

1992 Technical Review Summary  
by *Jamel Akbar*

1240.IND

# Entrepreneurship Development Institute of India

Ahmadabad, India



*Architect*

H.C. Patel Architects - Bimal Patel  
Ahmadabad, India

*Client*

Entrepreneurship Development Institute of India  
Ahmadabad, India

## I. Introduction

What is entrepreneurship and how significant is it to society ? Entrepreneurship means the acquisition of skills needed by an individual who wishes to create and own a business. Thus, it transforms people who are jobless into business owners. Logically, each developing country requires small industries to manufacture goods and services; however, most developing countries do not have enough skilled people to set up, own and successfully manage businesses. The Entrepreneurship Development Institute of India (EDII) performs this rôle. The EDII aims to set up institutions all over India which in turn will develop entrepreneurs through training courses. It aims at developing tutors who can train the public, but most of all, the faculties of EDII conduct research into entrepreneurship. They experiment with new target groups: for example, can women become entrepreneurs ? If so what techniques are required ? Can government employees become entrepreneurs ? Thus, courses in the institute experiment with new models and approaches to be used by other institutions. This means that most of the work of developing entrepreneurs is carried out by the institutions set up by EDII all over India. In the words of the EDII director the institute is "research institution, training institution, and institution building institution". This shall ultimately increase the number of entrepreneurs or owners of businesses.

What types of entrepreneurs ? The EDII considers all types of businesses, from establishing a shop in a village to the creation of a transport company in a city. However, research and training at EDII is essentially targeted toward industrial entrepreneurship such as setting up a food processing company, plastic recycling factory or even a rivets collecting company. These activities should, in the long run, affect the socio-economic structure of society.

## II. Context

### a. *Historical Background of the EDII*

The revolutionary concept of the EDII for Third World Countries is pioneered in Ahmadabad. It started in 1969 when one of the chairmen of a financial institution in Ahmadabad noted that funds were available for loans but there were no entrepreneurs to utilise them. Another individual, Dr. V.G. Patel, was working in an industrial investment corporation which is a state owned development bank in the State of Gujarat. The bank announced a credit scheme to offer loans to technocrats or any individual who knew how to manufacture a product. The loan was up to 100% of the project cost, yet few people new how to establish, own and manage such industries. The idea of developing entrepreneurs was born. Dr. Patel, who is an economist, decided to adopt the concept. One of the first obstacles was to find a location for the activities. Dr. Patel found a college building where he managed to convince the administrators to allow the use of their classrooms from 19.00 to 22.00. This allowed working people to attend the programme. Thus, the EDII was established. There were two individuals involved, Dr. Patel with one other tutor. Dr. Patel told his colleague that the job was valid for six months only. If they succeeded, they might revolutionise Entrepreneurship and become famous, and if not they would both be jobless. Dr. Patel stated that his degree in economics did not help him much. He started by asking businessmen: "what is it that people should know to become successful businessman ?" "What keeps people from not becoming entrepreneurs ?" The answer to such questions developed a body of knowledge that kept growing through developing models and testing them. Thus, the institute succeeded. Seven years later, they rented a small house as the headquarters for the institute. In 1983, 14 years later, the Ford Foundation told the EDII that if they succeeded in other states they would support them. The reason for this is that the State of Gujarat is considered as economically dynamic. So the EDII was funded to test entrepreneurship ideas in other states such as the state of UP which is considered economically inactive. They succeeded and the government of India remarked the success. The National Industrial Development Bank prepared a report on the EDII which was circulated to all the States of India. Thus, the EDII became a national movement and not just a programme. Every State wanted to develop its own programme based on the EDII programme. Financial and governmental institutions of other states became involved to establish their own entrepreneurship institutions. Questions emerged about the quality of the new

programmes since so many inexperienced individuals and institutions have become involved. There was a need for a national institution for entrepreneurship, a mother institution which would supervise the establishment of entrepreneurship institutions all over India. The EDII became that institution in 1983. Four years later, they had the funds necessary to build a campus that could host individuals from other states and would have facilities for training and research.

