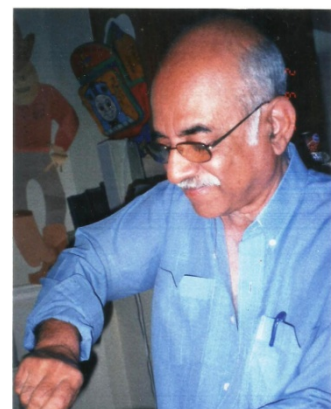
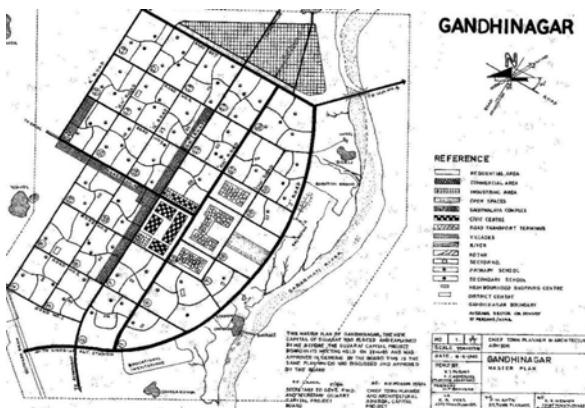


Making of a New Capital City

Gandhinagar Gujarat: India



PRAKASH MADHUSUDAN APTE

About this book

This book will inform the reader of the thought processes, concepts and technical aspects that went into the designing and planning of Gujarat's new capital city, Gandhinagar. The author is the Town Planner of the project and has therefore the insider's knowledge to provide first hand, matter-of- fact, unbiased information on this sparsely written subject in this seminal work of erudition. The book attempts to serve as a benchmark against which other genuine, sincere, knowledgeable, professional and informative books; written on the subject of designing and planning of capital cities can be compared with.

A record has become essential in view of recent attempts by some Consultants, either by design, imbecility or professional jealousy, to dismantle and distort the basic concept in the planning of Gandhinagar. Readers seeking peripheral information-unrelated to the planning of the new capital city can look up other books, masquerading as 'scholarly treatise' by Academics, far removed from the profession of planning & India and depending on 'hearsay' by planners in India who were not even born when the project was under implementation . Opinions and accounts of the elaborate behind-the-scene machinations of, and eulogies to, contemporary industrialists, architects and pseudo town planners and denigration of the government town planners, are also not in short supply in such books, owing to the ease with which they can be written from second hand information, by biased armchair writers, far removed, physically from India and professionally from the practice of town planning and architecture. This book attempts to correct the imbalance and present the subject in its proper perspective.

About the Author

Prakash M. Apte, born in 1939, is a graduate in Architecture, has a Masters in Regional Planning, a Diploma in Urban Design from Naples University, Italy and a Diploma in Business Management. He is a Fellow of the Indian Institute of Architects, & the Institute of Town Planners, India & Eisenhower Exchange Fellowships, U.S.A.

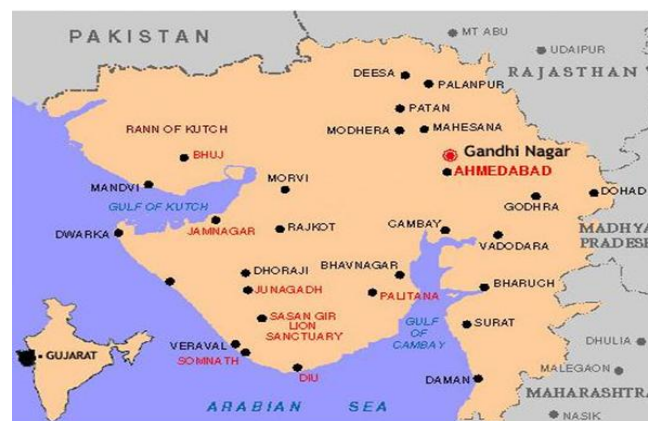
He led a team in 1965, to design and build the new capital city - Gandhinagar - for Gujarat state. Later, as Chief of Housing & Urban Development Corporation of India (HUDCO), he executed over 250 housing projects. In 2004 he was invited by the Royal Government of Bhutan as a Senior Adviser for the Shelter Sector project for the Capital city Thimphu. He participated in the drafting of the Housing Sector paper for the 8th five year plan of India, and has been a Consultant for World Bank funded Low Income Housing programmes in Malaysia Gujarat, Madhya Pradesh, Maharashtra.& Tamilnadu.

From 1999 he has been a consultant to the World Bank aided resettlement and rehabilitation project for Mumbai Urban Transport Project (MUTP) & Tsunami Emergency Rehabilitation Project at Chennai. He was invited as the 1988 Eisenhower Fellow from India by the Eisenhower Exchange Fellowships Inc. U.S.A. in the field of Urban Management.

He is the author of the books, "Urban Planning & Development, An Indian Perspective", "Urban Growth Strategies; Mumbai Lessons", "Hands on Guide: Urban Planning & Housing" and "What Ails India". A progressive thinker, he has written extensively in English & Marathi Newspapers about socio-political-cultural issues facing the country and his writings can be seen on his website www.angelfire.com/indie/pmapte/. & www.prakashmapte.webnode.in

Gujarat is the westernmost state of India.

Gandhinagar was made the capital of the state in 1970



Gujarat

Gandhinagar : Aerial View by Google 2005.



CONTENTS

FOREWORD	7
PREFACE	9
ACKNOWLEDGEMENTS	21
1. TOWN PLANNING IN GUJARAT.....	23
2. EVOLUTION OF TOWN FORM AND STRUCTURE	26
3. HISTORY OF AHMEDABAD.....	29
4. CAPITAL CITIES OF GUJARAT	32
5. APPOINTMENT OF CHIEF TOWN PLANNER	34
6. BUILDING THE NEW CAPITAL.....	35
7. THE SITE	38
8. THE PLANNING CONCEPT FOR THE CITY	40
9. PROGRESS FROM 1966 TO 1970	60
10. UTILITIES.....	71
11. PARKS & GARDENS	77
12. PROGRESS TILL 1972.....	78
13. GANDHINAGAR TODAY	81
14. A TALE OF TWO CAPITALS	86
15. GANDHINAGAR ENDANGERED	92
16. EPILOGUE	98
17.GLOSSARY	99
18. INDEX.....	101#

FOREWORD

As a young professional I was blessed to win a Fulbright Fellowship bringing me to Ahmedabad, India in 1968. As a young architect-urban planner, who was Jose Luis Sert's student, I was intrigued that the new capital city of Gujarat was being planned, and built just north of Ahmedabad. I heard that a young man not even thirty years of age, named Prakash Apte, was at the helm of the planning team. When I returned to Ahmedabad in 1971 to found the School of Planning at CEPT with Balkrishna Doshi, the new capital, named Gandhinagar, was well under way, and I had the honor to meet its creator, Prakash Apte. His only senior was H. K. Mewada, the state's Chief Town Planner, who was guiding me on the creation of the new school of planning.

