

CAMPUS ON THE SABARMATI

IIT GANDHINAGAR



ACADEMIC COMPLEX
DESIGN EVOLUTION

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Development of this document was supported by the Indian Institute of Technology Gandhinagar, Gujarat, India.

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Note:

For this publication, the drawings and graphic material were prepared by Mitimitra Consultants Pvt Ltd or their subconsultants and presented to IIT Gandhinagar in various draft reports. It is hoped that this publication will be of interest to design professionals as well as others, and will also serve as a useful educational tool for students and young professionals.

All cost figures are given in Indian rupees, typically in crores.
One crore = 100 Lakhs or 10,000,000 rupees.

ILLUSTRATION/ PHOTO CREDITS
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Indian Institute of Technology Gandhinagar, 2017
ISBN: 978-81-934412-2-0

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FOREWORD

Once created, universities may last not just decades, but centuries. Hence, it is a rare privilege for any academic to participate in the process of creating a new university. Establishment of the Indian Institute of Technology Gandhinagar (IITGN) has enabled all of us associated with the Institute to innovate in creating curricula, in organizing governance, and in nurturing a unique culture and ethos of the Institute. The philosophy of education has been to push traditional boundaries with an emphasis on a multi-disciplinary approach with crosscutting thematic areas.

Just as the Institute endeavours to think out of the box for its academic programmes and governance, it has also been doing so for development of its 399 acre campus on the banks of Sabarmati River. It is our belief that the physical environment makes a huge contribution to shape the processes of learning and knowledge creation. The campus has been conceptualized keeping in mind long-term objectives as well as present needs and immediate future. The guiding principles of the campus development have been

- An ambience that attracts visitors and conveys to them that they are on a university campus unlike any they have visited before.
- Functional convenience for the academic community for mutual interaction, learning and research.
- Low energy and resource consumption, as well as minimal upkeep and low maintenance costs.

The engagement of many professionals and academics in brainstorming and executing the design and construction has enabled us to introduce numerous innovations in the development of the campus. The campus development work was split into master planning and architectural design. The Masterplan development was completed by a consortium of architects selected through a competitive process. Another selection process was conducted for the comprehensive architectural design of the student hostels, the faculty and staff housing, and the academic buildings. A landscape architect and member of the master planning team oversaw the landscape design for the overall elements and spaces of the new campus. This landscape architect also peer-reviewed the landscaping developed as part of the hostels, faculty and staff housing, and academic buildings. IITGN was also supported throughout this process by our “owner’s architect”, M/s Design and Planning Counsel, Ahmedabad, who were our partners in all decision-making.

This publication is one in a series that explains the complex decision making, design, and construction process for the new campus. These publications have all been developed through a collaborative process involving all concerned: architects, consultants, and the IITGN community. The publications in this series have been made possible because of several visits of Marjorie Greene to IITGN as a Scholar-in-Residence. During these visits she worked to systematically compile the various materials presented here, collaborating with IITGN colleagues as well as our architects and consultants.

ABOUT THIS PUBLICATION: This publication showcases the architectural design of the academic complex, building from goals and objectives set forth in the Masterplan. The architects selected for this challenge were Mitimitra Consultants Pvt Ltd, who led a team of consultants to complete this important component of development of the new campus.

Sudhir K Jain
Director and Professor
Indian Institute of Technology Gandhinagar



Dedication of IIT Gandhinagar Campus to the Nation
by Prime Minister Narendra Modi on 07 October 2017

EXECUTIVE SUMMARY

Vital Statistics about the Project

Construction commencement date	August 1, 2013
Construction completion date	April 10, 2016
Area of Building	45,200 Sq m
Total construction cost including all services and parcel development	Rs 188 crore

Guidance from Masterplan

A conscious decision was made by the IITGN community to take a holistic view of campus development and to articulate a comprehensive detailed Masterplan that would guide this development. In various meetings with the IITGN community and consultants, a series of master planning goals as well as specific design objectives were outlined for the new campus. These goals and objectives expressed in the Masterplan document were meant to explicitly define the uniqueness of IITGN. Individual architects, working on separate parcels of the development, would then use the Masterplan as a reference point for their designs. The architects selected to design the Academic Complex are Mitimitra Consultants Pvt. Ltd.

Guiding Principles

The guiding principles that the architects took from the Masterplan were

- To encourage the free exchange of ideas, through interaction among faculty, staff and students.
- To foster amiable relationships among all members of the Institute's community, generating a culture sensitive to human beings and nature.

In addition, there were some basic planning controls imposed by the Gujarat Urban Development Authority and urban design controls and guidelines that were suggested by the Masterplan. These urban design controls were particularly related to the “spine”, the central defining feature of the academic complex.

Design Objectives

The design derived its inspiration not only from the Masterplan but from the vision statements of other IITs, as well as the response to the IIT goals and objectives on the whole. Many of the vision statements of the IITs have “to serve the nation” as a goal; this led to the idea of a central movement “spine”, articulated in the Masterplan and brought more fully to life in the architectural design.

Buildings are primarily of a mixed use-- lectures, classrooms and offices-- with lecture hall complexes at two end nodes. These mixed types are meant to create interest and variety in the academic areas. The geometry of each building was derived to emphasize the linearity of the spine, which in turn was defined as the “hub of activity”, offering a variety of experiences. Each laboratory building was defined with a forecourt before connecting to the central spine. Public outdoor spaces are interspersed, with a combination of shade, shadows and light.

Background Studies

A series of conceptual and background studies were prepared to help the architects understand the site, the use of spaces, the arrangement of buildings, distances, etc. These studies also provided information on shade patterns and the density of uses of various spaces.

Defining Architectural Features of the Academic Complex

Several unique architectural features are part of the new campus, and contribute to its distinctive character.

- **Gateway**—both from the highway (Entry Gateway) and at the Arrival Court, conceived to provide a strong visual link.
- **Central Spine**—running through the academic campus, providing visual continuity throughout the complex. Uniqueness is provided through the use of colours and a different scale of space and character for each court.
- **Nations Court and Tower of Light**—main entry point from student hostels, with background of Tower of Light, visible from any part of site. The tower has now been named ‘Lal Minar’ by the IITGN community and functions as an urban reference marker to campus and Gandhinagar city on the opposite bank of the Sabarmati River.
- **Use of Courts**—as organising elements for buildings, as positive open spaces, each of the nine courts has a unique spatial character and design. Accordingly each court has been named aptly, e.g Samvad, the main court where maximum interaction takes place and so on.
- **No Rear Side to Buildings**—given that the rears of buildings can often become inaccessible or shabby, buildings are kept open, with essentially no backs or fronts.
- **Barrier-Free Circulation**—entire campus is conceived as barrier-free for differently abled people.
- **Enhancement of Riverfront Promenade**—providing tiered interaction spaces all along the Sabarmati River, establishing a strong visual and physical link with the most important natural features (ravines and river) within the site.
- **Exploration and Interaction**—the open spaces and buildings are organized in a manner to allow people to meander, explore and interact.

Architectural Design Evolution Process

After the basic conceptualization of the project at the time of the architectural firm selection process, it was consciously decided that each aspect of the architectural design should be given new thought, trying out different designs and functions. Various alternatives, each with their own strengths and weaknesses, were prepared to explore the possibilities of variations in campus design and functional relationships. Sixteen architectural design alternatives were prepared initially, which were further synthesized into two more fully developed options. The focus of these alternatives was primarily on defining the character of the indoor and outdoor spaces, specifying the overall built mass, maintaining transparency and permeability at various levels, and defining functional convenience and the distribution of various activities.

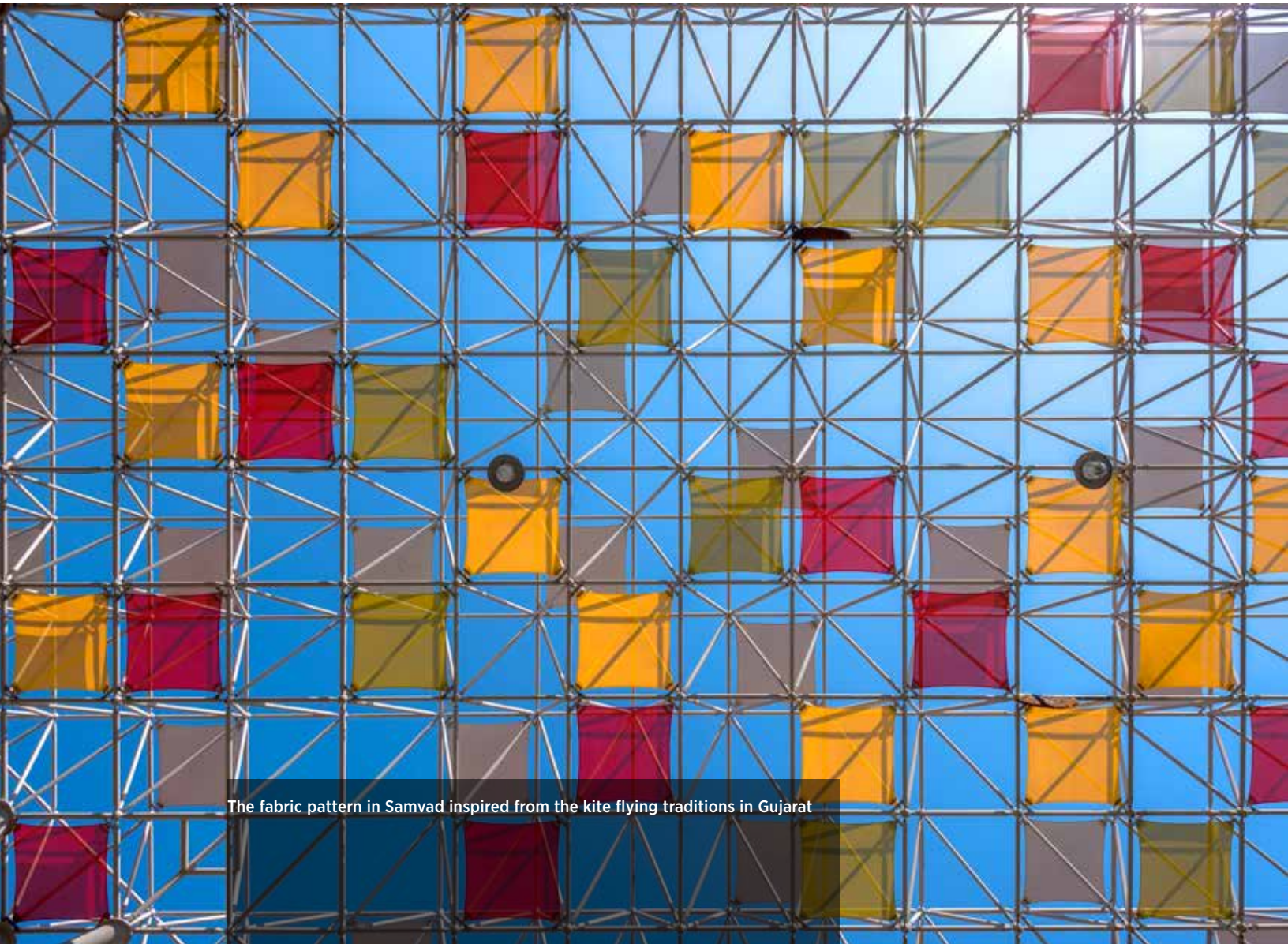
Landscape Design and Development

The overall objective of the landscape design of the Academic Complex was to connect the landscape features of the Central Vista and Riverside Promenade seamlessly with those of the Masterplan. While the landscape design for the Academic Complex was prepared as part of the architectural design, it was important to make sure this landscape design was coordinated with and built on the Masterplan landscape design. The evolution of the landscape design for the Academic Complex place in four stages, with continual refinements made at each stage.