The EDII was initially financed by development banks, but now earns sufficient income through fees and is an autonomous institution that is jointly sponsored by the Industrial Development Bank of India (IDBI), Industrial Finance Corporation of India (IFCI), Industrial Credit and Investment Corporation of India (ICICI) and State Bank of India (SBI), with the active support of the State Government of Gujarat, the World Bank, International Labour Organisation, UNIDO, Commonwealth Secretariat and several other International agencies.

### *Historical Background of the Architect*

One of the important links to Muslim culture in this project is the architect's design approach. Therefore, an historical background of his development should be useful.

The architect completed his studies in 1984 and joined his father's office which had been established thirty years previous. The office currently employs 25 people; these include 8 architects, 5 engineers, and 2 administrators. His father gave him the chance to participate in the design competition of EDII.

He is of the view that history courses in his undergraduate school are quite poor; it seems that Greek and Roman architecture is favoured to the exclusion of Indian architecture. So when he went to Berkeley and through his extensive travels in India he realised how rich is his own - architectural - culture. He argues that Hindu architecture is limited to temples, while Islamic architecture shows much more diversity of building type: palaces, mosques, tombs, bazaars and forts. Thus, when he pulled out the book "Archaeological Survey of India" at the library in Berkeley, he found himself studying Islamic architecture of India. As he explained, he used to "sit down with those drawings and re-draw them to fill up my head with them and then I started to discover patterns of how to put things together". Thus, he started to observe how a building's elements are put together, what are the organisational principles, what are the characteristic elements that he should use in new buildings. At the same time, he was influenced by the work of Christopher Alexander, Leon Krier and Claus Herdeg. This was his Masters thesis. He explained that lately built architecture in Ahmadabad is quite modern and appealing but without any connection to Indian culture. He feels it is quite important to establish some connection, as Indian architecture represents the accumulation of past centuries experience of which he should take advantage, especially the examples in north-east India.

The architect is also influenced by the use of building materials in traditional buildings. He explains that those buildings are made of "very few building materials but make a rich architecture also". Furthermore, the limited number of materials used are exposed and not plastered (see section VIII B, Relation to Cultural Context).

#### *b. Local Architectural Character*

Local architectural character is influenced by the history of the city: Ahmadabad was founded in 1411 by Muslims. It was ruled by the British in 1812. In 1816 the first textile mill was built. Thereafter, Ahmadabad became the most important textile city in that part of the world. Major aspects of vernacular architecture and the compact fabric of the Muslim built environment can be found in the old part of Ahmadabad: courtyard houses, labyrinths of public thoroughfares and alleys, private *cul-de-sacs* and gates. Houses line 8-15 metre wide streets that lead to more narrow (3-6 m) streets. Inside the old town, courtyard houses are arranged to generate the typical compact organic fabric with its narrow and occasional *cul-de-sacs*; however, with little or even no overpasses. Some colonial influences are evident on the façades of some houses. There are gates inside the old town that denote the quarter's autonomy. Thus, Ahmadabad has strong domestic traditional architecture (vernacular). The period of British rule influenced development;

however, compared to Delhi or Bombay, there are no great colonial architectural examples. Most formal architecture of the city before the period of British rule is Islamic, such as mosques and some surviving mausoleums. The most famous is Sarkhej Rauza which is possibly the best example of Islamic architecture in the state of Gujarat. Yet, this complex does not compete with monuments found in the north-eastern part of India near Delhi, such as Taj Mahal or Fatehpur Sikri.

