alkali-silica reaction.
g) Decrease the Water permeability.


Fig d:
Microscopic examination reveals the Glassy nature of GGBS particles

References:

1 H. saricimen, king fahad University of Petrolium and mineral research institute, A review of research to improve concrete performance in the Arabian Gulf Region, 6th International conference on Deterioration and repair of reinforced concrete in the Gulf region. p-1
2 American concrete Institure, ACI 201.2 R-02 Guide to Durable Concrete, ACI committee 201
3 P. Kumar Mehta & Paaulo J.M. Monteriro, Concrete Microstructure, properties and material
4 A.M. Neville, Properties of Concrete
5 Mike Walker, Guide to the construction of reinforced concrete in Arabian Peninsula
6 The CIRIA guide to concrete construction in the Gulf Region Special Publication 31

KUWAIT CHAPTER

Local Connection with International Links

ACI-KC 2nd International Conference

Design and Sustainability of Structural Concrete in the Middle East; with emphasis on High Rise Buildings

March 12-14, 2007

Kuwait

INVITATION

The ACI-Kuwait Chapter invites you to attend its second international conference that will be held in Kuwait between 12-14 March 2007. The conference will be accompanied by other events that will be announced later.

The first international conference was held in September 2003 and was attended by large number of delegates from many countries.

CONFERENCE

The theme of the conference this year is «Design and Sustainability of Structural Concrete in the Middle East; with emphasis on High Rise Buildings». The Organizing Committee invites authors to submit papers related to the theme with particular interest in the following areas:

- Sustainable Building Materials
- Recycling of Building Materials
- Management and utilization of Natural resources
- Design aspects of Sustainability
- Codes related to Design and Sustainability
- Maintenance and Repair of Structures
- Durability and Long Lasting Structures and High Rise Buildings
- Sustainability and Durability of Concrete
- Sustainability and High Rise Building
- Sustainability in Hot Weather

The official language of the conference will be English. Papers, however, may be also submitted and presented in Arabic.

ABSTRACT SUBMISSION

All those who are interested in submitting papers are requested to submit an abstract in 200-300 words. The abstract may be submitted in either English or Arabic and should be accompanied by the name(s) of the author(s), affiliations, mailing address and e-mail address.

IMPORTANT DATE

Abstract Submission: September 16, 2006
Abstract Acceptance: October 28, 2006
Draft Manuscript: December 9, 2006
Final Manuscript: January 30, 2007

CONTACTS

Dr. Naji M. Al-Mutairi, Conference Chairman
Research Decorate, KFAS
P.O.Box: 25263 Safat
13113, Kuwait
Tel.: (965) 242-5912
Fax.: (965) 240-3912
e-mail: nmutairi@kfas.org.kw

or

Prof. Moetaz El-Hawary, Proceedings Editor and President of ACI-KC
ACI Kuwait Chapter, KSE, Arabian Gulf Road
P.O.Box: 12608, Shamiah
71657, Kuwait
Tel.: (965) 498 9260
e-mail: mhawary@safat.kisr.edu.kw

Course Outline :

- **Standards & Specifications**
  Sampling fresh concrete
  Slump of fresh concrete
  Temperature of fresh concrete
  Making and curing concrete cylinders
  Density of fresh concrete/Yield
  Air content of concrete by pressure method
  Air content of concrete by volumetric method
- **What difference does it make (if standards are not followed)?**
- **Records and Reports**
- **Acceptance criteria (Acceptance testing vs Routine testing)**
- **Laboratory practice session**
- **Review of ACI examination procedures**
- **ACI performance examination**
- **ACI written examination**

Reference Material (Included in the course fees) :

ACI CP-01 Technician workbook; course handout material

Course Instructors :

Abdul Kader Keyrouz, *BS, MICT, MACI*
Head of Technical Division, Materials
ACTS

Khaled Awad, *BE, MICT, FACI*
President
ACTS

Who Should Attend :

Client Representatives, Consultants, Contractors, Governmental Bodies, Material Suppliers, Concrete Suppliers, Inspectors, Testing Agencies, Quality Assurance Organizations

KUWAIT CHAPTER

american concrete institute

Kuwait
November 11 to 13, 2006

aci KUWAIT CHAPTER

QUALITY CONCRETE & RELATED FIELD TESTING PRACTICES

ACI Certification – ACI Concrete Field Testing Technician

November 11 to 13 , 2006

Kuwait

" Tell me and I will forget. Show me, and I may remember. Involve me, and I will understand."