Green Architecture and Environmental Aspects

A separate publication in this series describes various innovative features introduced in the campus design that will help the campus reduce its demands on resources. Briefly these include understanding the hot and dry climatic zone of the campus and appropriate choices for building orientation, massing, shading and window design that will help keep the buildings comfortable.

The campus Masterplan received the first 5-Star rating for Green Rating for Integrated Habitat Assessment (GRIHA) for large developments. In addition, the Academic Complex received first prize from the Housing and Urban Development Corporation (HUDCO) Design Awards 2016 in the category of 'Green Buildings'.



The fabric pattern in Samvad inspired from the kite flying traditions in Gujarat

ACKNOWLEDGEMENTS

IITGN would like to acknowledge the contributions of all stakeholders in the conceptualization, evolution of campus design, detailed engineering and construction of the IITGN permanent campus - academic parcel: the team of various specialized consultants such as structural designers, MEP services, landscape design, acoustics and audio design, wayfinding, energy studies, advisor consultants to architects and furniture design led by principal architects M/S Mitimitra Consultants Pvt. Ltd., Pune; Central Public Works Department (CPWD) engineers; contractors; and the construction workers.

Special acknowledgement is due to Mr. L. K. Bhargava, Project Manager, CPWD; Mr. B. L. Suthar, Executive Engineer (Civil); Mr. Rathod, Executive Engineer (Electrical); Mr. K. R. Singh, Assistant Engineer, CPWD; Mr. Nipun Gupta, Assistant Executive Engineer; Mr. Sagar Pawar, Assistant Executive Engineer (Electrical); Mr. Bhattacharya, Assistant Engineer (Electrical); Mr. Shivkumar Mesharma, Assistant Engineer, CPWD; and Ar. Dhara Mehta, Resident Project Architect, Mitimitra Consultants Pvt. Ltd. for the wholehearted efforts they put into this project. Special acknowledgment is also due to the IITGN Works Department team consisting of Mr. Nagaraja Narayan Rao, Past Advisor; Mr. Anil K. Kothari, Past Superintending Engineer; Mr. L. P. Srivastava, Advisor; Mr. G. C. Chaudhary, Superintending Engineer. The entire project was guided by the Building and Works Committee (B&WC) of IITGN and regularly monitored by the Project Planning and Management Committee (PPMC). We acknowledge the constant review, critical advice and guidance of all members of B&WC and PPMC. Special acknowledgment is also due the Extra Low Voltage (ELV) committee, chaired by Prof. Deepak Phatak of IIT Bombay.

Several IITGN faculty members were also involved deeply and contributed immensely and enthusiastically to the project from the first day. Their various interactions, safety and social concerns, knowledge about and exposure to world-renowned universities contributed a great deal to shape the final form of the academic campus of the project. Special thanks to IITGN faculty Prof. Amit Prashant, Prof. Harish P M, Prof. Bhaskar Datta and Prof. Pratyush Dayal. Special thanks also to Prof. Dheeraj Sanghi, Prof. Durgesh Rai, Mr. Navpreet Singh, Mr. Rajeev Garg, Superintending Engineer of IIT Kanpur and Mr. P. C. Shah, ISRO, Ahmedabad. Mr. Vijay Shah, Bhoomi Consultants and Ms. Alpa Sheth, VMS Consulting Engineers, Mumbai, who assisted with proof checking and peer review, respectively, for the structural design. Shri S Narasimhan and Shri G. S. P. Singh of Bhavini, Kalpakkam, extended significantly help in some of the tender documents. Mr. Sudeep Banerjee and Mr. Rohit Chaudhary of IITGN assisted in framing of ELV tender specifications.

The campus design and development underwent intense stages of debate and discussion under the guidance of Dr. Vinod Gupta, Ar. Ujan Ghosh, Green Campus Development Consortium (Space Design Consultants & Upalghosh Associates), Masterplan Consultants; Ar. Shobhit Tayal, Ar. Hetal Shah, M/S Design and Planning Counsel Pvt. Ltd., Ahmedabad and their team. Special mention needs to be given to the landscape designer the late Prof. Mohammad Shaheer, M/S MSYK Designs, who guided the landscape design team throughout the project.

This project would also not have been possible without the financial support provided by the Government of India.

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Lal Minar rising above the campus

Addressing the need for expansion of the Indian Institutes of Technology system, the Government of India has established a number of completely new IITs. This includes the Indian Institute of Technology Gandhinagar (IITGN), which became part of the system in the 2008-09 academic year. The Institute was initially housed on the premises of Vishwakarma Government Engineering College in Chandkheda, Ahmedabad, Gujarat. In July 2012, the Government of Gujarat provided a piece of land on the banks of the Sabarmati River at Palaj village, Gandhinagar District, measuring about 161 hectares (399 acres) for the IITGN permanent campus.

The 399 acre site has a difficult terrain and only about 55% of the site is available for development. The site is in two parcels with the village of Palaj separating them. A new highway forms the boundary on the eastern side of campus and the western side of campus is bounded by the Sabarmati River. Of the total site area, the southern parcel consists of 305.1 acres; 93.9 acres are in the northern parcel. The northern parcel is dominated by ravines while the southern parcel has a large contiguous area suitable for the main campus.



Figure 1. Site of IITGN permanent campus, before construction



Figure 2. Ravines on the site



Figure 3. Natural pond on site



Figure 4. Herbal garden at the site



Academic building under construction

Guidance Provided by the Masterplan

A conscious decision was made by IITGN to take a holistic view of campus development and to articulate a comprehensive detailed Masterplan that would guide this development. In various meetings with the IITGN community and consultants, a series of master planning goals as well as specific design objectives were outlined for the new campus. These goals and objectives expressed in the Masterplan document were meant to explicitly define the uniqueness of IITGN as well as to guide development of all phases of construction for all areas of the campus. The campus was to be designed as a “campus apart from others”. Although development is taking place and will continue to take place in phases, the campus was not intended to appear incomplete at any point, because of the design characteristics of the buildings and the surrounding grounds. In addition, the campus was to be designed in a sustainable manner, with a long-term emphasis on the ecological restoration of the river and the ravines and an ultimate goal of resource self-sufficiency for the campus.



Figure 5. Meeting of Building & Works Committee of IITGN with Masterplan consultants

Mitimitra Consultants, who were selected for the academic campus design, used the Masterplan as the guiding document for their statement in response to the RFP. They wanted to respect, respond to, and thus enhance the thought process that had gone into the formulation of the Masterplan. Once they were selected, however, the approach differed from a typical competition—usually an architect who is awarded a project then designs what was originally proposed. However, with IITGN as the client, Mitimitra Consultants were asked to approach their designs afresh based on inputs from the IITGN team.

Thus began a process of give and take, with much healthy debate, resulting in many iterations of the designs. Two of the directors of the architecture firm came to meet with the IITGN community every Tuesday for the first year, and at a continued high frequently for the next two years. In fact, the firm shifted the Sunday holiday to Tuesdays because the directors were never in their Pune office on Tuesdays. The IITGN Director participated in all these meetings, as did the architects for the other elements of the campus (Masterplan, hostels and housing), the owners’ architects, the CPWD representative, various faculty and other consultants. Everyone would give inputs, and all opinions were respected. After the fifteenth iteration, the stakeholders were happy enough that the architects could move forward, with still further amendments and inputs to be made later.

In addition to weekly meetings, the architects, along with Prof. Bhaskar Datta and Prof. Harish P. M., visited other universities in India (other IITs) and abroad (Singapore) to understand how spaces were used or not used, in what ways spaces seemed not to work, and how the built environment affected student-teacher relationships.

The guiding principles for the academic campus, as interpreted by the architects from the master planners were:

- To encourage the free exchange of ideas through interaction between and among the faculty and staff with students pursuing bachelor's, master's and doctoral programs, leading to degrees at the cutting edge of science, society and technology.
- To foster amiable relationships among all members of the Institute's community, generating a culture sensitive to human beings and nature.

There were planning controls imposed by the Gujarat Urban Development Authority, some basic constraints of the site that dictated what was possible to be built on the campus, and Masterplan design development controls, including for the academic complex. These are described in more detail in the publication on the Masterplan but are briefly summarized here:

- Plot area: 67,800 m²
- Floor area ratio of 1.5 [max] [an estimated built area 67,800 x 1.5 sq mts]
- Ground coverage – 50% max.
- Building height - 3 storeys [25% of the buildings can be 1, 2 or 4 floors]

In addition to these constraints there were some urban design controls and guidelines that were suggested by the Masterplan, particularly related to the spine, which is the central defining feature of the Academic Complex. Figure 6 summarizes the urban design controls for the site.

One of the guiding principles for Mitimitra Consultants is that architects design spaces, and buildings are the envelopes that define these spaces. They designed the spaces within the buildings as well as outside the buildings with the idea that when looking at the entire campus the smaller and bigger open spaces are noticed first. The campus will be known for the open spaces of its interactive courtyards as much as for its buildings.