Ahmadabad hosts the work of some of the leading modernist architects from the 1950's such as Le Corbusier and Louis Kahn. Le Corbusier built the Mill Owners Association, the houses of some textile families and the City Museum, while Louis Kahn built the Indian Institute of Management. This has set a strong tradition of modern architecture in Ahmadabad which can be seen through the work of architects such as A. D. Raje and Doshi.

c. *Climatic Conditions*

The climate is hot and arid. Temperatures vary from 27-41°C in summer and from 14-29°C in winter. The monsoon season is from June to September when precipitation averages 600 mm. October to March is considered the most agreeable period. Winter is from November to February. Since the city is located on the Tropic of Cancer, sun is high overhead, and the light is strong and harsh.

d. *Immediate Surroundings of the Site*

The campus site is adjacent to the eastern side of a 90 m wide highway that connects Ahmadabad with the new capital Gandhikagar. The site is essentially farmland acquired almost fifteen years ago by the government. There is a little village nearby, but the site is surrounded by undeveloped land with sparse vegetation.

e. *Topography of the Project Site*

The terrain in Ahmadabad is generally flat and vegetation is sparse. The soil is clay loam. The topography of the site is flat; however, as it is adjacent to a dry river situated on the western side, the land is characterised by a gentle slope towards the river.

### III. Description

a. *The Rise of the Programme*

The EDII was established and was nationally recognised in 1983. Previously it operated from a small house in Ahmadabad. Students from out of town had to reside in hotels and this was expensive. Thus, in 1985 the EDII decided to build a campus of its own that would include boarding and lodging facilities, classrooms, offices, a library and an auditorium. Land was purchased from the State Government at a subsidised price.

The institution hired a consultant (Dr. Rasu Vakil) who determined the EDII's requirements and established the brief for the complex. The brief was quite elaborate and innovative; ideas such as less dependence on artificial energy and a well landscaped campus are proposed. Although the programme was clear and ambitious, it did not succeed in capturing the future needs of the institution. Space requirements are over estimated. Although only part of the facilities included in the initial brief have now been built, these exceed the institution's current and future needs for at least ten years.

A committee was formed to announce a national competition for the design of the complex. Sixty firms replied. The sixty firms were screened, and ten were given the design brief, of which, six

firms submitted designs. The committee selected three projects based on their concepts and finally one firm was selected. The committee (jury members) was composed of Dr. Patel (director of EDII), Dr. Vakil (consultant), Mr. Bhagvat (landscape architect) and three members of the governing council of the EDII. (The EDII has a Governing body composed of 15 members from the various financial institutions.)

*b. General Objective*

To provide accommodations for the institute which would profer the following functions through education, training and research:

- to augment the supply of industrial entrepreneurs through education and training;
- to produce multiplier effect on opportunities for self employment;
- to improve the managerial capabilities of small scale industries;
- to contribute to the dispersal of business ownership and thus to expand the social base of Indian entrepreneurial class;
- to contribute to the creation and dissemination of new knowledge and insight in entrepreneurial theory and practice through research;
- to augment the supply of trainer-motivators for entrepreneurship development to participate in institution building effort.

*c. Functional Requirements*

The functional requirements are not unique or unusual. All activities relate to the EDII's nature which is quite theoretical: training, teaching and research. These activities obviously need office or classroom type arrangements. In addition there are a hostel and a dining hall.

*d. Building Date*

The campus is composed of seven buildings linked by two axes.

Two of these buildings are hostels (A and B). They are identical in design and size. One (B) is two storeys high and contains twenty air-conditioned rooms, while the other (A) is one storey high and contains ten non air-conditioned rooms. Each room is 5.40 x 5.40 m and has twin beds and an attached bathroom. Near the hostels, the third building (C) contains the kitchen with catering facilities and two dining halls, each of 60 seats capacity. These three buildings share the same axis. The other axis is shared by four buildings. Three of these (D, E, and F) are composed of one module (5.10 x 3.40 m) grouped around a courtyard on three sides while the fourth side links with the axis. In some instances, the modules are grouped to form larger rooms. Two of the buildings (research and administration, E and D respectively) are similar in size and each is composed of eighteen modules. The third building (training centre, F) has a larger courtyard since it is composed of 28 modules. The training centre has two air-conditioned, well furnished seminar halls with twenty-five seats capacity each, and a conference hall with eighty seats capacity. They are equipped with overhead projectors and audio-visual facilities. The seventh building (J) is the library which is a rectangular building (approximately 10 x 34 m) with basement and partial upper floor.

e. *Evolution of Design Concept*

*Response to Physical Constraints*

The major physical constraint is the site topography. The buildings of the three main activities (research, training and administration) are located on the higher area of the site and are visible from the main point of access. The hostel accommodations have been positioned in a more secluded area and are further detached from the institutional facilities by a large area of green space.