As fate would have it, our paths would cross on numerous occasions over the following forty years, with all of our experiences weaving us into an intellectual tapestry of friendship. After Gandhinagar, my next meeting with Apte was when he was the Chief Architect and Town Planner of the Housing and Urban Development Corporation (HUDCO) in 1972. At the age of 29 I had been commissioned to design two thousand houses at Jamnagar for the Gujarat Housing Board, and I had to go before him to clear my plans for a large loan!

As this was my first large project, my visit began with some trepidation, based on my previous interactions with bureaucrats. My plan was the very first Economically Weaker Housing Scheme to be built in India with units on plots barely 30 square meters in size. Mine was a very new idea. Rather than challenge me, Prakash Apte became a partner in my scheme of things, and we worked on the project together with great passion. In 1973 the World Bank asked me to prepare the plan for Site and Services in Chennai, and I fell back on Apte's advice throughout the work. That program created shelter access for 15,000 poor households! In the meantime, through HUDCO, my designs for a township for low-income households in Hyderabad at Yousafguda, and another in Pimpri-Chinchwad near Pune, were funded, with Apte's critical guidance.

In 1976 I founded the Centre for Development Studies and Activities at Pune, where Prakash Apte became a regular visiting professor and partner with me on numerous planning projects across India. We prepared development plans for Thane and Kalyan cities for the Mumbai Metropolitan Development Authority; then for 28 urban centers in Madhya Pradesh; and we prepared policy initiatives for the UNO and the World Bank.

Ours was a relationship of "beginnings:" starting with his creation of a new capital city; my initiation of the school of planning at Ahmedabad; his initiation of HUDCO with Bain D'Souza; my planning the first large township for households with limited

incomes; and the making of the world's first Site and Services programme. Later, in 2001, when I was commissioned to plan the capital of Bhutan, I immediately turned to Prakash Apte to be my team leader.

His youthful experiences in designing a new capital shadowed him as a huge body of wisdom throughout his life. We have continued on a journey, guided by values and ideas, which ignited flame of eternal friendship and intellectual companionship. We have watched with disappointment as our youthful hopes turned to grim realities; but the flame of the possible still burns within us.

When my imagination drifts back to my early years in India, I remember young Apte deep in his studio work, sleeves rolled up, working from tired to tired, over drawing boards in 45 degree temperatures, with no air-conditioning, on a pittance of a salary, on the new capital city of Gujarat. Our mentor, H. K. Mewada, and then Chief Town Planner of the Gujarat, was over-burdened with the new state's seven cities' first development plans, and fending off the industrialists in Ahmedabad, who wanted to manipulate the planning of the new capital city. He wisely left the new capital plan to his young colleague. Those were heady days of creativity, imagination, of devotion to ideas and to causes long forgotten.

In this book Prakash Apte lays out the true story of one of the few planners in the world who has designed an entire new city; and that too a capital city. That story has been misrepresented and wrongly told by many amateurs and journalists, and for the first time in this volume we can learn from the guru of Gandhinagar himself.

Gandhinagar is one of the greenest, best-planned and most sustainable cities in the world. It now faces devastation at the high altar of development, hands of developers and machinations of their handmaidens. Thus, this book comes at the crucial moment in the history of urban planning when we can either save Gandhinagar, or throw it to the wolves of history. Maybe it will live on only as a dream in an antique land of memories of visionaries and idealists, where no one can ever enter.

At least this volume will be left as a testimony of that dream!

Christopher Benninger
INDIA HOUSE
Pune, India

PREFACE

Why I wrote this book

My association with Gandhinagar Project was as sudden as it was unexpected. I was in Asansol, West Bengal, working as the Senior Planner of the Asansol Planning Organization of the Government of West Bengal. I had joined there in September 1964 a little while after returning to India. I was about to complete the draft regional development plan for the Asansol-Durgapur Region when I received urgent telegrams from M.D.Patel, the Chief Engineer and H.K.Mewada the chief Town Planner of the New Capital Project of Gujarat offering me the post of Senior Town Planner for the New Capital Project. Those were the days when urgent communication was possible only through telegrams! I hesitated for a few days to weigh this proposal against a verbal offer made by Dr. Vikram Sarabhai to my father to put me in charge of designing the township for a large industrial project near Baroda. Presently I received a telegraphic appointment order as Senior Town Planner for the Capital Project, an unprecedented procedure in the history of government administration! I joined the project in October 1965.

Recently a research scholar from USA, after extensive investigation to find someone personally involved in the building of Gandhinagar so as to get firsthand knowledge about its planning concept, met me at my residence in Mumbai. I realized then, that I am the only surviving planner of Gandhinagar. Most of my then colleagues, the Chief Town Planner, Chief Engineer, and even the executive engineers, are no more. Most of the IAS officers and the politicians are also no more. Lest it be misunderstood, I must clarify, that I survive as I was the youngest person to be associated, in designing the new capital city. I was only 26 years old when I joined the project in 1965. The plan for Gandhinagar was prepared between October 1965 and April 1966.

The realization that, no one but me, knows and can recall the true circumstances and events that preceded the establishment of the new capital city is ***the first reason for writing this book.***

Not many books have been written, about Gandhinagar. One book, though well researched and exhaustive, deals more with the geo-political history of Gujarat and the political history of the project. It vividly relates, behind the scene machinations, of some Architects of Ahmedabad and the doings of the industrialists, and their cronies to procure the commission to design the city. As for the planning aspects, the aforementioned book relies mostly on hearsay or secondary data from persons, though presently occupying important positions in the state government, were mere school kids when Gandhinagar was being built, and hence unaware about its planning concepts. As a result, the book does not elaborate on the planning process or the considerations behind the planning of Gandhinagar and there is no evaluation of the basic concepts of the plan itself. It is unfortunately, short on planning information, but long on the project politics. It fails to mention that this is the only capital city in India designed by Indian Planners and, on the contrary; laments the fact!