One of the issues in designing a new campus is that much of the design has to be conceptualized without specific requirements. While there are of course certain code requirements and norms, as well as cost requirements, much was left up to the broad collaborating community of architects and IITGN representatives to say what they wanted the campus to look like. In the case of IITGN, very few faculty were in place and while the existing IITGN community could articulate needs for basic campus elements, including laboratories, libraries, classrooms and offices, there was little specific guidance about these spaces to give to the architects. The director's office, for example, is currently in a space that was initially conceived of as a laboratory. The architects and the IITGN community needed to think through future needs and growth and decide how best to design spaces that could be adapted, expanded or changed, as necessary.

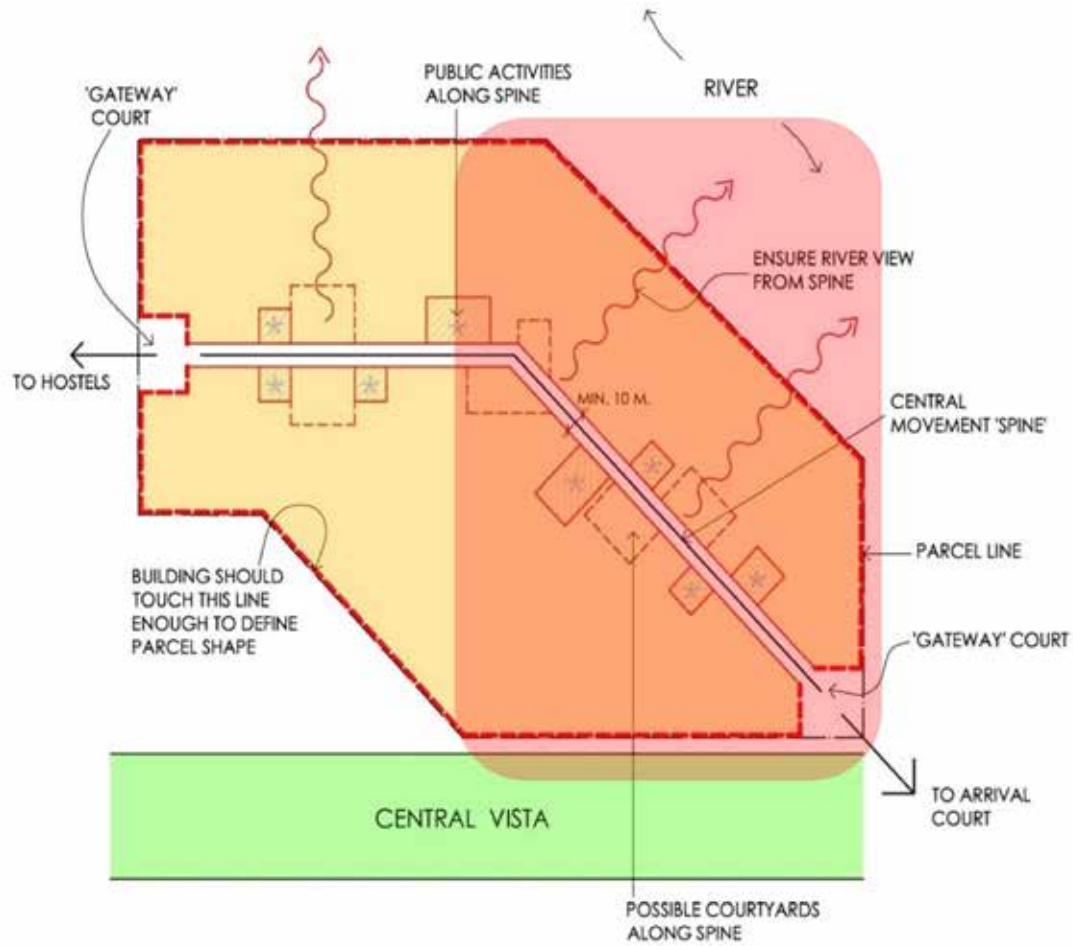


Figure 6. Masterplan Urban Design Controls, Academic Campus Phase 1-A



Figure 7. Academic Campus view



The play of sun and shade creating interesting patterns and moods in Samvad

Architects' Response to the Context

For the Academic Complex of IIT Gandhinagar, the architects dealt with contextual situations of different types and complexity.

IITGN is an Institute of national importance and hence the architects treated it as an important project. The campuses of Indian Institutes are often looked upon as the nation's torch bearers, guides for the nation, as seen at the IIT Kanpur campus and at the Indian Institutes of Management in Ahmedabad and Bangalore. As the first complex of academic buildings, the context requires an architecture that is precedent-setting, not only for the future academic development of this campus but for the entire nation.

In the context of the region, Gujarat is one of the places in India to celebrate architecture and its expressions, cultivating in the past and today the works of nationally and internationally acclaimed architects. The state is considered one of the finest examples in the country for its continual evolution of architectural expression and philosophies, of its styles and debates. The IITGN Academic Complex has taken life within this regional architectural palette, and the response has been to maintain a fine eye for architectural expression.

The culture of Gujarat is quite rich in its expression of colours through festivals, people's gatherings, assemblies and general togetherness, which often get reflected in the spaces of the city. This cultural background is a very important intangible context to shape this project, a context that needs expression through campus architecture.

The climate of Gujarat--especially Ahmedabad and Gandhinagar--is of a unique type with hot days, cold nights, a relatively weak monsoon and good wind movement. This context of climate is a very important setting for this project, and its expression in architecture increases the comfort for those occupying the spaces.

New Urbanism

The Academic Complex has been conceived on the lines of New Urbanism theory, taking to the academic area the close-knit fabric envisioned in the overall campus Masterplan. New Urbanism is an urban design platform with pedestrian-friendly community space, recognition of the needs of different stake holders and disposition of various functions to create and foster community through "work-leisure-interaction relationships." Framed by the architecture, key elements are the landscaped places that reflect the climate, ecology and other local contexts.

Secure, safe, freedom-oriented and humane

The entire campus planning has been conceived on the notion that all the stakeholders shall have utmost freedom in their movement, a freedom that finds expression in the campus design. This will foster healthy relationships among students, faculty and other users for generations to come. Hence, the campus design model opted for is an open model with penetrations in all directions to create this level of flexibility. All the nooks and corners have been carefully dealt with to create a safe and secure environment scaled to human values and sensitive to human scale.

Exploration and experience

The campus design and spaces are arranged in such a way that the spaces will invite exploration by students and faculty. Any particular space can be used in more than one way, leading to multiple explorations. Students will develop their own paths, their own links, their own walks, and their own choices across the fabric of built and open spaces, which in turn will lend to each journey a different experience across all the seasons of the year.

Memory and association

For any place, it is of utmost importance to create an expression that will stick in the memories of its visitors as well as of the regular users, memories that can be cherished at different periods of time. It is very important for the health and culture of the Institute for the stakeholders to develop a sense of memory association to the spaces, buildings and campus. An attempt has been made to develop an architectural expression that defines the content and space in meaningful ways that can then be converted into memory and associations.

A *genius loci*--a spirit of a place--is indeed an important aspect in creation of spaces for memory and associations. The central Samvad Court has been conceived on these lines.



The central academic spine

The design derived its inspiration not only from the Masterplan but from the vision statements of other IITs, as well as the response to the IIT goals and objectives on the whole. Many of the vision statements of the IITs have to serve the nation as a goal; this led to the idea of a central movement spine in the Masterplan and was brought more fully to life in the architectural design.

Design objectives were thus articulated as:

- To create an ambience that sets the campus apart from others.
- To provide functional convenience and promote interaction among students and faculty.
- To use natural resources efficiently, leading to GRIHA ratings for some buildings and the campus as a whole.
- To use the central spine of the academic campus to make a dramatic visual impression rather than just using it as a passageway or a corridor.
- To use the spine as the hub of activity for the campus.
- To develop the campus in such a way that no side/face of any building would be termed as rear, eliminating the tendency to neglect the rear side.
- To create an architecturally interesting design in terms of space and function.
- To instill a strong feeling of national pride.
- To explicitly address the Sabarmati River in the design.

These design objectives were translated into specific architectural features by the Mitimitra team, with much of the emphasis on the role of the spine, as well as the role of the spaces in and around the buildings (the courts, the vista, etc).

In addition to the more general suggestions coming from the Masterplan, there were also specific recommendations that were made about the spine and overall academic environment, including:

- Entry to individual academic buildings, teaching labs and common facilities like lecture halls, department offices, common rooms, cafes, etc. shall be located along this spine.
- Parts of the central spine shall be suitably covered to protect the space below from sun and rain. This protection must be at the 1st floor roof level or above. The cover can be of RCC, steel, fabric, glass, polycarbonate or any similar material.
- The spine shall have distinct gateways in the form of courts at the ends and link the academic complex to adjacent facilities like hostels, arrival court, housing, etc.
- The buildings must touch the boundaries of the land parcel sufficiently to define the shape of the parcel.
- The spine should have visual links to the river front.
- The spine should be a network of courts of various sizes and shapes strung together by a continuous

linear legible direct movement line.

- Public activities along the spine and its courts should happen at lower two levels of the buildings to make it interesting.
- Buildings should be suitably oriented for minimum solar heat gain and maximum river view.
- Building should be oriented to emphasis the use of natural lighting.
- Buildings should be modular in nature and the floor plate size and shape should be such that functional / space needs of different departments can be accommodated.
- Building on either side may be connected across the spine in the upper levels by bridges or buildings so long as they do not obstruct the visual continuity of the spine.

The specific design of the academic buildings used these recommendations for the spine as the basic starting point, as can be seen in the descriptions below.



Figure 8. Building 5 entrance from the Academic spine

The academic philosophy central to the establishment of IITGN is anchored by the principle that there are no rigid departments. The lack of these rigid academic boundaries also translated into the physical spaces, which were then designed to encourage cross-disciplinary interaction and fluid movements across buildings and courtyards. Spaces were designed to create feelings of transparency, openness and freedom, through the use of random seating areas, landscaped spaces and open corridors. The spaces were designed to be more interaction oriented than department oriented.

The architects and IITGN community together worked to evolve a physical campus that encourages the experience of exploration. This spirit of exploration is left to the end user and in this case the end user is the student.

5.1. Studies to conceptualise spaces and functions of campus

Before beginning work on specific campus features, a number of conceptualisations were prepared as well as specific background studies, as shown in Figures 9, 10, 11 and 12. Conceptual drawings that were used to describe the vision of spaces and functions are shown in these figures.



Figure 9. Zoning and Functions Distribution- Functions were categorized into three zones and arranged facing inwards.