The other major physical constraint is the limited number of construction materials selected by the architect to conform with the budget for the project. Brick and concrete are mixed together to create pleasing forms. For example, attention is given to façades by carefully selecting elements that repeat in a symmetrical arrangement. The lintels are of exposed concrete and are used as decorative elements over windows, doors and the arches which span circulation corridors. The use of these elements establishes a theme that unifies the buildings' architecture, despite the variation in function and spatial arrangement offered within each block.

*Response to users Requirements*

The EDII wanted a building that should not exceed 15 million INR and should be built within a 16 month construction period.

The complex responds well to the users' needs because of the architects' skilful positioning and grouping of the spaces to form various buildings. The architect managed to convince the client to alter the brief to form several buildings, each around a courtyard with a distinct function and character yet linked to the two main axes. He also convinced the client not to have high-rise buildings, since the amount of land available was extensive. On the other hand, it was not advisable to have one building to host all the EDII's functions; this approach would lessen the possibility to create and define inside and outside spaces. Indeed it is this play of inside and outside relationships that gives the EDII its pleasant character.

The EDII wanted two types of hostels with different standards to serve two social classes of students; one serves government employees and those who wish to become trainers, while the other is for entrepreneurs. The architect argued that the space requirement for both groups should be identical as both classes of users would have the same ergonomic and anthropometric requirements. The difference between both groups of accommodations is in the furnishings and equipment; for example some accommodations buildings are air-conditioned while others are not.

The EDII wanted a typical administration building with a central corridor to service rooms on both sides and some large spaces for visitors to give the institute an "executive" look. The architect managed to convince them that if they wanted good working space they should build smaller, personal units or modules; the building should consist of groups of rooms - instead of a few large rooms around a courtyard shared by many employees. Each module or sector (3.40 x 5.10 m) is thus divided into two parts; the inner part of the sector is the personal or private area and is meant for the faculty member or researcher's own personal activities; the larger external area is for daily activities such as preparation of courses and meetings. The two areas are separated by a 90 cm high wall with an access passage. The same pattern is repeated for most rooms. In some cases the inner area is used as storage or the space is shared by two people.

*Landscaping*

The designers had two different attitudes in landscaping the site:

First: As the site area around the buildings is extensive, large numbers of trees were planted as they require little maintenance. *Neem* and *Ambli* trees are planted on a grid pattern of 18-20 feet. This treatment helps cool the whole site. These trees live for fifty to sixty years and are evergreen. In five years time they will create "a forested looking envelope". The rear of the site near the river - where rain-water gathers - has been planted with *Eucalyptus* which requires little maintenance.

Second: The courtyards and the smaller areas in between the buildings were treated attentively. Courtyards are paved with stone on one side and planted with grass on the other, where users may sit. In between there are selected trees such as *Batam* that are known for the large size of their leaves or for their colour.

f. *Structure, Materials, Technology*

*Structural System*

The structural system consists mainly of load bearing brick walls; however, in some locations reinforced concrete columns are used where large spans are necessary; for example, lecture halls. Beams, two-way slabs and steel trusses are used in few locations.

*Materials*

Most foundations are of brick. There are few reinforced concrete column footings. Structural members are made of brick and some reinforced concrete. All infill materials are brick and are finished with plaster. There are no finishing materials used on exteriors with the exception of wooden doors and windows that are painted. Walls, ceilings and columns are exposed brick or concrete. Stone of different colours has been used with mosaic tiles for floor finishes. In two locations over the axis that links the buildings, profiled aluminium sheet has been used.

*Building Services, Site Utilities*

Since the institute is outside the city of Ahmadabad, it is not connected to the city sewerage or drainage network. There are two main septic tanks, while rain-water drains to the nearby river. There is one overhead water tank. Electricity is connected to the mains cable near the highway via an electrical transformer.

g. *Origin of Technology, Material, Labour Force and Professionals*

All human and material resources involved with the project are local with two exceptions; stone used for floor finishes was brought from a site approximately 200 km distant; electrical and plumbing consultants were from Bombay.