Some accounts about Gandhinagar's planning are quite biased and use a derogatory language about its planners! These could have been penned/promoted by those Architects, who had failed in getting the job of planning the city. The state government was determined to have it done through talent that existed in its own organization than award it to a foreigner-Louis Kahn- whom these Architects had put up as a front.

It is surprising and distressing that after 50 years some architects now seek to disfigure the plan of the city and dismantle its very concept! This is what would appear to be the attempt if one were to evaluate objectively the new plan prepared by the Consultants of the Gandhinagar Urban Development Authority (GUDA). It also could be that the profit to be gained by the trading of lands –with the advance knowledge of the intended plan proposals- for urbanization is the prime motive in the dismantling of the planning concept of Gandhinagar! ***That is the second reason for writing this book.***

It is the great quality of Gujarat & wise 'Gujaratis' of opting for the best, irrespective of personal or community biases that made the state government go for Mewada & Apte, rejecting the American Architect, Louis Khan, who was propped up by a group of architects from Ahmedabad. Their self proclaimed superiority, despite a slavish attitude to the 'white man', was perhaps not appreciated by the politicians and administrators of the state in 1965. The modest but talented and home grown creative planners won the day to design Gandhinagar.

How did Mewada contend with the constant politicking, machinations and irritations of a group of architects from Ahmedabad and other actors on the scene? Only I have that knowledge. Why did the state government and its administration stand firm in getting the job done through its own organization? What was the concept that shaped the plan of Gandhinagar? How did my upbringing, education and training shape its concept?

My primary schooling was at Chota Udepur- a small state east of the Gaekwad state of the then Baroda in Gujarat. My grandfather, Daji Nagesh Apte was a practicing lawyer in Baroda and was much respected by the ruler Maharaja Sayajirao III who commissioned him to write many books in Marathi and published them under state patronage. It was around 1990 that a French research scholar came to Mumbai searching for me-having come to know of my relation with Daji Nagesh Apte, the author of a book titled "Rajyabhishek Chandrika". He wanted to know if I had a copy of the book. I was able to procure it for him. It was then that I realized the value of the written word and resolved to pen all my professional thinking and project design work for the benefit of the future generations. ***That is the third reason for writing this book***

Chota Udepur state, in 1944, had just 5 senior officers. My father was the magistrate and revenue officer and there was a judge, chief civil engineer, chief electrical engineer and the commander of the army, apart from the Diwan (chief administrator) of the state. As in most towns of Gujarat, Chota Udepur developed on the banks of a river called 'Orsang', and had a lake in the centre of the town. We, the officer's families, could use a special rowing boat that would take us to the island in the centre of the lake where there were a few concrete benches. I remember having gone there once on a full moon night with other families and being very hastily bundled back in the boat in a short while to return to the land. Later I came to know from my father that a large crocodile was seen under one of the concrete benches on the island!

I would have loved to create a lake in the centre of Gandhinagar. Alternatively, I had thought of creating a narrow and long water body in the central green of the avenue, road no. '4' focusing on the state assembly building; almost like the central vista of New Delhi. The city's main north-west to south-east roads were numbered 1,2,3,4,5,6,7 etc. while all north-east to south-west cross roads were designated by Gujarati language alphabets 'CH', 'CHH', 'J' etc. However, fiscal resources were a constraint and the idea could not be implemented. But we did create a small lake in the garden in sector 29. I had also planned to turn the ravines of river Sabarmati into an adventure park with an entry near the

dilapidated fort at village Indroda on road 'J'. The adventure park land has now been sacrificed by designating the land east of road 'J' for residential use, presumably for weekend cottages for the rich of Ahmedabad!. The small Indroda park presently developed along the ravines does however showpiece statuesque recreations of prehistoric animals like dinosaurs including a large crocodile!

We moved to Baroda in 1946, after my father took up an assignment and went to London leaving us with my grandfather. Baroda also has a lake called 'Sursagar' in the heart of the town. Rather than being a focal point, it aesthetically strung together the buildings surrounding it; the Hindu, Mughal & Gothic style buildings comprising the music college on the south, the women's basic training college raised on a high ground to the north, the girl's high school on the west and the high court building on the east. This aesthetic "binding" quality of the lake is lost today with the implanting in the middle of it, a giant sculpture of 'Shiva' thus making it a focal point! This complete reversal of the role of the lake and a partly constructed and later abandoned commercial tower in front of the high court building has completely distorted the urban design of the area! I have seen this distortion and destruction of a unique urban design concept by self seeking architects! Little did I have an inkling that after a few years the civic design concept of Gandhinagar that I had so lovingly planned and developed would be similarly distorted and destroyed!

Baroda, till about 1959 was a 'pedestrian friendly' town. We could walk or cycle to the school or college, visit friends in their old houses in the 'pols' -narrow streets- close to the main town thoroughfare yet quiet and peaceful in their interior environment. We used to coat the threads for kite flying, in the long narrow streets, without any vehicular disturbance. In the stillness of the night, round the street light posts, we wound and prepared the thread, lacing it with a mixture of ground glass, aloe-vera and wheat flour, for the kite fights on 'Makar Sankranti', a day invariably occurring on the 13th or 14th of January, every year. The experience instilled in me, the feel of pol living at night and day, and its community network, neighbourly feelings and bonhomie. Consciously, I tried to recreate that environment in the planning of the government housing clusters in Gandhinagar .

For a short while, during this period in 1948, our family shifted to Ahmedabad. My school was at Lal darwaja where the main intra-city bus station was located. I could walk to school and back home. On Saturdays, the large ground at Bhadra (old fort at Ahmedabad) that I had to cross, used to hold a weekly fair of skills and crafts, dominated mostly, by the street magicians and performers. It was a great attraction for the people, young and old alike. The idea and concept was so imbibed in my mind that I tried to recreate a similar fair ground in the form of an open square, bounded by commercial buildings in the civic centre of Gandhinagar in sector 11. Unfortunately, the profit motive and money making hunger of the Consultants has resulted in the sacrifice of this fair ground, a heritage feature of town planning in Gujarat. Instead the land has been designated for commercial use though, only about 50% of land marked for commercial use in the original master plan of Gandhinagar had been sold till 2011.

