380
QAT

The Aga Khan Award for Architecture

32, chemin des Crêts, 1218 Grand-Saconnex, Geneva, Switzerland, Telephone (22) 98 90 70

1983 ARCHITECTS' RECORD **CONFIDENTIAL**

I. IDENTIFICATION

A. Projet Title: QATAR UNIVERSITY (Previous The Gulf University in Qatar)

B. Postal Address: DR. KAMAL EL KAFRAWI
P.O.BOX 9018
DOHA, STATE OF QATAR

FRANCE: 42/44 RUE DE LA BRUYERE
POISSY 78300

II. PERSONS RESPONSIBLE

(Please give name and address for each. If more than one, please state precise roles and relationships.)

A. Client/Owner

1. His Highness the Amir of The State of Qatar, KHALIFA BIN HAMAD AL-THANI, The Chairman of Qatar University.
2. Mr. Hisham Qadoumi - The Engineer/Director of the project Technical Office of H.H. The Amir of Qatar, p.o.box 923, Doha.
3. The President Dr. Mohamad Ibrahim Kazim and University Development Bureau, P.O.Box 2713, Doha, Qatar. Members of UDB: a. Dr. Abdulla Al Kubaisi b. Dr. Abdul Rahman Al-Ibrahim c. Dr. Latifa al-Houty d. Prof. Dr. Abdul Aziz El-Bayoumi e. Dr. Johaina Sultan Al-Esa

B. Architect/Planner

Since January 1973
Dr. Kamal El-Kafrawi
P.O.Box 9018, Doha
State of Qatar.

France-Paris : 42/44 Rue de la Bruyere - Poissy 78300

C. Consultants (e.g. Economist, Sociologist, Demographer, Engineer)

1. Ove Arup & Partners, Consulting Engineers, 13, Fitzroy Street, London Since March 1975.
2. UNESCO - 7, Place de Fontenoy, 75700 Paris Various Educational Planning missions Since 1973. Furniture & Equipment Field Experts Since June 1980.
3. Turner International, Project Construction Managers, 405, Lex Ave N.Y. 10017 Since October 1977.

D. Contractor

1. Precast Contract Factory - Dyckerhoff & Widmann P.O.Box 400426 D 8000 Munich 40 Date 1976-1977.
2. Precast Contrete Production, Interbeton, P.O.Box 3809 Doha Qatar, Date January 1978.
3. Phase 1A Main Contract, Fujita Corporation, 4-6-15, Sendagaya, Skibuya-Ku, TOKYO - Japan.

E. Master Craftsman

4. Mechanical Installation - Reliant, P.O.Box 2089, Doha, Qatar.
5. Electrical Installation - Kemco, P.O.Box 2642, Doha, Qatar.
6. Finishing & Associated works - Hyundai Construction Company, 178, Sejono-Ro, Chongro, Hyundai Bldg. Seoul-Korea.

(Please continue overleaf if necessary)

University of Qatar, Doha, Qatar

III. USE

A. Type(s) of Use: Multi Disciplinary University, with Resident, Social and Sports Facilities.

B. User/Occupant: From The State of Qatar and other from ARAB and Islamic Countries.

1. Occupation

2. Income Level

C. Specify any change(s) between planned and actual use.

IV. PROJECT HISTORY

A. Programme Development

1. Date of Commencement: January 1973

2. Date of Completion: As planned for Phase 1A October 1983

B. Design

1. Date of Commencement: January 1974

2. Date of Completion: (Phase 1A) 1978-Ongoing on further phases.

C. Construction

1. Date of Commencement: Phase 1A precast concrete production-Jan.78 Main Contract award June 1979.

2. Date of Completion: Contract completion Oct 1982 extension to October 1983.

D. Date of Project Occupancy

V. PROJECT ECONOMICS

(For Costs, please give amounts and currencies. Specify their date(s) of validity)

A. Total Initial Budget: 1000 m Q.R.

B. Total Actual Costs: Value of works to date QR 435 (m)

C. Analysis of Costs

1. Land

2. Materials: Ratio approximation 70%

3. Labour: 30%

4. Professional Fees

D. Source(s) of Funds (indicate percentage)

1. Private: Funded by The State of Qatar

2. Public

a. Local

b. National

c. International

(Please continue overleaf if necessary)