#### **IV. Construction Schedule and Costs**

a. *History of Project*

The design of the EDII commenced in February 1985 and was completed in August 1987. Construction of the complex commenced in February 1986 and was completed in August 1987. The facilities were occupied in 1987.

b. *Total Cost and Main Source of Finance*

The total initial budget was INR 15'000'000 while the total actual cost is INR 17'400'000 (USD 1'330'000). The cost of labour, materials and infrastructure was INR 14'000'000; landscaping cost INR 450'000; professional fees were INR 820'000 and tubewells, etc. were INR 2'200'000.

USD = INR 13.09, Indian Rupees.

c. *Comparative Costs*

The cost of INR 1'700 (USD 130) per m<sup>2</sup> is considered average cost; however, in comparison with the quality of construction, cost can be considered below average. The construction is quite neat when compared to buildings I saw in the same category.

d. *Maintenance Cost*

No information is available on maintenance costs; however, the building is one of the most well maintained buildings I saw in India. This is due to careful use and constant maintenance. What is interesting is that the institute has asked an individual from a nearby village to form the company responsible for maintenance of the institute. This is obviously in line with the EDII philosophy.

As the design of the building deals with climatic aspects, there are no heating or cooling costs with the exception of some air-conditioning units in the director's office, the computer room and the main classrooms. These air-conditioning units are necessary during the summer months; however, according to the users, the inside temperature of the rooms is bearable for the major part of the year.

## V. **Technical Assessment**

a. *Functional Assessments*

Possibly the most interesting element in this project are the two axes that link the buildings. In an article by Ranjit Sabikhi published in *Architecture* (Vol. 78, No. 9, pp. 88-89) he states:

"Starting with a featureless site, Patel created a sequence of spaces linked by courtyards and corridors. The complex consists of five verandah-type buildings - three for academic facilities, two for dormitories whose rooms edge an open courtyard. The connecting corridor itself is an exciting space, expanding both sideways and upward. There are at intervals wide staircases leading to an upper level where more academic facilities will be built. Endowing the corridor with visual interest and variety are natural light from above and below, alternating flat and arched lintels spanning openings to adjoining court yards".

The second most interesting element is the use of open courtyards and their relation to the rooms through galleries or verandahs. The columns are well proportioned, the width of the galleries is sufficient to protect the rooms from sun light; however, the disposition of the library and dining hall necessitates the crossing of exposed open space in a harsh climate.

b. *Climatic Performance, Lighting, Ventilation, Acoustics, Orientation, etc.*

The area of the courtyards is large in proportion to building heights. The reason for this as explained by the architect is that such proportions will keep the "buildings as ventilated as possible" with cool air. This will certainly be true when the trees in the courtyard have grown. He argues that this pattern is frequently used in traditional buildings where large trees cover most parts of the courtyard. His argument is quite acceptable as the Technical Reviewer observed that rooms around the courtyard have openings on two opposite sides; one towards the courtyard and the other towards the surrounding gardens. When the windows on both sides are opened, there is always a cool breeze of air. Windows are closed only in the middle of summer in the afternoons. Galleries around the courtyards create a transition space between the harsh light of the court and the shaded rooms.

All windows are recessed towards the inside and not flush with the façade; this creates shade around the windows that are not protected by the galleries of the courtyards. During the monsoon season they are better protected from the rain.



c. *Choice of Materials; Level of Technology*

The choice of materials is successful compared to most buildings in Ahmadabad. The use of concrete lintels with the brick background is quite charming. Different colours of stone on the floor gives the wall surfaces an added charm. Although the building technology used is the standard in Ahmadabad, the overall appearance of the building is very pleasing.

d. *Ageing and Maintenance Problems*

One section of one of the buildings has settlement and some cracks are apparent. They are not major according to the structural engineer.