On Fridays, there used to be a 'shukravaria' bazaar (Friday bazaar, selling all kinds of old, used and discarded nick-knacks) on the dry sand beds of the river Sabarmati. It was a treasure trove, for innovators to build or repair implements at low cost. The civic square that I planned in sector 11 of Gandhinagar, was intended to accommodate such regular events. It was also meant, to provide a stage for 'garba' -the traditional dance festival that precedes "Diwali" the festival of lights- competitions at town, district or even state level. It could also be used as an open air venue for civic meetings, 'mushairas' (poetry recitation at a poet's gathering) street plays and many such events that are germane to the rich culture of

Gujarat. Fortunately, I am told, the state government holds state level garba dancing competitions there every year.

It is for these reasons that any attempt at re-planning or redevelopment of a city or an urban design has to first understand the genesis and absorb the underlying concepts that gave birth to the original physical plan. The plan is but a manifestation of the culture, traditions and life styles of the people for whom a city has to be a vibrant and proactive organism that makes the citizen really “feel at home”. The re-planners of Gandhinagar did not perhaps understand such concepts. Neither did they make any efforts by exploiting the development potential of the lands between Ahmedabad and Gandhinagar to understand the genesis of the Gandhinagar plan. Their only motive seemed to be to benefit, when their plan received the official seal of approval.

The GUDA consultant's totally irrational and ill-informed proposal of extension of the city towards the south (like a monkey's tail attached to a beautiful human baby) was perhaps born out of such non-professional considerations. Even a layman, if shown the original master plan of Gandhinagar, and asked what would be the logical direction of its growth and extension, would endorse the expansion towards the north-west, as originally envisaged in the plan. It is either a measure of the consultant's professional incompetence, imbecility or deliberate intent, that the most important symbol of the capital city, its capitol complex, has been disoriented by the re-planning because it is no more the foci of the city's central axis (road no.4), which itself has been made into just a dead end road!

During the 1960s', a joke about the 'Amdavadi' (resident of Ahmedabad) was very popular and widely circulated. In the middle of the night a train stops at a station for quite some time. A passenger on the train wakes up and opens the window to look for the name of the station. There are not many people around on the railway platform, but eying one, he beckons him to come near. He then asks him "sir, what is the name of this station?" The person on the platform, looks furtively around and then says in a whisper, "I will tell you, if you give me 4 annas (quarter of a Rupee)". The passenger closes the window. He does not need to have the reply. He knows it is Ahmedabad!. Even after 50 years the 'Amdavadi' mindset prevails: think nothing but money, money, money!

After matriculation I studied Architecture in Baroda. The teacher who influenced me the most was M.B.Achwal, a thinker, and a writer. Even after I left Baroda, he remained in touch and was a good friend till his death. While I worked in Delhi as Chief of Projects of Housing & Urban development Corporation of India, while on leave, visiting my parents in Baroda, he would invite me and my wife to his house for dinner. We used to have long discussions about the latest trends in Architecture and in Marathi literature till late in the night. He lived in Shiyabag, in an old detached house overshadowed by a large gulmohor (Leguminosi) tree. The tree was so large and distinct that it was the address for his house. When it was felled for street widening, Achwal wrote a very poignant essay about it.

To him the tree was almost a kin, gently soothing his nerves with its green expanse and rustling of leaves, nudging his creative instinct with its vibrant blood red flowers when in bloom. It sheltered many birds that had their nests on the branches. Generations of parrots, Mynahs and Sparrows were sheltered by it. During the hot and arid summers, a bicycle repair shop, under its shade, was the resting place for passersby, and the pans & pots sellers. It was not just a tree, but a distinct and integral feature of the urban landscape.

May be with this image imbibed in my mind, I used trees in the landscape of Gandhinagar far more differently than done in the past either by planners or by landscape architects. In the city plan I adjusted the road grid, to save every little tree of any kind, from being cut down. This was not an easy task, as I could not create bends in the main road grid. All this had to be achieved, with the primitive survey instruments like the dumpy level and Theodolite. While aligning the main road grid we had to contend with the protesting goat herders ready to attack us with dharias (a solid 6 ft bamboo staff with a curved sickle attached to its top)

In the planning of the internal roads in the residential sectors, to save existing trees, I made the roads literally go around trees! While constructing a primary school with pyramidal roofs over each class room, I left the existing tree intact in the central courtyard of the school! Trees were deliberately not planted in neat rows along avenues in Gandhinagar. Tree planting, along the city streets and the major roads connecting Ahmedabad and Khodiar railway station, was done in informal groups and not in straight rows, with a sprinkling of occasional flowering shrubs. While, to a visitor today, it may give an informal look to the landscape, but achieving this 'planned informality' required detailed plans for each section of the roads and was an arduous task for the director of parks and gardens Mr. M.Z. Shah. But he appreciated the concept. A well known landscape expert Mr. B.N.Rahalkar from Delhi, helped me to get this idea of informal plantation accepted by the bureaucrats.

In the entire planning of Gandhinagar, in almost 10,000 acres of land, only 5 trees were uprooted! All these were mango fruit trees. Shah cooperated in transplanting them. Each was trimmed, to a height of 8 feet, most branches chopped off, and the tree removed while retaining as much of a root bulb as we could, with manual labour without any mechanical equipment. Every time I visited Gandhinagar till 1971, I used to check on the replanted trees. A special nursery was established and plants were provided at no cost to citizens. The profusion of trees in Gandhinagar and its reputation as the greenest city in the world, owes it in large measure, to this un- conventional concept that we followed of group plantation along the streets and the completely informal street patterns in all residential sectors designed to avoid cutting of trees.

The Gandhinagar plan is often compared with that of Chandigarh and branded as a poor copy of it! Nothing could be farther from the truth! ***That is the fourth reason of writing this book.*** I have dealt with this falsification graphically in the chapter titled 'Tale of Two Capitals' in this book. But to highlight, Gandhinagar's planning concept differs from that of Chandigarh's in three major aspects.