VI. CONSTRUCTION DETAILS

A. Site Area and Characteristics

2 Km east to west and 1¼ Km north to south formed of two linked plateaus bounded by +20 contour with a central valley, East ground falls steeply to coastal plain to general elevation about 3m above sea level. West ground less steeply to about 14m above sea level. Soil composed of layers of sand, silt, limestone cobbles and boulders reaching unweathered dolomitic limestone within 1m of existing ground level.

B. Total Floor Area of Individual Building(s)

Library	7,691 sqm	Womens College	10,000 sqm
Science & Engineering	29,282 "	Administration	4,510 "
Mens College	7,590 "	Central Services Unit	4,743 "
	7,632 "		

C. Structural System (describe)

Building uses concrete as abundantly available material primarily in the form of precast units but also as insitu and made up blockwork. Limited use is made of structural steel.

D. Materials (describe and indicate whether locally produced or imported)

1. Infill - Compacted fill uses excavated dolomitic limestone.
2. Rendering of Facades - Primarily unrendered with fairfaced white concrete precast panels to facades.
3. Floors - Extensive use of precast terrazo internally with conc.paving slabs generally in circulation areas, carpets and rubber flooring also used as functionally necessary.
4. Ceilings - Combination of exposed painted concrete coffers, metal tiles and spray textured render on EML.
5. Others (interior and exterior) - Use of Tradional Moushrabia and GRC in lattice shading screens, aluminium (Syntha pulvin coated) windows, plastic laminated timber doors & solar tinted glass.

E. Site Utilities and Building Services (describe)

Electric and water supplies adequately provided by State services to local sub-stations and university reservoir. Sewer services to connect with Doha treatment works. Air-conditioning system of two types - self contained fan coil and All Air systems for larger areas. Load centralised plants in Central Services Unit building redistributed via system of underground ducts.

F. Construction Technology

1. Describe the Basic Method of Construction

(Octagon) Basic procedure would erect precast conc walls and columns with pouring of lst floor slab on waffle moulds and reinforcement. On similar procedure on lst floor, formwork required for erection of precast roof panels supported on precasr walls. Finally erection would follow of precast Tower of Winds with all structural connections to roof.

2. Indicate which major building parts were fabricated on-site and which were fabricated elsewhere.

Main support walls, roof panels, Tower of Winds panels, made up concrete blocks & floor tiles all prefabricated in precast factory. Windows, lattice shading screens (timber and GRC) and doors imported items.

G. Type of Labour Force (indicate percentage)

1. Skilled 60%
2. Unskilled 40%

H. Origin of Labour Force (indicate percentage)

1. Domestic 1%
2. Imported 99%

(Please continue overleaf if necessary)

VII. EVOLUTION OF DESIGN CONCEPTS

Please describe the genesis of the project, through programme, design and construction to final and present occupancy.

1973 - In January 1973 Dr. Kamal El Kafrawi was commissioned by UNESCO to make a preliminary study and investigate the special needs of two Faculties of Education.

During the year the architectural brief was prepared with work in Qatar and Paris and the report submitted. Initial requirements were limited to higher teacher training colleges.

1974 - In March 1974 following the report Dr. Kafrawi arrived in Doha to undertake the project and was appointed as the Architect by the Office of His Highness the Amir. A policy report prepared by the College of Education followed in May 1974 confirming need for a University accommodating 4650 students and several disciplines.

These developments resulted in a substantial impact on the Architect's brief, enlarging space requirements and increasing ancillary central functions. It was during this period that the architectural and planing concepts were formulated and approved by the Clients which in essence have been maintained in the construction to date.

1975 - In August 1975 the first Master Plan and report were submitted to the Users and in October 1975 a special presentation was arranged for His Highness the Amir, who confirmed the project should proceed without delay. A budget of QR 741,000,000 was allocated for implementation of Phase 1.