One of the major problems is the treatment of water spouts. The architect has used the position of water spouts as decorative elements without installing the water spouts. This has led to rain-water washing the walls and has affected the appearance.

Open water drainage is carefully placed around courtyards and is successfully used as a decorative element. They can easily be cleaned. This would reduce maintenance problems.

e. *Design Features: Massing and Volume, Articulation of Spaces, Integration With the Site*

The total site area is 23 acres. The total ground floor area is 5'100 m<sup>2</sup> and the total combined floor area of phase one is 6'600 m<sup>2</sup>. Phase two is not yet built.

The institute is composed of seven buildings which are connected by two axes which are perpendicular and converge on the entry pavilion. The form of the entrance pavilion, with its use of brick, concrete and light green pyramidal profiled aluminium roof, summarises the EDII's morphology.

## VI. Users

a. *Description of Those Who Use or Benefit from the Project*

The EDII has 20 full-time and 10 visiting faculty members. Faculty members are paid INR 9'000 on average. The student body is quite diverse in terms of income, culture and religious background. There are two main categories of courses for two distinct socio-economic classes of students. One is governmental employees, businessmen and the like who will become trainers or researchers in other States or countries in the field of entrepreneurship. The others are the individuals who will become entrepreneurs, and they are usually from a less affluent section of society.

There are five types of entrepreneurship programmes. The programme for entrepreneurs is usually held in the evenings. It is a three month course of four hours a day. This course is meant for the residents of Ahmadabad. It usually accepts 30-35 students. The EDII can run two such courses at any one time. Each course is taught by 10 faculty members and 15-20 practitioners.

The programme for future trainers is usually six weeks long with six hours a day and six days a week. This course is meant for those who will stay in the campus hostel. It usually accepts 20 students. Each year the EDII usually runs two courses for India and one for developing countries. However, the EDII has become more and more active and this year they ran ten courses for India and five programmes for Third World countries (for detail of courses and programs see attached documents).

*b. Response to Project*

The users are proud of their institute and this is reflected in their care of the facilities. Classrooms, offices, etc. are all well maintained. However, there are some drawbacks; the position of the door frames, on the external surface of the wall, make it difficult to open the doors 180°. They can only open 90°. Some users complained about the room separation, while others took advantage of it. One might argue that the low walls which divide the rooms are an inefficient use of resources.