Firstly, it is democratic, contrasted against the Imperial plan of Chandigarh. The Capitol Complex of Gandhinagar, is not at the apex of the town, but surrounded by residential sectors, on three sides.

Secondly, it is not colonial like Chandigarh where there is a distinct hierarchy and segregation in the physical location of housing for government employees and no intermixing of different categories of housing for government employees

Thirdly, it achieved social integration between the housing for the government employees and the supporting population. In each residential sector, along with the 4 categories of Government housing, there is a corresponding category of plots of land meant for the supporting population.

This is vividly demonstrated in the layout plan of sector 29. At the core of the sector are the community facilities like the school, shopping, community centre etc. Each residential sector is 1 km. long & 0.75 km. wide so that the distance to be traveled to the core was a maximum of 10 minutes of walking. Around these facilities, are four groups of housing for government employees, arranged on the concept of the 'pol' as in the old towns of Gujarat. independent, yet in close proximity to each other, to afford social integration. The housing, for the government employees, hence, was self sufficient from day one, having access to the offices, by the bicycle track, passing through the middle of the sector.

The plots of land, for sale to the supporting population, also form four groups, juxtaposed with an appropriate and corresponding group of housing for the government employees, (in terms of economic level) and are located, on the periphery of the residential sector . As a result, to a visitor today, in Gandhinagar the government employees housing, which had to be 'typed' by necessity, is not visible, on account of being hidden by the houses built on plots for the supporting population. This lends a variety to the streetscape, unlike the stereotype in Chandigarh.

The plan of social integration was not easy to achieve. In those days, we had neither electronic calculators nor computers. I spent days and nights, making manual arithmetical calculations, firstly, to distribute the population, dependent on government service in different sectors, in the required numbers and balance the numbers in four categories in each sector. Thereafter, I worked out the distribution of the plots for supporting population in each sector, without losing sight of the overall density to be achieved, in each sector. It was a complex exercise to work out the right combination. I achieved it in about a month's time. I then prepared a social integration plan of housing for government employees, and the plots for the supporting population. This "social plan" formed the basis, without which the Gandhinagar physical development plan, and the detailed sector planning and layouts could not have been worked out. Unfortunately, I no longer have a record of the visual depiction of this social plan.

In 1960, when the separate states of Gujarat & Maharashtra were created, both inherited the systems of the erstwhile Bombay state, wherein the consulting surveyor to the government, managed the town planning issues as well. In Gujarat, the department was headed by J.T.Patel, a surveyor by qualification. He came to know the intentions of the government to create a new department for the planning of the new capital for the state. He considered it a prerogative of his department, to deal with all town planning matters, and hence considered it his right to be in charge of planning the new capital.

While the state government was scouting in the country, to find a person to head the planning team for the new the capital, J.T.Patel came to know a Mr. Ram Sethia, an architect- town planner, and employed him in the department to strengthen his claim to plan the new capital. Mr. Sethia was a glib talker and well versed in the art of politicking. The architect to the state government, a Dr. V.J. Mistry also felt sidelined that the government should be looking outside the bureaucracy to appoint a new Architect and town planner for the capital project. All three teamed up, with a mutual understanding that Mistry would design the state legislative assembly building and Sethia & Patel would jointly prepare the master plan and design other important buildings..

After I joined the capital project in October 1965, Mr. Mistry once invited me for dinner and made a slide presentation of his design for the state legislative assembly building. It had the assembly hall with two separate chambers for the legislative assembly and the legislative council, and the entire structure was topped by a roof in the shape of a 'Gandhi cap'! I made

due exclamations of appreciation expected of me! I personally could not appreciate the design. Perhaps, Dr. Mistry thought that the political leaders would fall for the Gandhi cap! The political leaders of those days, were far too intelligent and mature, to fall for such gimmicks! They continued their search for a competent planning team.

In the meanwhile, one of the influential industrialists of Ahmedabad, Mr. Kasturbhai Lalbhai, had initiated the building of a new Institute of Management. He had earlier invited Le Corbusier to design the building of the mill owner's association building, and later persuaded the Ahmedabad municipal corporation to invite him to build a museum (Sanskar Kendra). He now invited another American Architect Mr. Louis Kahn to design the building. Well known architects like B.V.Doshi from Ahmedabad who had worked with Le. Corbusier in his Paris studio, were naturally supportive of the idea of commissioning an American Architect to design the Institute of Management.

A group of Architects in Ahmedabad, aspiring to design the new capital, initiated a dialogue between Architect Louis Khan and the political leaders, for designing the new city. They came to a quid pro quo understanding with Louis Kahn, whereby the building designing work would be undertaken by them, in return for projecting him, as a second Le Corbusier, to design Gandhinagar, the new capital city of Gujarat,

H.K.Mewada was appointed Chief Town Planner & Architectural Adviser for the Capital Project in early 1965. But the efforts of the group of architects to install Louis Kahn as the consultant for the project continued unabated. It was under these circumstances, that Mewada and the chief Engineer M.D.Patel, urged me by sending successive telegrams, and later a telegraphic appointment letter as Senior Town Planner, to join the project immediately.

On my joining, Mewada took me in his confidence, and explained the situation to me. He was a most adroit person and an expert in handling politicians. He was a superb man management expert, and could out maneuver anyone in such politicking! He told me, that all his energies would need to be fully directed towards, defeating the machinations of the group of architects, the consulting surveyor and Architect to government. He could therefore, not find enough time to devote to the technical aspects of designing the city. He had prepared a basic concept, which he explained to me. He then told me, "Apte, I leave all town planning matters to you. Don't come to me for any guidance. Do as you feel right. I have full confidence in you. Even if there are short comings these can always be corrected later once I get rid of all the 'meddlers'!"

I could not have asked for more! I did not like, dealing with politicians, nor was good at it. Moreover, I was too young and inexperienced, to deal with scheming people, whether politicians, bureaucrats or professionals, but had a very creative and innovative mind and ideas about planning a capital. Recognizing my strengths, Mewada gave me a clean slate to plan the city based on my ideas and concepts. He, thereafter, devoted his full time and energies to deal with the group of Ahmedabad Architects, who wanted to have him replaced by the American Architect Louis Kahn.