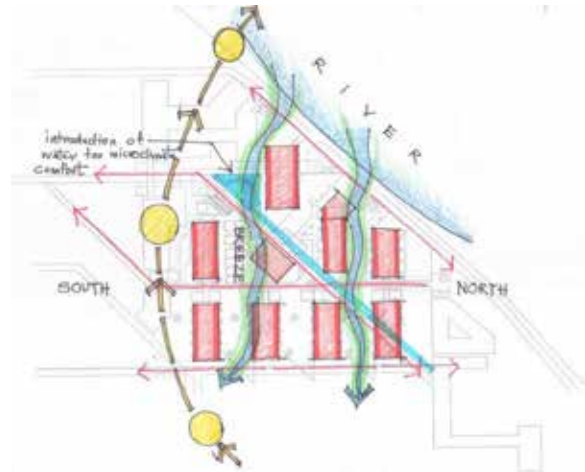


Figure 10. Orientation and Climatic Response- The major axes of all major functions are oriented along direction E-W to achieve the best cooling.

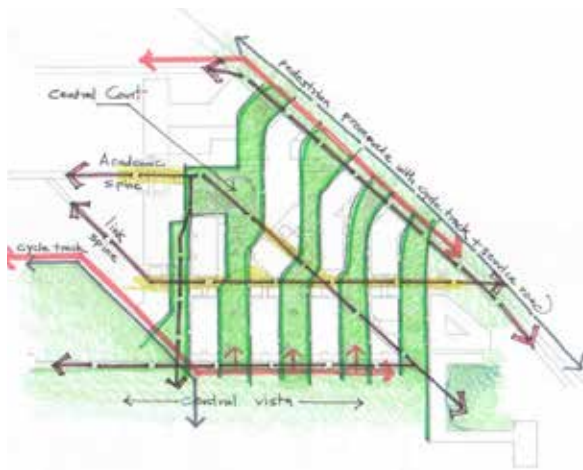


Figure 11. Open Spaces, Linkages and Penetrations- Internal open spaces connect the universal open space (the river) with the Central Vista.

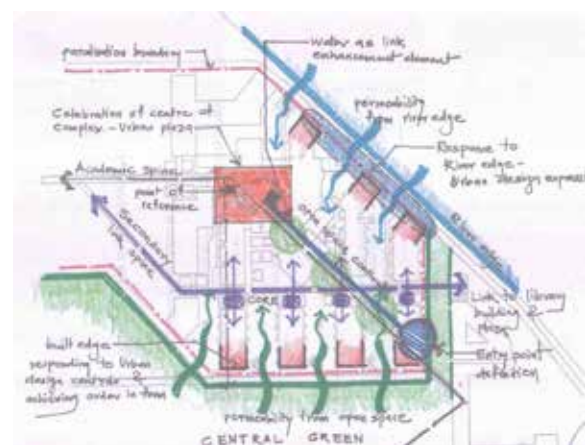


Figure 12. Response to Urban Design Controls and Masterplan Evolution- The land parcel for the academic complex, the visual line, a secondary link spine and the built form of the structures evolved to offer permeability from the central green and the river to the core.

5.2. Complete campus shadow analysis

A shadow pattern study was carried out at different times across a day and across a year, to work out the quality of shade in the open spaces. The goal is that at all times there are routes and spaces available that are shaded (see Figure 13).



Figure 13. Shadow pattern study of building 7

5.3. User density study

In addition to the studies described above, a user density study was conducted to understand the student/staff population across a typical day. This study necessarily reinforced the scale of open space provided in the design, including the open spine. It is expected that the maximum population on campus will be in the mornings and evenings, since during the daytime most students are anticipated to be in lectures or labs. Evenings will see a population mainly of research students and post graduation researchers (Figure 14).

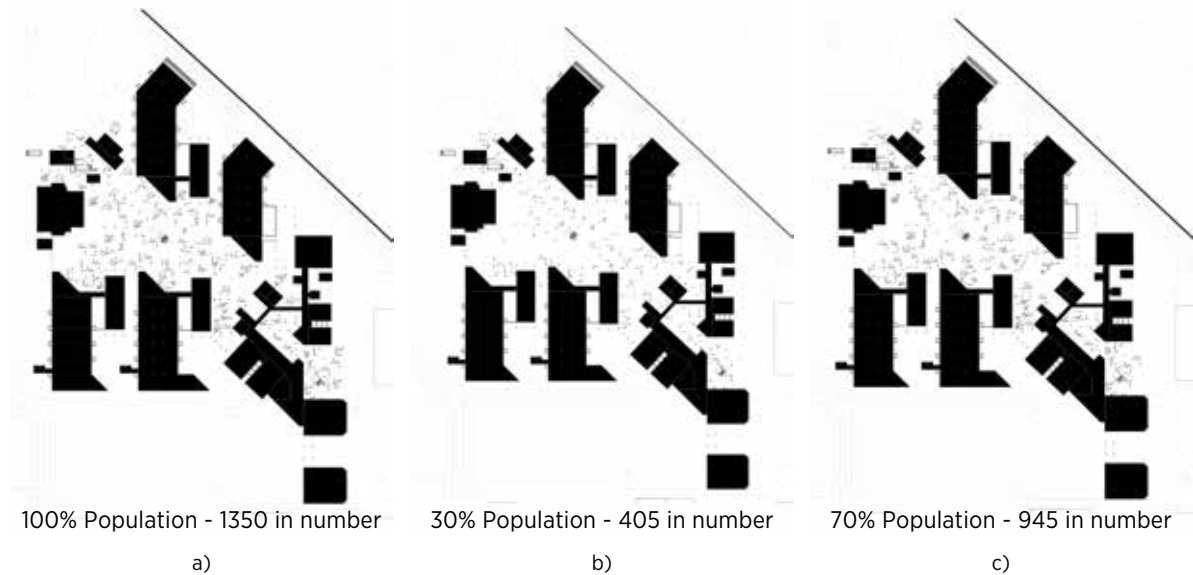


Figure 14. User density studies

5.4. Intensity zone studies

Studies of intensity zones and distances and reach were also prepared to better understand the use of the spaces. Figure 15a shows the horizontal connections among the buildings. Based on reach and distance studies, part-covered and part-open connections were devised for extreme sun and rain connections. Figure 15b shows that the maximum reach of the spine is three minutes. Any cross connection across buildings is not more than a half-minute walk. Figure 15c shows intensity zones and that the maximum population will be concentrated along the spine and its edges, making it the main concourse on the campus.



Figure 15. Studies of intensity zones and distances



View of Building 7 from Building 8

Defining Architectural Features of the Academic Complex

Several unique features are part of the new campus and are discussed below in more detail. A statement gateway leads to the entire educational complex. Buildings are primarily of a mixed use--lectures, classrooms and offices--with lecture hall complexes at the two nodes. These mixed types are meant to create interest and variety in the academic areas. The geometry of each building was derived to emphasize the linearity of the spine, which in turn was defined as the hub of activity, offering a variety of experiences. Each laboratory building was defined with a forecourt before connecting to the central spine. Public outdoor spaces are interspersed, with a combination of shade, shadows and light. The overall built form is configured with different sizes of building materials, shapes and spaces. Figure 16 shows the key plan for the Academic Complex, with the location of each of the nine buildings, and the functions of each of the buildings listed.

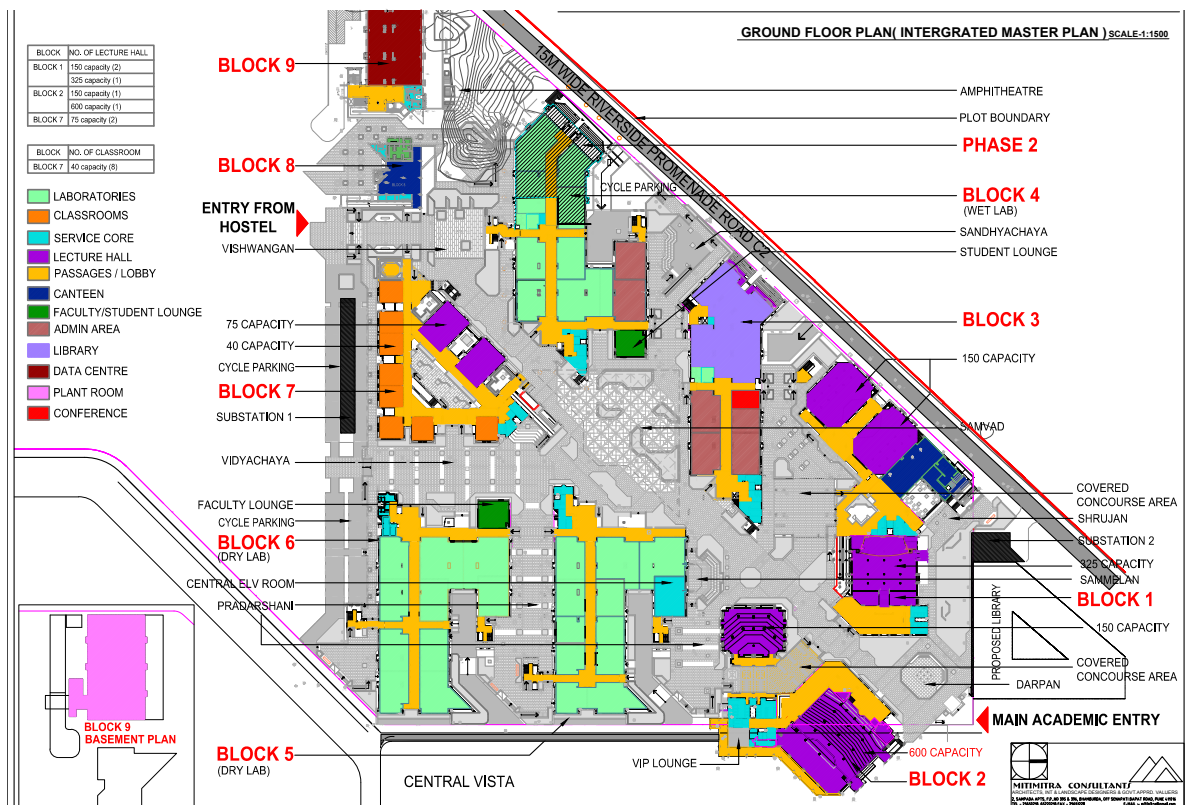


Figure 16. Key plan

IITGN is an Institute of national importance and hence the architects treated it as an important project. The importance of the buildings also influenced the scale of design, and translated into the spaces they were designing. The Samvad Court, for example, needed to be a big space, both to acknowledge the importance of the Institute and to suggest its impact.