**VII. Persons Involved**

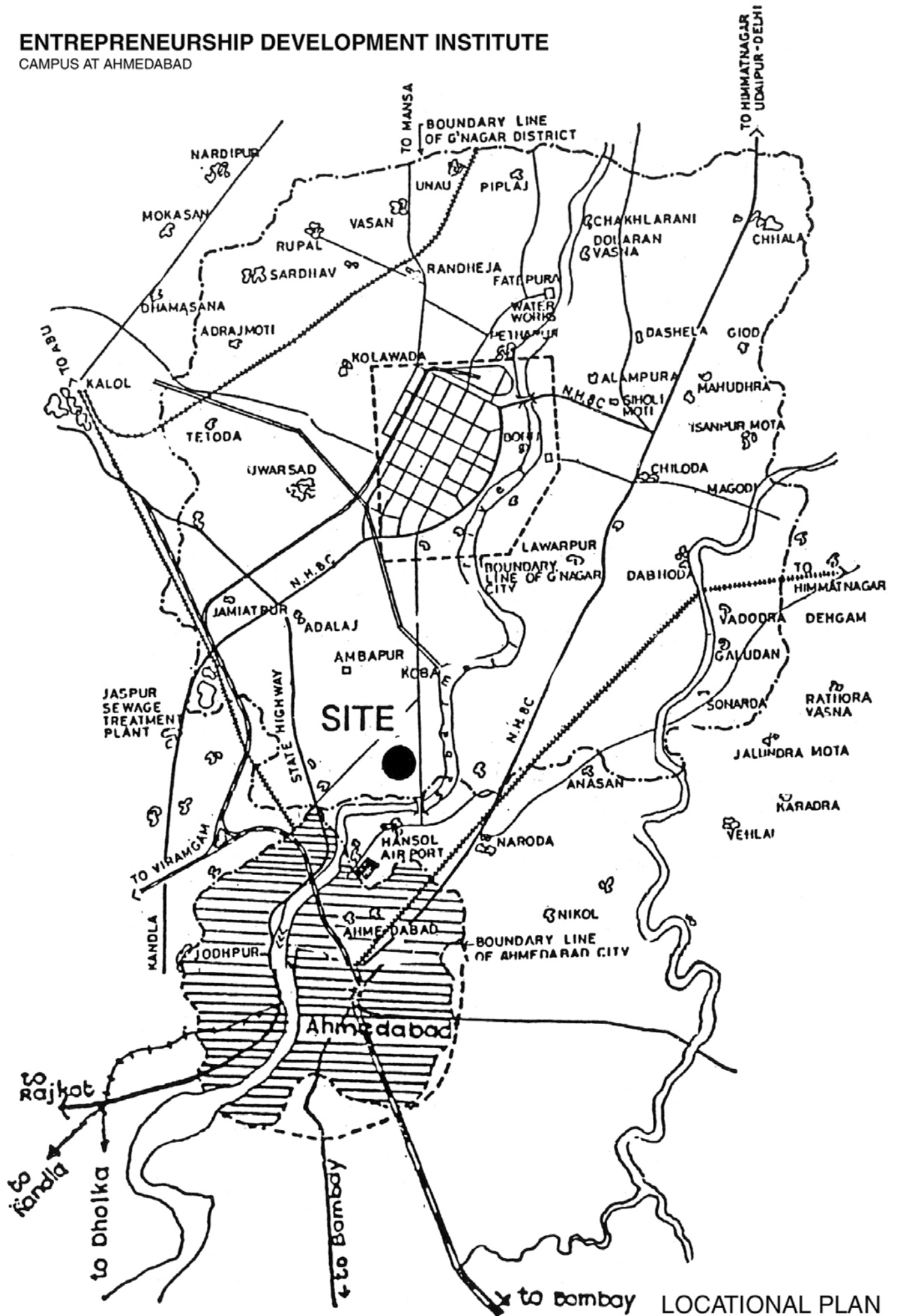
Two individuals are responsible for the project's success. V.G. Patel is the director of the institute and the driving force of the EDII. He is the founder of the institute and has raised the needed funds to build the current facilities. The second person is the architect, Bimal Patel. Although they both have similar names, this did not affect the EDII's selection of the architect. The architect's design was selected by a jury through the screening process.