Thus, a very fruitful and mutually beneficial relationship was born between me and Mewada. He recognized my brilliance and talent and was not ashamed to admit or give credit where it was due. In his absence, I had to hold fort, and attend meetings with the Chief Minister and other ministers, secretaries to government the Governor and other central government dignitaries, and take them round to various sites under construction in Gandhinagar. He jealously guarded my stature and position, and would not tolerate, even

the most influential of politicians, if he or she dared to treat me badly. It did happen once, when a very senior cabinet minister did not listen to my defense of a planning decision which I had to explain to her in the absence of Mewada. Having come to know of the incidence later, in a huff, he took me to her chamber, and made her almost apologize to me. Later on, he said "how dare she insult "my Apte"!"

Mewada, despite his astuteness, soon realized that it was an uphill task to counter the campaign to bring in Louis Kahn. The backers were very influential industrialists, and could resort to a lot of arm twisting! Moreover, they were the financiers of political parties for elections. We came to the conclusion that we had to bring in someone who could counter a white skinned man. What better alternative, than another white skinned man? But, it could be a very risky gamble. If we could not control the new white man, he could team up with the Ahmedabad group of architects, and we could end up shooting ourselves in the foot!

It was during this time that I received a brochure from the United Nations development programme about scholarship in the UK. I was too deeply involved and interested in building the capital, and was not lured by a short term training programme abroad. But it gave me an idea, which I discussed with Mewada. He was simply thrilled. The U.N. Development programme had a provision of funds to send experts to developing countries, for short duration, to help the local officers carry out tasks assigned to them in a more efficient manner. We decided to approach the UNDP to send an expert in town planning, to advise the Capital Project.

Thus, a U.N.D.P. expert, Vernon Z. Newcombe, a town planner from the U.K. arrived in Ahmedabad as a town planning expert to advise the chief town planner! His assignment was for six months and I was to work closely with him and provide technical assistance to work out his recommendations. Mewada had frequent interaction with him and convinced him of the futility of suggesting any changes in to the basic structure of the plan. Mr. Sethia, with his background in the U.K., tried to befriend him and suggested that he be taken on as a team member in the capital project. Suffice it to say that he did not succeed! Mr. Newcombe ended up by suggesting some modifications in the detailed planning. His major suggestion was to combine the four residential sectors to limit the vehicular traffic on a grid of 2 km. by 1.5 km. Mewada readily agreed, knowing fully well that neither the politicians, nor the IAS officers would take kindly to such a suggestion!

Prof. Newcombe submitted his report, had a very ceremonious send off and went back to England. His visit had achieved what Mewada's earlier efforts had not! The state government, now armed with the U.N. expert report and the fact that the expert had endorsed the Mewada-Apte plan became confident to deal with any criticism by the group of Architects. Louis Kahn, realizing the futility of pursuing the matter further, lost interest in the project. A misconception was propagated by the group of Architects that the basic concept of the Gandhinagar plan was prepared by Louis Kahn. In support of it is cited the orientation of the road grid which is not north-south, to avoid facing the direct sun in the morning and evening! Surely, such a decision about the orientation, which is simple common sense, does not require the genius of a great architect!

Taking advantage of the visit of Newcombe, and to further strengthen our position as the planners of the project, Mewada got Newcombe to recommend to the government of Gujarat that Mewada be sent to the U.K. on a study tour to visit the new towns being developed there. Accordingly Mewada went to the U.K. and as recommended by him, during his absence, I was appointed the chief Town Planner and Architectural Advisor to the Capital Project.

Many dignitaries used to visit Gandhinagar, and invariably Mewada deputed me, to take them round, many a times in my personal car. I remember having accompanied Mr. Kanetkar, the then director general of the border security force, to show him the site north of Palej village, on the eastern banks of Sabarmati for locating a cantonment. Since the site abutted the N.H.8, it was convenient from a strategic point of view. The BSF, as well as the Indian Army, now have a cantonment in this area. The housing provided there is based on the type designs for the government employees, prepared by us.

A memorable visit was by Shri Morarji Desai who was then Deputy Prime Minister, government of India. Since Mr. Desai, could not spare time to go round the city under construction, we were asked to display plans, designs and photographs at the guest house to explain the entire project to him. We accordingly put up a display of all plans and building designs on the rear lawns of the government guest house at Pethapur, on the northern boundary of the Gandhinagar city area.

Those days, we did not have computers. All drawings, maps, designs, had to be hand drawn on the drawing board. The three dimensional perspectives also, were hand drawn, and coloured with poster or water colours. There was no Indian architecture or planning journals. We used to subscribe to the American or English journals. Two of our architects, who were proficient in making perspectives, prepared those for the various housing types. In those perspective drawings copied from American journals, the human figures were all clad in neckties & jackets. The layout plans of the city and some sectors, were also prepared and coloured. We ordered professional model makers, to make models of residential sector layouts, city centre, district shopping centre and civic centre.

I explained the city plan, and the residential sector plans and the social integration plan for the city to Shri Morarji Desai and the chief minister. Desai appreciated the gradual social integration of housing groups in the sector plans as well as the city. Later, looking at the perspective drawings of the buildings for the housing types- I think it was the bungalow for secretary level officers- he asked why all the men in the drawings were donned with ties and jackets. "They must wear Indian national dress" he said. Fortunately for me, at Mewada's advice, I had hastily got a Jodhpuri jacket stitched for the occasion. I was saved! I can still recall the incident vividly.

It was during the time of Hitendrabhai Desai as chief Minister that Mewada had gone abroad and I was the Chief Town Planner & Architectural Adviser. I designed the bungalows for the ministers and the chief minister and used to visit them to explain the plans. The minister's bungalows had 4 bed rooms and a room on the ground floor to be used as an office. The chief Minister's house had 5 bedrooms, an office with rooms for secretaries attached and two additional guest bed rooms. The minister's housing enclave was located on the east of road 'J' to the north of the city and was a gated area for security reasons.

When Hitendrabhai took over as the chief minister of Gujarat, the foundations for the bungalow had already been laid. He was told that the house would be ready in about 8 month's time. He was keen to perform a Puja for the house before its construction. A remedy was found by one of our resourceful executive engineers. At his suggestion, the main door frame of the house was erected by Hitendrabhai and a Puja was performed on the occasion. At the ceremony, he 'honoured' me as the architect of the city and his house, by presenting me a 'Shreefal' (coconut) and a shawl!