1976 - The detailed design for Phase 1 (Gulf University) was developed in this year and included:

- Two collesges of Education (Male & Female)
- Colleges of Science and Civil Aviation
- Central Facilities of Audio Visual Centre, Library & Sultural Centre, Auditorium, Administration, Mosque, Central Services Unit and Refectories.
- Infrastructure of Roads, Carparks, Services and Landscaping

The construction programme envisaged site earthworks and basic services alongsipe the construction of a factory. (Started September 1976/September 1977). This would manufacture many of the building components required in advance and also provide a useful addition to Qatar's building industry infrastructure.

In May 1976 the site (of Markhiah) was changed about 4 kms away making the distance from Doha now 10 kms. Major implications on the project resulted both in planning and on contract re-negotiations. A new masterplan was presented by Dr. Kafrawi in October 1976 and this was accepted.

1977 - Initial site contracts were successfully completed by September 1977.

A constructed factory was ready to start production with stockpiles of building materials necessary with required services connections.

Road was constructed to the University Site with Labour Camp ready for the Main Contract. By December 1977 site earthworks were completed.

During this year however events occured which again significantly affected the design work and further changes in policy and academic planning delayed the progress.

(Please continue overleaf if necessary)

1978 - In January 1978 a team for the University and UNESCO visited Doha and reviewed the academic requirements and concluded with a report recommending immediate action.

A programme for the Mechanics of Implementation was agreed with the Client. In March 1978 the Consultants submitted revised:

Brown Book (brief and area requirements)
Master Plan (Revision 6)
Budget Cost Estimate
Programme

New tender documents also prepared for production in Precast factory. In April 1978 these were also approved by the Technical Office of the Amir.

1979 - During this year production continued in the precast factory with the contract awarded to Interbeton Ltd (Netherlands)

Main Contract was awarded to Fujita Corporation Japan, in June 1979 with buildings in Phase 1A including:

Administration, C.S.U. Mens and Womens Colleges, AVA, Science and Engineering Colleges and Library and Exhibition.

1980 - Work proceeded on site with a very slow moblisation period and the contractor in general well behind in his construction programme. During this year the University Development Bureau was instituted and consisted of Heads of Faculties and Various Specialists.

1981 - Having appointed a University User, the Client was instructed a further replan of both phase 1A and 1B incorporating their recommendations.

Dr. Kafrawi moved to Doha in early 1981 and established a Design Office to supervise the replanning the construction of the project.

1982 - The Replan work was successfully completed and contractor instructed by the Client to proceed with the revisions. Programme completion date scheduled for October 1982 for Phase 1A is at present under consideration for an extension.

Tenders were received for Phase 1B and are at present being actively considered in context of minor User Body recommendations Contract award is anticipated later in the year.

1978 - In January 1978 a team for the University and UNESCO visited Doha and reviewed the academic requirements and concluded with a report recommending immediate action.

A programme for the Mechanics of Implementation was agreed with the Client. In March 1978 the Consultants submitted revised:

Brown Book (brief and area requirements)
Master Plan (Revision 6)
Budget Cost Estimate
Programme

New tender documents also prepared for production in Precast factory. In April 1978 these were also approved by the Technical Office of the Amir.

1979 - During this year production continued in the precast factory with the contract awarded to Interbeton Ltd (Netherlands)

Main Contract was awarded to Fujita Corporation Japan, in June 1979 with buildings in Phase 1A including:

Administration, C.S.U. Mens and Womens Colleges, AVA, Science and Engineering Colleges and Library and Exhibition.

1980 - Work proceeded on site with a very slow moblisation period and the contractor in general well behind in his construction programme. During this year the University Development Bureau was instituted and consisted of Heads of Faculties and Various Specialists.

1981 - Having appointed a University User, the Client was instructed a further replan of both phase 1A and 1B incorporating their recommendations.

Dr. Kafrawi moved to Doha in early 1981 and established a Design Office to supervise the replanning the construction of the project.

1982 - The Replan work was successfully completed and contractor instructed by the Client to proceed with the revisions. Programme completion date scheduled for October 1982 for Phase 1A is at present under consideration for an extension.