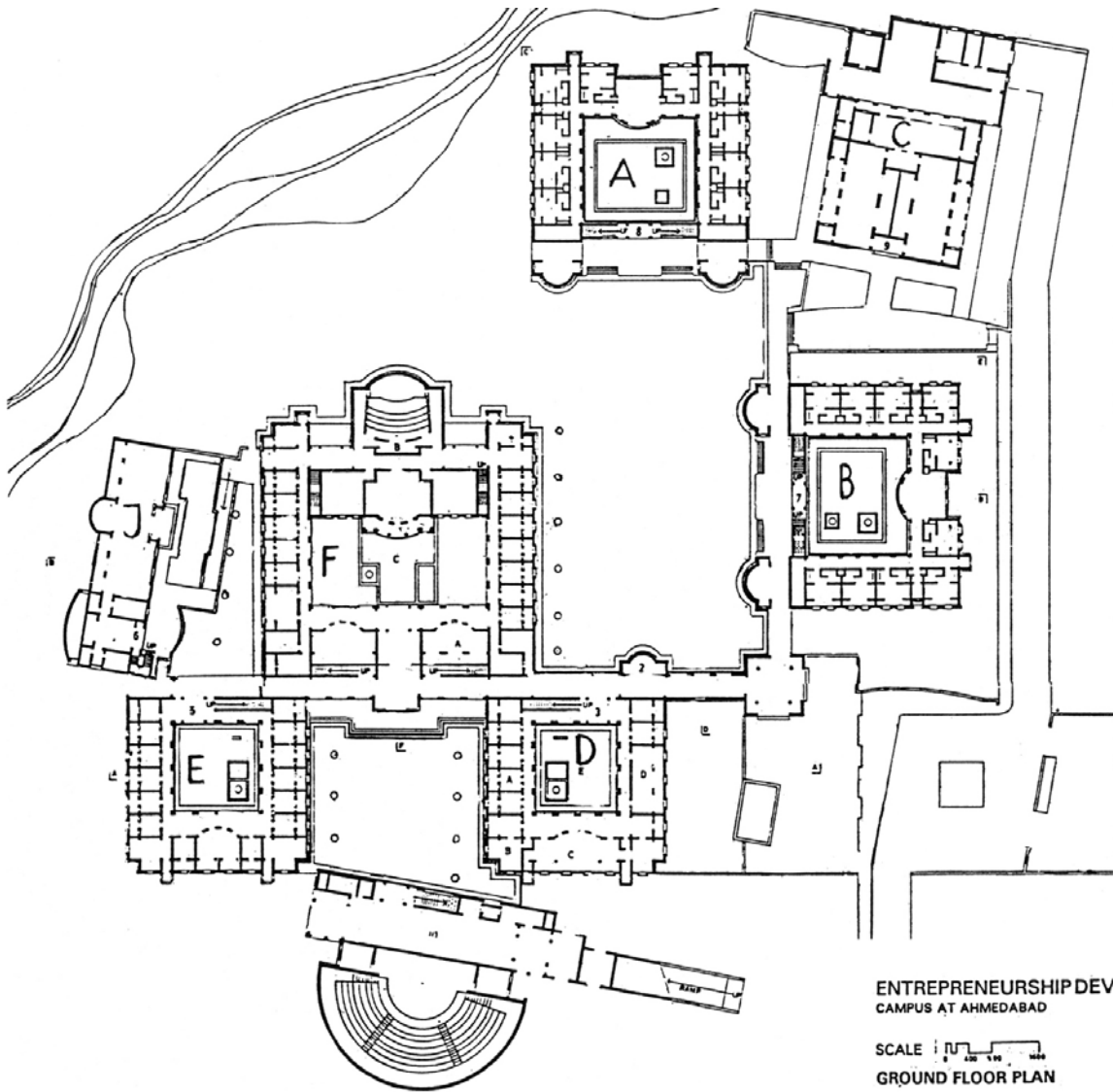
*Jamel Akbar*

Ahmadabad, May 1992

# ENTREPRENEURSHIP DEVELOPMENT INSTITUTE

CAMPUS AT AHMEDABAD





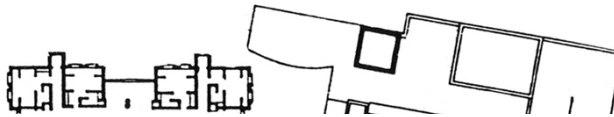
**LEGEND**

- 1. Entrance
- 2. Inquiry
- 3. Administration
  - A. Room
  - B. Director
  - C. Board Room
  - D. Waiting
  - E. Court
- 4. Training Center
  - A. Computer Room
  - B. Lecture Hall
  - C. Court
- 5. Research Center
- 6. Library
- 7. Trainees Hostel
- 8. Deluxe Hostel
- 9. Kitchen - Dining
- 10. Auditorium - Canteen

**ENTREPRENEURSHIP DEVELOPMENT INSTITUTE  
CAMPUS AT AHMEDABAD**

SCALE 1:1000

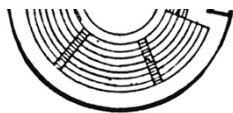
**GROUND FLOOR PLAN**



LEGEND



SCALE 0 400 800 1600  
**SECTIONS & ELEVATIONS**



**ENTREPRENEURSHIP DEVELOPMENT INSTITUTE  
 CAMPUS AT AHMEDABAD**

ENTREPRENEURSHIP DEVELOPMENT INSTITUTE  
 CAMPUS AT AHMEDABAD

SCALE 0 400 800 1600  
**FIRST FLOOR PLAN**