I also recall the visit of the former maharaja of Baroda, Fatehsinghrao Gaekwad, who, for a short period was a minister in the state ministry. He wanted to have a look at the bungalows constructed for the ministers. Mewada asked me if I knew him. I said that we have met a few times, but he knew me as the grandson of Daji Nagesh Apte. So, I was deputed to take him round the city, now almost built and then show him the bungalow designated for him. As we entered the bungalow meant for him, I showed him round the ground floor which had the living-dining, kitchen and a bed room, and then the first floor, which had 3 bedrooms. We climbed down to the living room and exited from the rear terrace on the lawns. He looked at me and asked in Marathi, "bas, itkach?" (is that all?) I think it must be an anti climax for him, normally residing in the Laxmi Vilas palace at Baroda with probably over 100 rooms, to be shown a 4 bed room house as his residence!

The execution of the first phase of Gandhinagar started in 1966, the state government shifted to the new city in 1970, 1st of June. The city was ready for habitation in just 4 years. No other project of this magnitude has ever been completed in such a short period! In 4 years, more than half of residential sectors were developed with all physical, social and other infrastructure. Offices for the state government, pro-tem accommodation for the legislative assembly and legislators built, schools & colleges developed, inter and intra-city bus service was started. Water supply and electricity was provided to the population that shifted to the new city. The city was in no way deficient. My elder son, who was then 4 year old, started his schooling at the St. Xavier's school in Gandhinagar, when I shifted there in June 1970.

On the 1st of June 1970, when the state government was in the process of shifting to Gandhinagar (a great convoy of trucks transporting files and records- the transfer was completed in 2 days) the Managing Director of City and Industrial Development Corporation of Maharashtra (CIDCO) Mr. J. B. D'Souza visited the new city and met Mewada. I was on a day's leave, to see to the shifting of my personal belongings, to Gandhinagar. He met Mewada and our Architect M.Y Thackeray, who had not shifted his residence, and was therefore in the office. Thackeray was given the offer to join CIDCO as Chief Architect to design new Mumbai. Thackeray soon left to join CIDCO. He was never really comfortable in Gujarat and preferred to be back in Maharashtra.

Undoubtedly, M.Y. was a very talented Architect. But D'Souza gave the offer to him (he himself told me, over a drink, after many years later) mainly as he was a Maharashtrian and related to one of the rising political stars Shri Bal Thackeray. Later on, Mewada good humouredly chided me, for being absent on the day as otherwise he said "Apte, he (D'Souza) would have preferred you over Thackeray and you would have had the opportunity to design new Bombay"! It so happened that after leaving the assignment in Gandhinagar, I joined Housing & Urban Development Corporation of India (HUDCO) as its Chief of Projects and closely worked with J.B.D'Souza. JBD greatly admired me as an Architect, particularly as a highly innovative one, and we had a lifelong friendship that lasted till his death in 2008. He eulogizes my role in HUDCO, in his autobiography, 'No Trumpets or Bugles, Recollections of an Unrepentant Babu'.

Having completed the first phase development of Gandhinagar, I was on the lookout for a similar challenging opportunity. It was in 1970 that Housing & Urban Development Corporation of India (HUDCO) was established and the organization needed a Chief Architect- Planner. I was among over 29 candidates, interviewed by a committee. Two were short listed. One was a person with high connections in Delhi and was interviewed next day by the chairman Keshub Mahindra the industrialist. I was not informed of being short listed and came to know about it accidentally next day when a selection committee member saw

me on Curzon road in New Delhi and asked me why I had not met the chairman for the final interview. When he came to know of the lapse on the part of the secretary HUDCO of not informing me, he got in touch with Mahindra and fixed an appointment for me in Mumbai. I met Keshub Mahindra at his office in Dhanraj Mahal. He was so impressed with my work that, in my presence, telephoned to Delhi and asked the secretary to issue a letter of appointment. I joined HUDCO in July 1971.

It was in HUDCO that I met Christopher Benninger, the world renowned Architect. His great humility impressed me and –as he after many years admitted- my integrity and honesty, him! We have worked together since, particularly on the housing plan for Thimphu, the capital of Bhutan. Around 1988 when the most prestigious Eisenhower Exchange Fellowship (EEF) used to be awarded to a candidate selected from amongst those to be nominated by some eminent personalities, Christopher nominated me and the committee selected me as the EE Fellow for 1988, from India. It was a great honour & experience for me and my wife, who was also invited to visit USA-it was our first visit- and meet the cream of the professionals in the city planning and management field. But I am running ahead in my narrative.

A high frequency bus service was provided between Gandhinagar & Ahmedabad to facilitate students and workers who needed to commute to Ahmedabad daily. Free ambulance service was made available to take patients to Ahmedabad if they could not be treated in Gandhinagar. The state government took all possible measures to ensure that the families that shifted to Gandhinagar did not have to face any hardships due to the transfer. It is a measure of the government's forethought and appropriate preparedness to deal with emergency situations, that there was hardly any protest from the families. In fact, they were happy to have got good accommodation, in very congenial surroundings.

Even the lowest of the category, had a one bedroom house, with front and back courtyards, or attached terraces on upper floors. Most houses were only two storied. Adequate parks and playgrounds were available, schools of repute had already started working, health facilities were provided. Fair price shops and consumer goods store "Apna Bazaar" was also started from day one. The public sector milk distribution scheme was also extended to Gandhinagar. The common man had very little to complain about, except the lack of urban environment –mainly the hustle bustle of Ahmedabad. The people from surrounding villages like Borij, Indroda, vavol and Pethapur found a ready market for their produce like milk and vegetables.

In the one year sojourn in Gandhinagar between 1970-71, I found the life peaceful, healthy and quiet in a town that I was proud to call my creation! However, in later years, I rarely went back to it neither gloated over my great achievement, though it is a unique one. But I did visit it recently in 2010, with post graduate students of the Ball State University of USA, to explain the concepts and have a last look at the city that could soon be dismantled and its plan obliterated by the Consultants of the Gandhinagar Urban Development Authority.

In Retrospect:

Given an option, would I have planned the Capital in a different manner than what I did in 1965? I have pondered over this question often.