These are the first academic buildings of the campus and will set the precedent for generations to come. The architects were aware of this responsibility throughout the design process.

Building 1 Lecture Halls – 3 in number of 150 capacity each, one Auditorium of 325 Capacity with supporting facilities including canteen, kitchen, passages, toilets, etc.	Building 2 One Lecture Hall of 150 capacity, Auditorium of 520 capacity with such supporting facilities as VIP lounge, green room, offices and services, toilets, etc.
Building 3 Dry, wet and general labs, administration, faculty cabins, postgraduate student cubicles, services, library with supporting facilities, passages, toilets, etc.	Building 4 Wet labs, faculty cabins, postgraduate student cubicles, classrooms, services, student facility centre with supporting facilities, passages, toilets, etc.
Building 5 Dry and general labs, faculty cabins, postgraduate student cubicles, classroom, services, student, facility centre with supporting facilities, passages, toilets, etc.	Building 6 Heavy labs, faculty cabins, postgraduate student cubicles, classrooms, services, student facilities like passages, toilets, etc.
Building 7 Classrooms (16 in number) 40 capacity each and lecture halls (4 in number) 75 capacity each and supporting facilities, passages, toilets, etc. Roof terrace.	Building 8 Landmark tower, canteen, student activity area, kitchen and supporting facilities, passages, toilets, etc.
Building 9 Data center, central HVAC plant room, faculty and postgraduate student cubicles, Later it was decided to utilize this building for temporary location of incubation center and research park.	Site area (Phase 1A) - 39,500 Sq m Built-up area - 45,200 Sq m Ground coverage - 23,000 Sq m

6.1. Central Vista as a Zero-to-Infinity Walkway

Many of the IITs have vision statements that include “to serve the nation”. In the case of IITGN this was interpreted as a grand vista, conceptualized in the Masterplan by the provision of a Central Vista, passing through the campus from the Arrival Court along the Arcade before finally culminating in the water body at the end. The Central Vista is a garden strip 50 m x 650 m, running through the center of campus.

The architects for the Academic Complex initially proposed a “Zero-to-Infinity - Path of Indian Glory” walkway to celebrate Indian inventions and achievements. While there is no timeframe for implementation of this walkway, the intent is to develop it to celebrate Indian achievements from the ancient era such as the concepts of zero and infinity (*anantya*) along with the entire number system, Ayurveda medicine, navigation systems, dams, chess, universities and planned cities to present day achievements including Pentium chips and Higgs boson particles. Innovations from Indian scientists and researchers can be exhibited in terms of displays, mobiles, sculptures and demonstrations. There will be vacant spaces on the path, reminding IITGN students and faculty that there is room for their future contributions. The experience of travelling through the Path of Glory from Zero to Infinity should really become a journey in time. This walk is intended to run along the green Central Vista, running through the center of the campus, where it will be most visible to students, faculty and visitors.

Staircases

The staircases on campus have unique designs as seen from underneath, called crocodile staircases, visitors ask the architects how the contractors were able to build these. How did they agree to do this in the first place? The architects felt that since you can see the bottoms of the staircases, the bottoms should be interesting design elements on the campus. In fact, they should be not only a design element but an identity element to the campus.



Crocodile staircase

6.2. Gateway

The experience at entry to the campus is conceived at two levels. While still under construction at this writing, the intent is that from the highway one makes a turn to a scenic drive leading to the Entry Gateway for the academic campus, where parasols will be situated above the academic buildings to provide a strong visual link that guides the visitor until the Arrival Court (Figure 17). Then there is a second level of gateway which opens and guides the visitor into the buildings. The academic spine continues to guide the entrance and the eye up to the Nation's Court, which acts as an urban marker (see below). The enclosure to this marker camouflages the area reserved for future expansion, thereby giving its enclosure a sense of completeness. The green gateways continue to integrate the buildings and the landscapes all around the academic buildings.

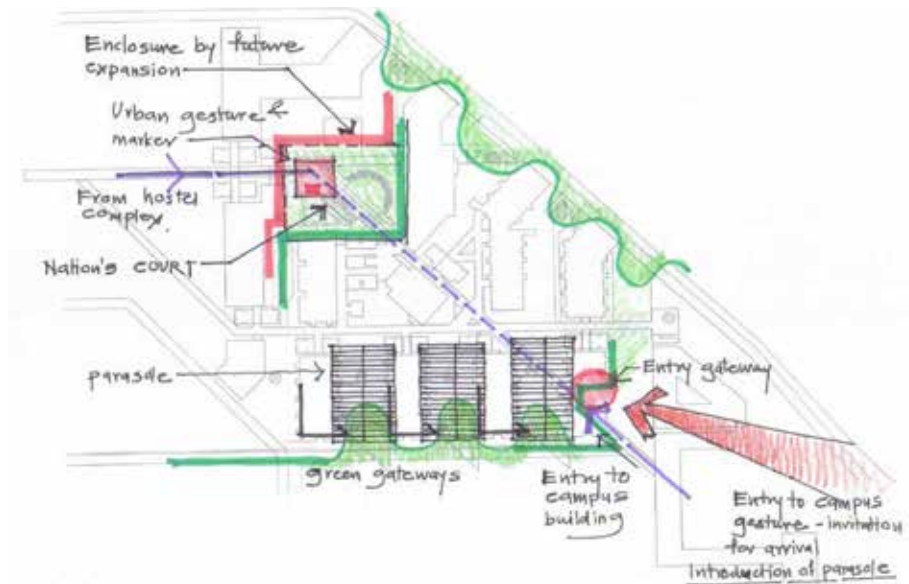


Figure 17. Gateways and built form



Entrance to academic complex from hostel

6.3. Central Spine

A central spine of the Academic Complex is intended to provide visual continuity throughout the complex (Figure 18). This will formally/informally demarcate predominant entry areas, concentrated interaction zones, hubs supporting formal and informal interactions as well as recreational activities. The character of the spine was conceptualized as a link connecting a series of courts or open spaces. The spine will help to better define the gateway to the entire academic complex, as well as the gateway to the student hostels. This idea is being developed further by introducing a colour specific to a particular court for its architectural fenestration and landscape design. The character of all the courts will be different from each other and specific to the adjoining use of the space or associated buildings. The spine will act as an invisible thread binding all the activities of the academic campus, delineating clear paths for vehicular and pedestrian movement, accessibility, transition zones, event zones and spill-over zones. The spine will connect important courts such as Court of Nations, Samvad (interaction), Darpan (reflections), and Sammelan (assembly). Various activities will be inserted along the spine, such as book kiosks, vending kiosks, small outlets at strategic positions, random seating areas, and different floor textures to increase the vibrancy of the spine space.

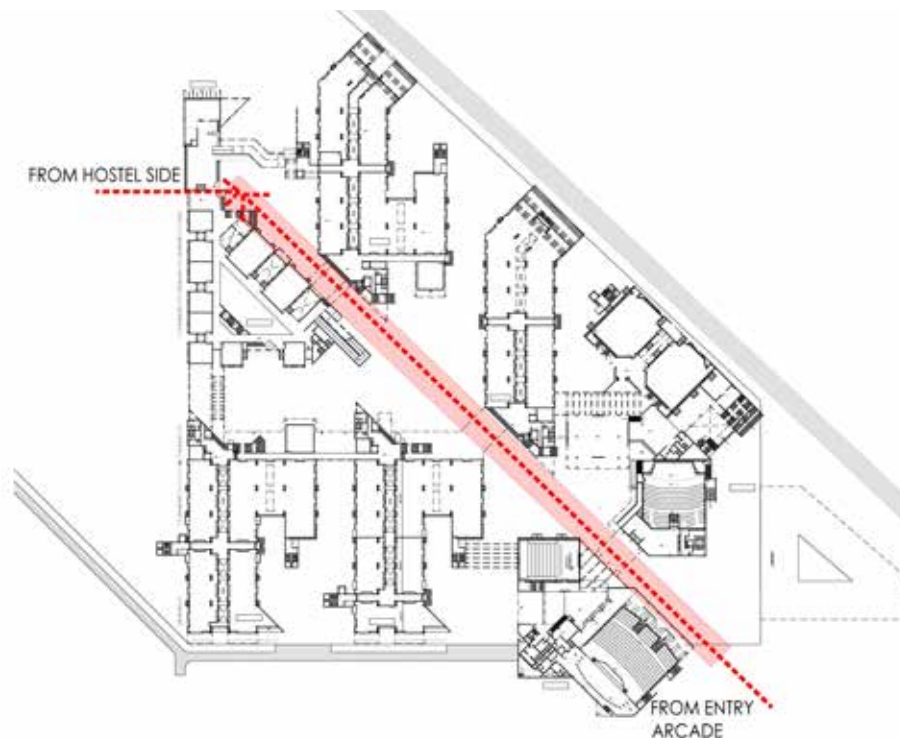


Figure 18. Central Spine



Figure 19. View of Vidhyachaya from central academic spine.

6.4. Court of Nations and Landmark Tower, Lal Minar

From the initial design stages, a Court of Nations was conceived with the background of a tower as a reference point on campus. The tower has gone through various modifications in its design. However the position has been constant at the point of change of spine geometry at the centre of Academic Complex parcel 1. The tower has been further visualised as a tower of light signifying a lighthouse, a role IITs are expected to play in the development of Indian society. Various decks have been provided at intermediate levels to observe the panoramic view of the campus and the river. The architectural vocabulary has a distinct character with embedded symbolism. The IITGN community as a whole came up with the name Lal Minar.

Since the entire Masterplan envisaged predominantly low-rise buildings, orientation within the campus becomes critical. The idea of a landmark tower emerged from this premise. A conscious decision was made to have an urban reference marker within the academic area, a marker visible from any part of the site as well as the city of Gandhinagar. With an identifiable and unique form different from the rest of the buildings around, visitors will be able to continually orient themselves within the campus.



Figure 20. 3D visualisation

The Tower (Lal Minar)

The architects conceived the tower to be an urban marker, as visible (or more visible) from an airplane or from the city of Gandhinagar across the river. Seeing the tower as largely symbolic, the architects argued strongly that it needed to be 30 metres high. Since all the other buildings on campus were either 12 or 13 metres.