Tenders were received for Phase 1B and are at present being actively considered in context of minor User Body recommendations Contract award is anticipated later in the year.

VIII. SIGNIFICANCE OF PROJECT

In what way is this project important?
Please describe the aspect(s) of the project which you feel represent a particular achievement, for example, the technical, economic, or social achievement, or its response to culture or climate, etc.

Summary of The Design Philosophy - Refer to (Blue Book) Design Philosophy

The material for this study is the environment and the people within it, the entire University; which is unique in that its basis is local, not imported, and its objectives are far from those of commercial projects. These aspects set it apart from many buildings in the Gulf and Arab Countries.

Architecture is a tangible expression of a civilisation, the product of the intellectual, social, economic and political activity of a whole people; construction technology is simply the tool with which to give form to this expression. One has therefore closely to analyse the environment of villages, towns and cites in the Arab Worlds, to determine the effects of Western contemporary Architecture. Since the technology has been applied without the philosophy which underlies it, the modern buildings are foreign to the area, which shows how far Arab Architecture has lost direction, and the profound effect this has on the individual and his environment.

One has then to reconcile the immediate need for the import of modern technology with the need also to adapt it for use in the local environment. This implies considerable study of the needs and aspirations of the individual.

As a philosophical principle in the design of the University, I posed this problem of the conflict between local culture and imported technology to experts in various disciplines. I would suggest that education in the effects of the conflict should be principle aim of the new University of the State of Qatar.

(Please continue overleaf if necessary)

IX. DOCUMENTATION

Please indicate the materials you enclose for project documentation:

- ✓ 10 Photographs; Color, and Black & White; 8″ × 10″ (18 × 24 cm).
- ✓ 20 Slides; Color, and Black & White; 35 mm.
- master plans Drawings: Community plan, Site plan, Floor plans, Sections, Elevations.
- ✓ Project Brief/Programme
- C.V. Biographical Data
- _____ Other (Please specify: _____).

Please note: The submission of this Record is a prerequisite to candidacy for the Award. All information contained and submitted with the Form will be kept strictly confidential until the announcement of the 1983 Award recipients. Subsequently, such information may be made available by the Aga Khan Award Foundation for scholarly purposes only. Nevertheless, persons wishing to publish, reproduce or reprint such information shall be required to secure prior permission in each instance.

Authorized Signature _____ Date 20.7.1982

Telephone office: 884100 home 883216 Telex _____

DOHA

University of Qatar, Doha, Qatar

GULF UNIVERSITY

State of Qatar

THE DESIGN PHILOSOPHY

1. INTRODUCTION

In January 1973 UNESCO commissioned my first work for the State of Qatar in the Arabian Gulf. This was to make a preliminary study of the general form and special needs of the Faculty of Education, which was to be the starting point for the Gulf University sponsored jointly by the United Nations and the State of Qatar.

I was at that time engaged in research into buildings for hot climates in Unit Three of the Ecole des Beaux Arts in Paris; I willingly accepted the commission for the reasons set out below.

1.1 Present Knowledge

The general impression given to the outside world by the phrase Arabian Gulf is simply of an area of great financial and strategic importance, derived from oil being a basic raw material for industralised countries. Beside this predominent impression, there is very little knowledge of the society, history or prospects of the Gulf area.

1.2 Study of Change

The wealth generated by oil is having a profound effect on the life of every person in the Gulf area, and the study of this is of great importance, particularly where the Islamic form of Bedouin society is related to the new technology and industry of modern Western civilisation.

2. THE INFLUENCE OF CULTURES

During my first visit (February to April 1973) I began with a study of many aspects of the traditional ways of life in Qatar, and also of the construction of older buildings in Doha, Wakrah, Khor and the North City. In each town there is an evident influence from the traditional Bedouin way of life.

I also talked to a wide range of people in Qatar, and found an intense interest in any development which would affect them or the society in which they live. I therefore accepted a second commission from UNESCO and the State of Qatar, to return to Qatar for a longer period, and take on the entire project design. I began work on this commission in May 1974, and defined the following principles for the design.