Registration Deadline November 01, 2006

To Register for QC & Related field practices

Delegate Name ----------

Position ----------

Organization ----------

Address & Postal Code ----------

Telephone–Telefax ----------

Method of Payment

❑Cash

طرق الدفع

❑نقدا

Fees : 290 KD (Training and Certification)

ACI CP-01 book, breakfast, luncheons, morning and afternoon coffee breaks are included in the registration fees.

Time: From 8:00am till 17:00 for the first 2 days. third day starts at 8:00am

Signature

For additional delegates please duplicate this form and follow the normal registration process. Discounts: ACTS has special team discounts. Groups of 8 or more from the same organization receive a 10% discount.

Cancellation: Please note that non-attendance at the conference does not entitle the registrant to a refund. In the event that a registrant becomes unable to attend following the deadline for cancellation, a substitute attendee may be delegated. A copy of the conference papers will be provided in any case.

Please notify ACTS of any changes as soon as possible. ACTS assumes no liability for changes in program content or speakers. A full refund of the attendance fee will be provided upon cancellation in writing received prior to November 01, 2006. No refunds will be issued after this date.

For More Information please contact:

Mr. Abdul Kader Keyrouz akeyrouz@acts-int.com

Dr. Moetaz El-Hawary mhawary@safat.kisr.edu.kw

(President of ACI Kuwait Chapter)

Tel: (965) 2448975 Ext. 312 or 4989260

Fax: (965) 2428148 (Attn: ACI)

KUWAIT CHAPTER

MEMBERSHIP APPLICATION

PHOTO

First Name | Middle Name | Surname

الأسم الأول | الاسم الثاني | اللقب

Employer/Organization | Corporate Title

Address

Telephone No. | Mobile/Pager No. | Fax No. | Email

Categories of Membership

Please check the category of membership you are applying for and provide the appropriate dues as described below:

- ❑ Organizational: KD 100/year … (A firm, corporation, agency of government, society, etc.)
- ❑ Individual: KD 15/year … (A person who is a member of ACI International)
- ❑ Affiliate: KD 15/year … (A person who is not a member of ACI International)
- ❑ Student: KD 5/year … (Full time student at an Educational Institution)

Member Profile Information (Please check only one box in each section)

- ❑ Officer, Top Management
- ❑ Administrative, Operating Management
- ❑ Plant, Production & construction
- ❑ Design Engineering Management
- ❑ Architectural & Engineering Services
- ❑ Chemicals and Allied Products
- ❑ Construction Machinery & Equipment
- ❑ Concrete Block & Brick
- ❑ Ready-Mixed Concrete
- ❑ Educational Institutions
- ❑ Engineering Services
- ❑ Contracting Services
- ❑ Architectural Services
- ❑ Management
- ❑ Design Engineer
- ❑ Materials Engineer
- ❑ Plant Engineer
- ❑ Research engineer
- ❑ Sale & Marketing
- ❑ Technical Specialist
- ❑ Testing Laboratory
- ❑ Quality Control
- ❑ Research Services
- ❑ Concrete Products
- ❑ Educator
- ❑ Student
- ❑ Utility
- ❑ Architect
- ❑ Government
- ❑ Other (Please specify)

Are you interested to join any ACI Chapter Committee? ( ) **YES** ( ) **NO**

Payment Method

Membership fees may be paid as follows:

❑ Cash ❑ Cheque (Payable to ACI-Kuwait Chapter)

Receipt No. | Cheque No.

❑ Money Transfer (Payable to ACI-Kuwait Chapter, Account No. 06655310 with The Gulf Bank)

Transaction No.

For ACI Kuwait Chapter use only.

Member No. | Date

Detailed Information Please Contact:

ACI Kuwait Chapter-P.O. Box 12608, Shamiah 71657

Tel: 2449071, 2448975 Ext: 312, Fax: 2428148, Email: info@acikuwait.com

KUWAIT CHAPTER

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.

PURPOSE OF THE ACI KUWAIT CHAPTER

The purpose of the chapter is to further the chartered objective for which the American Concrete Institute was organized i.e., to further education and technical practice, scientific investigation and research by organizing the efforts of its members for a non-profit, 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 provide the means of furthering the chartered 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 is operated through its committees which are made up of volunteers from the membership. Programs are developed by the committees to meet the needs of the Chapter members. The Chapter may hold several meetings each year and engage in activities that may include:

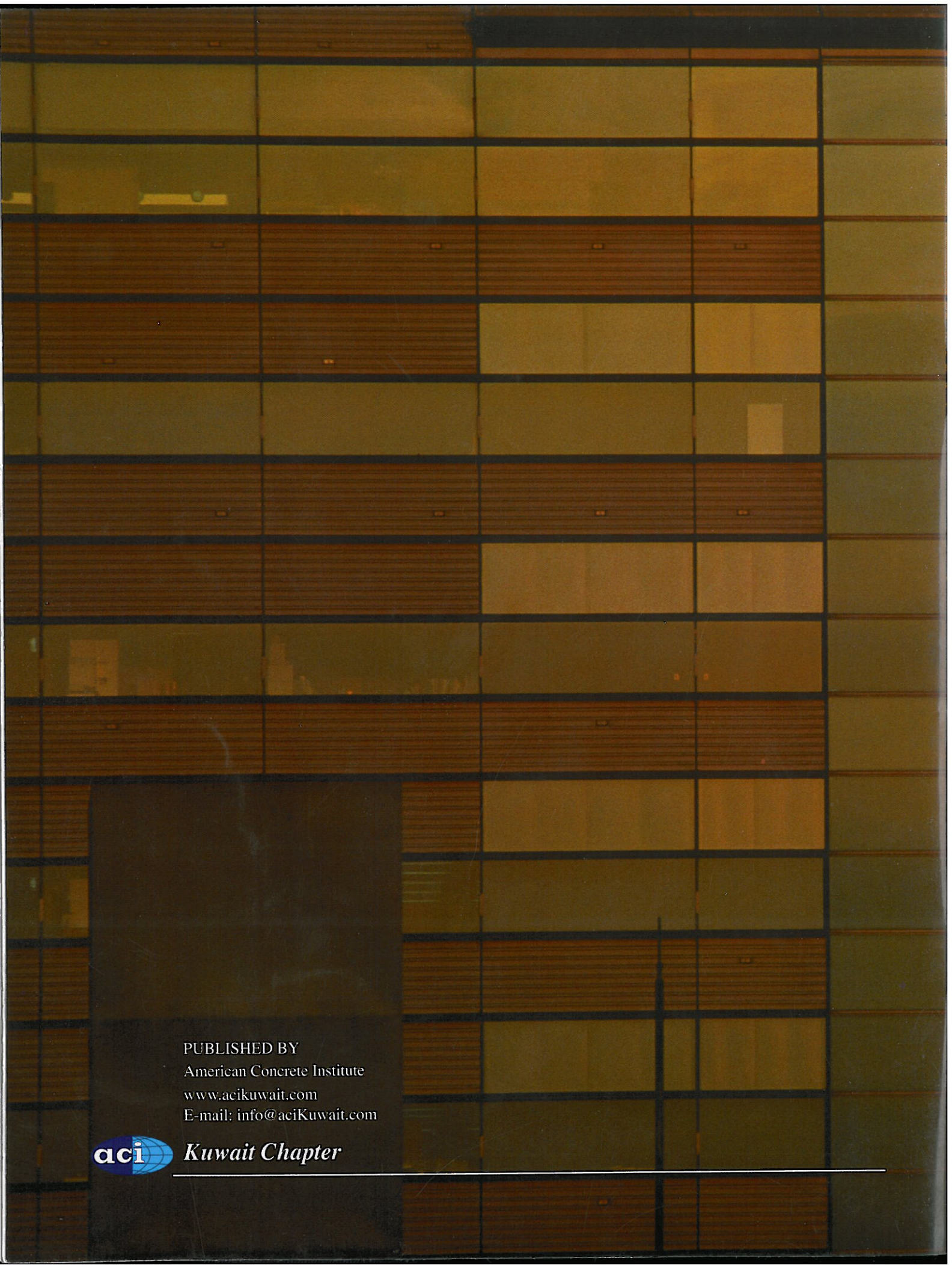
- Sponsoring educational seminars, short courses or workshops.
- Holding or sponsoring certification training courses and examinations.
- Publishing technical information and newsletters.
- Conducting awards, programs for local concrete structures.
- Special social events.

BENEFITS TO CHAPTER MEMBERS

- Attend seminars, short courses and workshops organized by the Chapter at reduced fees.
- Free use of ACI publications, which are supplied to the Chapter by ACI International and are, kept in the Chapter library.
- A forum for members to interact with colleagues and identify potential sources for cooperation in addressing specific technical problems.

HOW TO JOIN THE ACI KUWAIT CHAPTER

To become a member of the Kuwait Chapter please complete the attached membership application form. Different categories of membership are available. You will receive a copy of the Chapter Bylaws upon becoming a member. The work of the ACI Kuwait Chapter is a mutual interest effort and success depends upon your active participation.



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