The architects also specified that the tower be made from pigmented concrete, adding a red colour mix to the pigment in the concrete while it was being poured. The red colour is not superficial and the tower will stay this colour without fading. There is nothing else red on campus, and as the campus grows and becomes denser, the tower will continue to stand out, both with the red colour and the fact that there are many small holes in the tower, similar to jali screens. It is intended to be lit up at night, emitting a soft glow over the campus.

The installation of the ancient Indian time wheel on the face of the tower presented special construction challenges. The time wheel is 4.2 m in diameter and it is 75 mm thick. A 5mx5m Formwork was created at ground for the symbol and it was carefully hoisted in place with a Crane. It is one of the largest and tallest such symbols in India.

There are numerous historical international examples of such towers, including St. Mark' square clock tower in Venice, the tower at the central plaza in Siena, Italy, as well as clock towers on the campuses of many universities in India and overseas. These towers and their adjoining spaces become vibrant and lively areas, hence can be adapted to the IITGN campus. In addition, since the IITs are the symbol of excellence in education and torch bearers for the nation, the translation of a lighthouse as a symbol in this context was also thought appropriate to develop further. From here, it was further conceptualized as an urban landmark tower, as a 'tower of light' to guide and contribute to the development of the nation's resources. The tower was subsequently christened Lal Minar (Red Tower) by the community. The ancient Indian time wheel, as seen in the Konark Sun Temple, has been embossed on the tower as a metaphor for the connection of history to the future of India in the global context.



Figure 21. Landmark tower (Lal Minar)

6.5. Use of Courts

There are nine courts that lead off from the academic spine, each with its own unique character and Sanskrit name. Refer to Figure 16 for the location of each. The following is an explanation of each in terms of its spatial character, meaning of its name and its design expression:

- **Samvad (Dialogue)**

Meaning – The use of the term *samvad* for the space highlights the centrality of dialogue in the educational process.

Spatial Character – A central nodal space that offers visual connections to the entire academic building.

Design Expression – Space Frame to create shade, planters with built-in seating to facilitate interaction, organization of planters to facilitate dialogues in various-sized groups.



Figure 22. Samvad

The Space Frame

At the heart of the campus, the space frame over the *Samvad* Court was designed to symbolize the soaring nature of the academics at IITGN as well as the annual kite festival in Gujarat. This important festival in Gujarati culture is the day when no one works and families and friends celebrate with food, social interaction, stimulating discussions, and thousands of kites flying in the sky. The architects thus made the transition of this festival to the idea of the central court, meant for interaction, stimulation, discussion and debate. The court symbolises the gathering of families and friends and the space frame symbolises the kites in the sky, linking the Institute to Gujarati philosophy and culture.

The kites also play a role in providing shade and changing the character of the Samvad court. As the sun moves across the sky the shadows cast by the kites keep changing, with the effect of continually cooling the ground a bit. The space quality defined by the shade and shadow light is different in the morning than in the afternoon or evening, and this will further change throughout the year.

There is no pattern in the kite festival, only random kites in the sky. The pattern of the fabric here is meant to imitate that randomness. To arrive at this pattern the architects experimented with more than thirty different patterns.

The special fabric used for the kites is Teflon-based, Ferrari fabric that is perforated. Rain water will drain through the cloth. They are stretched in a particular manner to ensure that rain water can actually clean them. When not being washed by the rain, the kites need to be washed every few months.

The space frame also presented engineering challenges to construct. It is 1200 sq m, 12 m high and 20% of it is cantilevered. It was erected when all the nearby buildings were already constructed and functional, creating safety and structural stability concerns. The frame has 916 nodes, most of which have 8 to 9 members coming out of each. It was hoisted by crane in three parts—each part was hoisted and kept there with the crane for three days so careful testing of all the connections could be made. After three days the crane would be taken away and the next section hoisted.

- **Vidyachaya (Shade of Knowledge)**

Meaning – Education and research as a process of continuous progress with our predecessors providing the encouragement and direction through their research.

Spatial character – A transitional space in proximity to the classroom complex that terminates in the Samvad Court.

Design Expression – The Avenue is planted with *neem* trees. The botanical name of *neem*, *Azadirachta indica*, is derived from *azad drachta i hind*, meaning ‘Indian tree of freedom’. The tree cover provides an appropriate connection between the entry and the central open space.



Figure 23. Vidyachaya

- **Vishwangan (Court of Nations)**

Meaning – Learning at IITGN is about widening one’s horizons from an identity that is Indian to a sense of identity that is global. It is being both a global as well as a local citizen.

Spatial character – The main entrance area for the students coming from the hostels.

Design expression – The court has a reinforced concrete wall as a backdrop with an inscribed logo of IITGN. The petals of the flower of the logo seem to be simultaneously flying away as well as returning. The courtyard has three pillars, representing the pillars of knowledge. There are the symbols of intellect (*pradnya*), creativity (*pratibha*) and inspiration (*prerana*) represented respectively by the symbol of the goddess Saraswati, the Buddhist lotus indicating spontaneous generation and the Zen symbols of *enso* (freeing the mind).

- **Sandhyachaya (Evening shadows)**

Meaning – A place for reflection as an important part of the learning cycle (Experiment – Experience – Reflect – Conceptualize).

Spatial character – The space opens out on the vista of the river that is also in the direction of the setting sun.

Design Expression – A set of steps at seating height looking out onto the promenade and beyond to the ravines. The steps, rather than closing onto themselves, remain linear looking at the horizon.



Figure 24. Vishwangan



Figure 25. Sandhyachaya

- **Srujan (Ideation)**

Meaning – Ideation as a creative process happens through a variety of stimuli. Divergent thinking is one of the powerful techniques of enhancing creativity.

Spatial character – The space near the canteen.

Design Expression – An informal environment, where group interactions happen in a relaxed atmosphere for promoting divergent thinking. The design of the space is of an informal character with *Michelia champaca* (joy perfume) trees.



Figure 26. Srujan

- **Sammelan (Meeting)**

Meaning – A meeting of minds is what *sammelan* is all about.

Spatial character – It is the space outside the lecture theatre complex. It is small area with comparative seclusion from the spine.

Design Expression – An open space connecting to the stilted area and giving opportunities for forming and un-forming fluid groups for interaction.



Figure 27. Sammelan

- **Vishram (Pause)**

Meaning – A pause in the day, in the mind with possibilities of subsequent rejuvenation.

Spatial Character – The space near the canteen opening onto the promenade. This is the one Court not yet constructed (March 2017).

Design Expression – Visually shielded from the *Vishwangan* by pillars of knowledge, it is a space that is designed with an amphitheatre descending into the ravines. Horizontal lines dominate, making it a place to relax.

- **Darpan (Mirror)**

Meaning – A mirror that reflects one’s own image as well as reflecting the world. In a metaphoric sense, the library as a repository of knowledge is about seeing yourself in the world of knowledge.

Spatial Character – A nodal space to act as a link with the future library building.

Design Expression – A dry water body with water jets, where seating areas create the required pause on the way to the library.



Figure 28. Darpan



Figure 29. Jasubhai Memorial Auditorium

Jasubhai Memorial Auditorium

Building 2 includes an auditorium with a formal entrance facing Darpan Court on one side and the Central Vista on the other. Designed with the flexibility to host major institute functions of various kinds, the auditorium has state-of-the-art acoustics and audio-video facilities. The auditorium is also wheelchair-friendly and has been built with green features that include the use of fly-ash bricks and an insulated roofing system.

Designed to last decades, the auditorium furniture is warm, simple, elegant and is naturally left-hander friendly (due to symmetry). Each wooden piece of furniture is crafted using state-of-the-art CNC machines and laser cutting machines ensuring a high-degree of quality control and uniformity and thus adding a modern technology touch to the furniture.

The auditorium is the first named space on campus, in memory of Mr Jasubhai Shah, the chairman of the Jasubhai Group and a visionary, entrepreneur and philanthropist. His son, Mr Maulik Jasubhai, established an endowment at IITGN through the Jasubhai Foundation. Consistent with the vision of Mr Jasubhai Shah, this endowment will help promote excellence in education and research, and also support the Jasubhai Memorial Chair.

- **Pradarshani (Exhibition)**

Meaning – A place for exhibiting, reaching out to connect by showing what one can do. Outreach will not only be between the outside world and IIT but inter- and intra- departmental as well.

Spatial Character – Interstitial spaces between two buildings.

Design Expression – A paved space to facilitate exhibition activities.



Figure 30. Pradarshani

6.6. No rear side to buildings

Buildings are often a small part of the entire campus. And on vast tracts of land there may be no significance to the fronts and backs of buildings. When designed as such, they can set some rigid movement and open space patterns in and around the buildings. But in fact on any campus all edges of the buildings should be responsive and interactive. This leads to less identity for a specific building and enriches the possibilities for the unbuilt spaces as well as encouraging multiple uses of the spaces. Also the back sides of buildings often become inaccessible, shabby and less useful over time, making those areas a liability and under-utilizing land and space on the campus. Hence, the architects made a conscious decision to design the buildings as open, with no backs or fronts--in other words, all sides as front, making the buildings more permeable and transparent.

6.7. Connections and Barrier Free Circulation

The entire campus has been conceived as a barrier-free campus for differently abled people with connections between all buildings and ramps at various entry points, as illustrated in Figure 31. Connections between buildings were consciously designed at the ground level to create some cover over the central spine, to allow people to cross between buildings without exposure to heat or rain. In addition, there are some connections between buildings at the upper levels to facilitate ease of movement for faculty and research students.