2.1 Direct Reproduction

Holding fast to the traditional ways of building in the Islamic world, without change or improvement, would be an error since it would prevent the Arab from enjoying the benefits of modern technology.

2.2 Western Building

It would likewise be mistaken to import directly the building forms of Europe and America into the Islamic State of Qatar, since these foreign forms could disorient the Arab and disturb the Islamic values in his relationship to society.

2.3 Improvement of Traditional Forms

Western technology can, however, be used to develop the existing building forms of the Arab culture, and so import the material benefits of progress while also confirming the individual's roots in his own civilisation.

The latter principle formed the basis of my thinking, and in the Academic field has been the subject of my further studies.

3. THE ENVIRONMENT AND TRADITIONAL BUILDINGS

Prior to design work, I made a study of the local factors which dictate the forms of buildings, to codify them for the design.

3.1 Cultural Factors

I aim to extend the way in which traditional values and lines are expressed Architecturally, so as to strengthen the psychological link with the Qatari character, and ensure a sense of continuity in the modern environment.

3.2 Natural Ventilation

From a study of the traditional form of natural ventilation by Towers of Winds found throughout the Gulf area, has come the basis of the ventilation in both lecture rooms and residences, although we have adopted a more modern method of control. Not only are the Towers of Winds a substitute for mechanical ventilation and air conditioning in case of power failure, but they also characterise the outline of the University buildings and relate it to the cultural environment.

3.3 Natural Light

The brilliance of sunlight in the area calls for severe control of both strength and direction; the illumination levels required for visual and psychological comfort have been scientifically established, however the methods of control are most influenced by the following solutions derived from several hundred years experience.

3.3.1 The use of indirect light from specially oriented openings (found in all traditional buildings).

3.3.2 The use of screens in carved timber ("Moushrabir") or gypsum to fill window openings and reduce light intensity.

3.3.3 Admission of light from shaded surrounding areas, used for circulation and stairways; windows from the main space give onto such areas, as in the Qatar National Museum building.

3.3.4 The use of diffuse overhead lighting from openings in the roofs of large spaces, as seen in many traditional Islamic buildings.

3.4 Natural Temperature Control

3.4.1 Direct solar radiation is to be prevented from entering the buildings as far as possible by the design of the window openings.

3.4.2 The complex building form will shade many areas both outside and in the courtyards.

3.4.3 External walls are to be of substantial thickness, as in traditional buildings where walls range from 0.6m to 1.5m to achieve adequate insulation.

3.4.4 Covered courts and gardens are to be formed to reduce the harshness of the natural environment

3.5 Humidity

Enhanced air circulation from Towers of Winds is considered to be the best natural method of modifying the effects of high humidity.

4. PLANNING PHILOSOPHY

The overall planning of Academic, Cultural. Social and Sports facilities reflects the following considerations:-

4.1 The University as an Academic Institution

The buildings must carry some special feature which will distinguish the University from the rest of Doha, and identify it with the modern world while encouraging a particular educational, intellectual and social atmosphere reflected upon every student member.

4. PLANNING PHILOSOPHY

The overall planning of Academic, Cultural. Social and Sports facilities reflects the following considerations:-

4.1 The University as an Academic Institution

The buildings must carry some special feature which will distinguish the University from the rest of Doha, and identify it with the modern world while encouraging a particular educational, intellectual and social atmosphere reflected upon every student member.

4.2 The University as a Centre in the City

The site of the University, North of Al Markhiah, about 7 km from Doha and 2 km from the shore of the Gulf, and its elevated position, is a particular influence on the internal and external planning. It has affected the main vehicular and pedestrian entrances on the South and East sides of the University, and its entire relationship with the community's cultural and social activities.

5. THE BUILT FORM

The form of the buildings expresses the geometry of the lecture rooms, exactly reflecting the educational and physical aspects of the buildings' uses.

5.1 Lecture Room Shape

The basic lecture room is octagonal in plan 8.4 m across, linked to at least two lobbies 3.5 m square.

5.1.1 The first lobby is used as an entrance, a small library for the lecture room, and a transition space between interior and exterior, to smooth the change from air-conditioned room to outside climate.