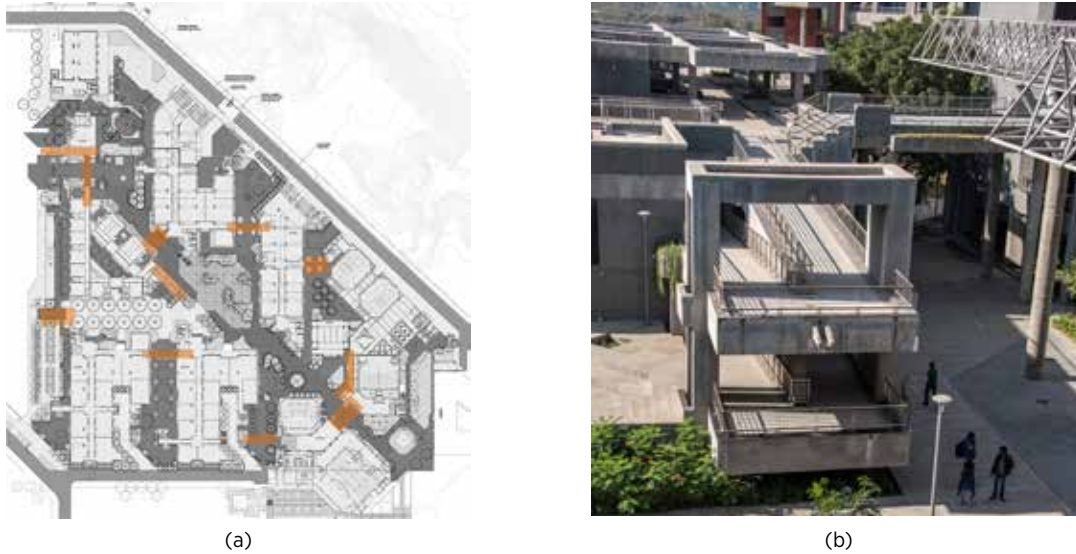


Figure 31. a) Conceptual locations of connections and ramps in Academic campus b) View of ramps for Building 7

6.8. Enhancement of Riverfront Promenade

Historically, civilizations have come into existence and flourished along the banks of rivers. In the case of IITGN, there is a peculiar geological form which dominates the shores of the river, “the ravines”. The very name of the Sabarmati River combines two of the most prominent features of the site, river and the ravines. The Sanskrit word श्वाभ्रमति (*shwabhrmati*) explains more accurately the naming of the river: श्वाभ्र (*shwabhr*) meaning ravines and मति (*mati*) meaning the one who bears it thus, the river with ravines on its banks.

Traditionally, riverfronts have been used for community activities in India and river *ghats* are considered auspicious spaces. The architectural design enhances the concept of a riverfront promenade by providing tiered interaction spaces all along the Sabarmati River, establishing a strong visual and physical link with the most important natural feature within the site, about 3.0 kilometers along the Sabarmati River’s edge. This link also encourages interaction amongst students and staff within the academic area.



Figure 32. Promenade and Sabarmati River edge in the dry season



A contribution of building orientation, shading, and planters used to break the harsh sun

Architectural Design Evolution Process

Notwithstanding the basic conceptualization presented at the time of the selection process, it was consciously decided that each aspect of the architectural design should be given new thought, experimenting with different designs and functions.

Various alternatives, each with their own strengths and weaknesses, were prepared to explore the possibilities of variations in campus design and functional interrelationships while still reinforcing the overall design goals and objectives of the campus.

Six architectural design alternatives were prepared initially. The six designs were further synthesized into two more fully developed options. Further improvisation took place thereafter.

The focus of these alternatives was primarily on defining the character of the indoor and outdoor spaces, specifying the overall built mass, maintaining transparency and permeability at various levels, and for various activities defining the distribution and functional convenience. A single guiding principle was followed through all the design alternatives, i.e. to maximize student activities at the ground level and to reduce the student population on the upper floors. Generally, the hierarchy that was followed included ground floor lecture halls, teaching laboratories and canteen, research laboratories on the first floor and faculty offices and general administration on the second floor and part of the third.



a)



b)



c)



d)

Figure 33. Architectural design of academic buildings (submitted at the time of selection process)

Figure 33 illustrates the design that was submitted as part of the proposal in response to the RFP, and Figures 34 to 38 show the final design.



Figure 34. Bird's-eye view of Phase 1A



Figure 35. From Vishwangan



Figure 36. Birdseye view of buildings 1 and 3



Figure 37. Bird's-eye view of Building 1 and building 2



Figure 38. Bird's-eye view of Building 7 and Lal Minar



One of the many discussion spaces

A separate document in this series describes the various landscape elements at the overall campus level. The following description elaborates on the landscape design specifically for the Academic Complex, which had specific landscape needs and the requirement to tie those landscape features into those of the campus at large.

The overall objective of the landscape design of the Academic Complex was to connect the landscape features of the Central Vista and Riverside Promenade seamlessly with those of the Masterplan. The design took into consideration:

- Providing a sense of place
- Offering choices
- Ease of navigation
- Complementing the architecture
- Dovetailing with landscape Masterplan



Figure 39. Landscape design (initial concept)



Robust external materials such as Lalitpur stone, stone grit plaster and exposed concrete

The evolution of the landscape design took place in four stages. The important features and the changes are documented below:

Stage 1 (Figure 40)

- A connection between the Sandhyachaya court and the Vidyachaya court was emphasized visually as well as physically through paving.
- A deck projecting over the ravines was visualised as a physical link with the river.
- A reflective pool was proposed at the entrance from the Central Vista.
- The amphitheatre was visualised as a combination of formal and informal seating with a central stage.
- Vidyachaya was planned with an avenue of evergreen trees leading to the central spine.

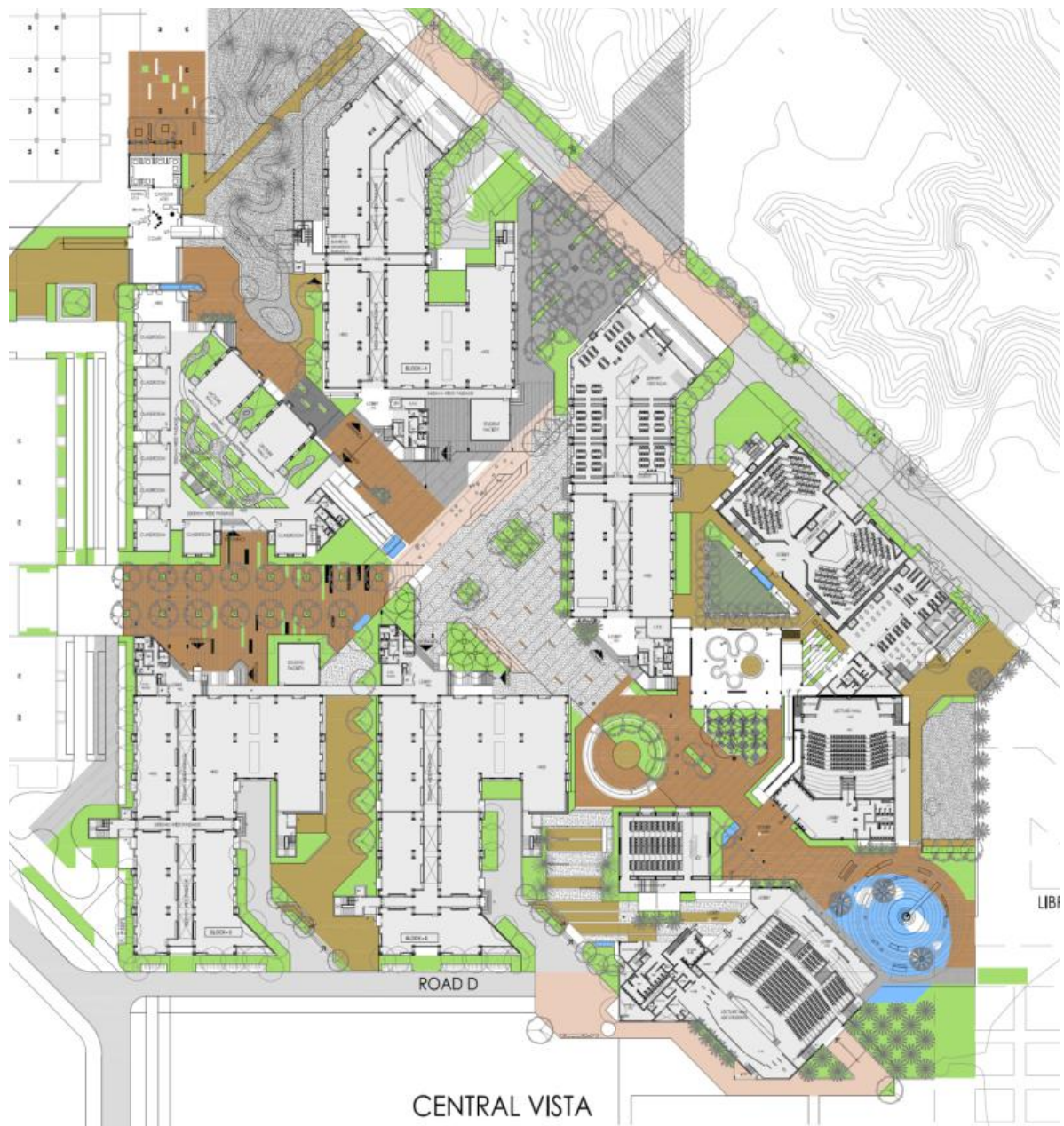


Figure 40. Stage 1 landscape design evolution

Stage 2 (Figure 41)

- Continuity of the spine was re-established.
- The deck was controlled in terms of its extent.
- A more minimal expression for the entrance was attempted.
- The amphitheatre was integrated with the built form, thus opening up more space around for movement.
- A series of steps were introduced to connect the Vidyachaya court to the ramp.