5.1.2 The second lobby is a source of natural light, and a space for use by small groups of students in discussion or study.

5.2 Teaching Methods

The octagonal form of the lecture rooms allows flexible use for the various teaching methods below.

5.2.1 The lecturer may stand in the middle of the room, thereby establishing a close link by minimising the distance to any member of the class.

5.2.2 The lecturer may take his traditional position, at one side of the room, facing the class.

5.3 Circulation within the Building

It is traditional in Universities to base circulation on corridors, on both sides of a lecture room, and enclosed stairways. Although this is valid in European countries, by reason of the climate, it is not suitable for hot countries.
The recommended solution for the Gulf University is to use internal and partly covered courtyards for horizontal circulation, and to form open stairs in those courtyards for vertical circulation. Although less economical in terms of built areas, this scheme has great advantages in terms of improving the atmosphere of the buildings by the frequent use of the courtyard gardens; there is also the chance to use them for both Academic and Social activities in the fresh air, to the benefit of the atmosphere of the University.

5.4 Acoustic Behaviour

The octagonal plan room with its domed roof and square lobbies has the advantage that, by multiple reflection of the lecturer's voice off many surfaces, echos are dampened. Therefore, in general, good acoustics can be provided without the expense of sound insulation; this will not be adequate in the studios of the Audio Visual Centre, or the large Lecture Theatre where loudspeakers will be used.

5.5 Thermal Behaviour

An advantage of the polygonal form of the octagonal lecture room and its multiply pitched roof is that exposure to direct radiation of any one surface is reduced as the structure shades itself. This limits heat absorption by each surface, and therefore limits the transfer of heat to the interior.

5.6 Natural Light

The plan geometry of the octagonal form readily allows the addition of square lobbies as light sources thus indirectly lighting the lecture rooms as in traditional buildings (for example the Qatar National Museum building). The planar dome of the roof gives the option of adding cubic structures on top to form Towers of Light, providing diffuse overhead light to the spaces below. In each case light intensity can be severely controlled, and direct sunlight entirely eliminated.

5.7 Natural Ventilation

The Tower of Winds alone is sufficient provision for ventilating the first floor lecture rooms; however the ground floor spaces rely for their natural ventilation on a continuous airflow from the Towers over the stairways, and its extraction through the internal courtyards.

5.8 Planning and Extension

Having developed from the constraints of natural ventilation and indirect lighting, the octagonal plan is extremely flexible in massing, and permits extension to the existing buildings in any direction without external constraint on ventilation or light sources.

5.9 Construction Methods

It is important to use local materials as much as possible, together with modern construction techniques to achieve the necessary speed and quality of construction in the face of a probable labour shortage - at present an acute problem in Qatar.

6. SUMMARY

In conclusion to this brief statement of the Philosophy underlying the Design of the Gulf University, and before presenting the drawings and models, I would like to make the following points:-

I do not claim to have produced the perfect design for the University, but would rather suggest that this work be seen as the first stage of a continuing Architectural study, directed towards a modern expression of Islamic Architecture.

The material for this study is the environment and the people within it, the entire University; which is unique in that its basis is local, not imported, and its objectives are far from those of commercial projects. These aspects set it apart from many buildings in the Gulf and Arab Countries

Architecture is a tangible expression of a civilisation, the product of the intellectual, social, economic and political activity of a whole people; construction technology is simply the tool with which to give form to this expression. One has therefore closely to analyse the environment of villages, towns and cities in the Arab world, to determine the effects of Western contemporary Architecture. Since the technology has been applied without the philosophy which underlies it, the modern buildings are foreign to the area, which shows how far Arab Architecture has lost direction, and the profound effect this has on the individual and his environment.

One has then to reconcile the immediate need for the import of modern technology with the need also to adapt it for use in the local environment. This implies considerable study of the needs and aspirations of the individual.

As a philosophical principle in the design of the University, I posed this problem of the conflict between local culture and imported technology to experts in various disciplines. I would suggest that education in the effects of the conflict should be a principal aim of the new University of the State of Qatar.

Kamal El Kafrawi
Principal Architect