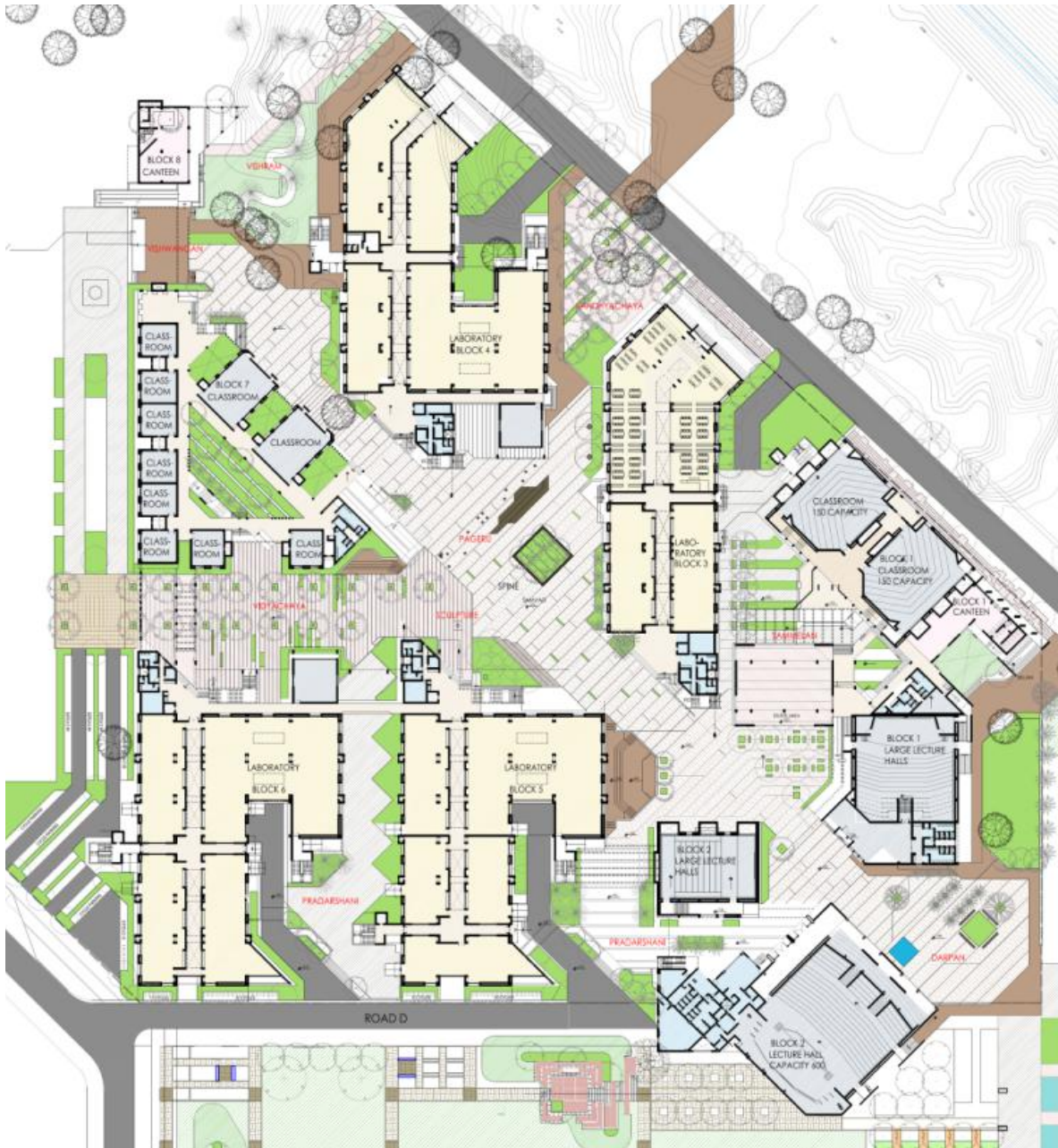


Figure 41. Stage 2 landscape design evolution

Stage 3 (Figure 42)

- The deck was removed in the final layout for technical reasons.
- An interim solution for the entrance was developed in the form of a centrally placed water pool.
- The Court of Nations was emphasised as a delineated square space accentuated by using trees.
- The Court of Nations and the connected Entrance Court formed a link to the pathway coming from the hostel.
- The central Samvad was given definition by the space frame above and through landscape enclosures of various sizes to promote interaction.



Figure 42. Stage 3 landscape design evolution

Stage 4 (Figure 43)

- Further refinement was done based on the modifications in architectural plans.
- The Vishram area was elaborated in the design to accommodate services and to give access to the lower level of the road.
- Existing contours, the surrounding built environment, services and the intended activity based on the original concept determined the evolution of the final design of the Vishram and Sandhyachaya areas.



Figure 43. Stage 4 landscape design evolution



Plenty of natural light within the buildings

Green Architecture and Environmental Aspects

A separate publication in this series describes various innovative features introduced in the campus design that will help the campus reduce its demands on resources. Briefly, these include understanding the hot and dry climatic zone of the campus and making appropriate choices for building orientation, massing, shading and window design that will help keep the buildings comfortable. One building in the Academic Complex also uses the Passive Evaporative Cooling Technique, described in more detail in the Green Building Design publication.

Several techniques were used in the design of the buildings to reduce heat gain during the day, including increasing the thermal mass of the walls, cavity wall system, insulating the roofs, using architectural features to provide shade and minimize the direct exposure of sun on the walls, and avoiding wall-mounted furniture. Techniques to increase the cooling rate in the evenings included night purging of heat with evaporative cooling and expelling radiant heat through windows in Building 7, and water sprinklers over a shaded roof in the evening (in Building 7).

The specific design of the louvered windows to control heat and cooling is also discussed in the Green Building publication.

In addition, light and space were used for cooling and comfort. Light wells in clerestory lighting windows provided optimum day lighting to internal passages. On the second floors of the buildings there is an open floor plan for student and faculty cubicles. White or light coloured paint is also used for walls and ceilings.

IITGN's Masterplan is the first in the country to receive a 5-star Green Rating for Integrated Habitat Assessment for Large Developments (GRIHA LD). The rating system evaluates the environmental performance of large developments such as educational campuses and townships.



Figure 44. Panoramic view of Academic Complex

The following pages contain photos of the construction as well as completed buildings, illustrating some of the architectural features described earlier.



Figure 45. Building 2 Jasubhai Memorial auditorium during construction



Figure 46. Building 2 Jasubhai Memorial auditorium after construction



Figure 47. Building 2 Auditorium with rooftop solar PV plant



Figure 48. Building 2 Jasubhai Memorial auditorium entrance from the academic spine



Figure 49. Building 2 Jasubhai Memorial auditorium (520 seating capacity) interior space



Figure 50. Building 1 auditorium during construction



Figure 51. Building 1 auditorium spillover space



Figure 52. Building 1 auditorium (300 seating capacity) interior space



Figure 53. Building 3 during construction



Figure 54. Building 3 entrance from the academic spine



Figure 55. Building 3 hosts general administration, library and laboratories



Figure 56. Building 4 during construction



Figure 57. Building 4 opening into Samvad court



Figure 58. Building 4 houses wet lab facilities along with faculty and students office spaces



Figure 59. Building 5 during construction



Figure 60. Building 5 entrance from Samvad court and its adjoining spaces



Figure 61. Building 5 hosts labs on 1st floor, offices and faculty cabins on 3rd and 4th floors



Figure 62. Building 6 during construction



Figure 63. Building 6 entrance from Vidyachaya area



Figure 64. Building 6 hosts heavy machinery labs including mechanical, electrical, physics and materials science labs



Figure 65. Building 7 during construction



Figure 66. Building 7 hosts lecture halls, and classrooms



Figure 67. Building 7 (Classroom building) courtyard



Figure 68. Building 8 during construction



Figure 69. Building 8 landmark tower and cafeteria



Figure 70. Building 9 hosts Incubation Center and Research Park temporarily



Figure 71. Building 7 terrace activity space

Owner

Advisor Works

Owner's Architect

Owner's Engineer

Structural Peer Review

Faculty Team

Indian Institute of Technology Gandhinagar

Mr. Nagaraja B. N. (up to 30-04-2013)

Mr. L. P. Srivastava (from 05-06-2013)

Ar. Shobhit Tayal, Design and Planning Counsel Pvt. Ltd.,
Ahmedabad

Mr. A. K. Kothari, Superintending Engineer (up to 28-01-2013)

Mr. G. C. Chaudhary, Superintending Engineer (from 04-02-2014)

M/S Bhoomi Consultants, Ahmedabad

Prof. Sudhir K. Jain, Director

Prof. Amit Prashant, Civil Engineering

Prof. Ashwini Kumar, Civil Engineering

Prof. Bhaskar Datta, Biological Engineering

Prof. Harish P. M., Mechanical Engineering

Principal Architect

Interior Design Consultant

Structural Consultant

BoQ & Tendering Consultant

MEP Consultant

Passive Cooling Strategy Consultant

Landscape Consultant

Lighting & Energy Studies

Acoustic Consultant

M/S Mitimitra Consultants Pvt. Ltd., Pune

M/S Mitimitra Consultants Pvt. Ltd., Pune

M/S Shrikhande Consultants Pvt. Ltd., Mumbai

M/S Strudcom Consultants Pvt. Ltd., Pune

M/S Shrikhande Consultants Pvt. Ltd., Mumbai

M/S Jhaveri Associates, Ahmedabad

M/S Dbhms Consultants Pvt. Ltd., Noida

M/S Swati Sahasrabudhe, Pune

Ar. Kanchan Sarbhukan, Pune

M/S Vijay Purandare and Associates, Pune

Other Consultants

Signage and Wayfinding

Furniture Design for Auditorium

M/S Tata Elxsi, Pune

Mr Anand Belhe, Pune

Project Management

Project Manager

Central Public Works Department (CPWD), Government of India

Mr. L. K. Bhargava, Superintending Engineer (up to 29-01-2016)

Mr. Kapil Deo Narayan, Superintending Engineer (from 29-01-2016)

Building & Works Committee

Chairman

Indian Institute of Technology Gandhinagar

Prof Sudhir K. Jain, Director, IITGN (2009-present)

Members

Prof Neelkanth Chhaya, Former Dean, Faculty of Architecture, CEPT University, Ahmedabad (2009 - present)

Shri Kiran S. Wagh, Chief Advisor (Civil Infrastructure), IIT Bombay (2009 - present)

Shri R. Subramanian, Former Additional Director-General, CPWD, New Delhi (2009 - 2012)

Chief Engineer (Capital), Roads & Buildings Dept, Government of Gujarat, Ahmedabad (2009-2012)

Smt Pratima Dikshit, Director (TS-I), Ministry of Human Resource Development, Government of India, New Delhi (2009 - 2011)

Shri L. P. Srivastava, Former Additional Director General, CPWD & Advisor (Works), IITGN (2012 - present)

Dr Prabhat Kumar, Former CMD, Bharatiya Nabhikiya Vidyut Nigam Ltd, Kalpakkam, (2012 - 2016)

Shri A. K. Jain, Former Special Director General, CPWD New Delhi (2012 - present)

Prof Ashwini Kumar, Professor-in-Charge, Planning & Resources, IITGN (2012 - 2014)

Prof Harish P. M., Dean (Campus Development), IITGN (2014 - present)

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This publication is one in a series describing the development of IIT Gandhinagar's campus on the bank of the Sabarmati River in Gandhinagar. The campus development provided numerous opportunities for innovation and the series is meant to document these.

The focus of this document is on the architectural design evolution for the Academic Complex. The architectural firm of M/S Mitimitra Consultants Pvt Ltd. was selected to design this complex. They led a large team that used design objectives and a series of design development studies to develop a cohesive set of defining architectural features for the Academic Complex. This publication describes these features, along with the landscape design for the Academic Complex.

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