What is a Capital city? Is it a physical symbol of the power of a state or is it a sustainable human settlement that houses the seat of power? Why is it to be perceived as a human settlement and not just the seat of power? Why not aggrandize the power function and make the human settlement secondary? Why do we tend to visualize a capital city in the

mould of New Delhi, Canberra, Brazilia, Washington or Chandigarh? Why should a capital be a city in itself? Why not have a grand Capitol and human settlements away from it? Why should a capital be a compact city? Why can't it be a decentralized and dispersed physical matrix of work centres and settlements?

These questions haunted me for a long time. If the capital is to be a symbol and the seat of power of a state why not make it a real symbol of power, a complex of edifices that are truly sculptural and monumental? Unhitch it from the residential areas with their necessary appendages of schools, temples, hospitals and clubs? Why does a capital have to be a compact urban structure? Why couldn't the existing villages, around Gandhinagar, for example, be developed into residential areas connected to the capitol by rapid transit routes?

Developing the existing villages like Borij, Indroda, Palej, Vavol, Dhola Kuva etc around Gandhinagar could have achieved the dual purpose of the development of those villages as also a comparatively lesser cost of physical infrastructure development. These could have been very high density developments in multistory towers so that most of the land now occupied by the 30 sectors could be just open green fields! There would just be the capitol complex from which rapid bus transit routes could radiate to these villages which would become the residential nodes that would house the population dependent on government employment.(See diagrammatic sketch at the end of this chapter)

The green fields around the capitol complex could accommodate very low density institutional functions like the knowledge hub, info-tech hub etc.(this has happened by such locations today in the lands between Ahmedabad & Gandhinagar) These could also accommodate Olympic level sports facilities for swimming, indoor stadiums, track events etc. There are 8 villages close to the site of the new capital city, some of them within the boundary of the city. These villages have the infrastructure to support the new city population. They also have a fairly good level of physical infrastructure like roads, water supply etc.

If these villages had been developed as the residential nodes for the government employees required to shift to the new capital, perhaps a far superior social environment and life could have been created there. It could have been an organic growth pattern as observed in Ahmedabad. A number of villages like Paladi, Navarangpura, Vasna which are now integrated in Ahmedabad were and still exist as villages. Most of the suburban settlements of Ahmedabad derive their names from these villages. Similarly, these villages within the designated site of Gandhinagar could have become the residential localities. This type of development could have organically achieved social integration.

A good mass surface transport system could have been put in place that would have provided the means of communication from home to work. These villages are within a perimeter of 5-6 kilometers from the capitol complex. The distance could be traveled by motorized transport within 10 minutes. Thus, an entirely different urban landscape in the form of 8 high density urban nodes around the government offices complex could have been created. Such a poly-nucleated growth would have facilitated development of work centers other than government, and may have helped in a more speedy development of Gandhinagar as a city rather than a predominantly government residential township. The poly-nucleated growth of work centres leading to self supporting and sustainable habitat could have made Gandhinagar a unique capital city.

It would however have meant that there would be no identifiable capital city in the conventional sense like Canberra or Brazilia or Chandigarh for that matter. But does a

ACKNOWLEDGEMENTS

My grandfather Daji Nagesh Apte was a great scholar. It was my good fortune to stay with him in my childhood till I joined college. It was he, who took me with him to his friend D.SubbaRao, the then Dean of the faculty of technology of M.S. University of Baroda and got me admitted to the department of architecture in 1954! After my admission, while I was still enjoying the summer holidays, before the first college term would begin, he taught me all the verses of the “Neetishataka” in Sanskrit by the king turned saint ‘Bhartruhari’. When I asked him of what use it would be in architecture, he said, “it is knowledge, it is never wasted”

My father Madhusudan Shrikrishna Apte was equally scholarly. While I was to be admitted to eighth class in a school in Ahmedabad, he had to fill up a form and state our religion and caste. It was June 1948 and he proudly wrote “Indian”. The clerk at the school would not accept a form that did not give the right information about religion and caste!. The dispute went on for days and I was not admitted, although the school academic year had begun. Finally, my father’s friends urged him not to insist upon his ideas in the interest of my education! He finally gave in! But he did not agree to perform the “Upanayan” (thread ceremony) for me. When I asked him the reason as most of my friends who were Brahmins had had the ceremony, he said “the ceremony won’t make you a Brahmin but knowledge will. Seek knowledge and you will be a Brahmin without the thread ceremony!” I did not perform the thread ceremony for my two sons Shireesh & Palash. Both have obtained doctorates and continue to pursue knowledge for its own sake.

How can one ever not acknowledge such “Sanskaras”?

Since then many people have made a deep impression on me and molded my career. My teacher of English & Marathi languages in the school, N.B. Puranik, my teachers in Architecture Prof. M.B.Dave and M.B.Achwal, my teacher in town planning Prof. D.V.R.Rao, my good friend Christopher Benninger. I have benefited from my long association at work with H.K.Mewada and M.D.Patel in the capital project. I could not fulfill Mewada’s wish of taking over the reins from him due to my insatiable desire to seek new challenges! My association at work and on other assignments for over 34 years with J B D’Souza was an education and experience that I cherish.

My sons Shireesh and Palash always encouraged me to write and though criticizing my ‘poor English’ helped me improve my manuscripts. Shireesh has ‘proof read’ the entire manuscript making corrections. If some mistakes still remain, the fault is entirely mine. Mrs. Neela D’Souza readily agreed to edit the Preface and made valuable suggestions. My erstwhile Deputy planner in the capital project Babubhai Shah has been a lifelong family friend and helped me in my crusade against the vilification of the Gandhinagar plan by the Consultants of the Gandhinagar Urban Development Authority.

Last but not the least, the constant support that I received from my wife in my mad zeal to realize my dream of building the city of Gandhinagar was invaluable! To all of them I dedicate this book with affection and humility.

Prakash Madhusudan Apte

Mumbai

1. TOWN PLANNING IN GUJARAT

In ancient India, the subject of Town Planning was termed as 'Sthapatya' or 'Vastushastra' and was regarded as one of the 'Upa-Vedas' of the 'Atharva-Veda'. A number of books have survived which throw light on the principles, procedure, and system of Town Planning in ancient India. 'Manasara', 'Vastuvidya', 'Shilp-Ratna' etc. deal exclusively with Town Planning and allied arts and sciences. These books specify, the qualifications for the practice of Town Planning, linear and spatial measurements, functional classification of Towns and Villages, matters to be dealt with in Town Planning etc. Different patterns of layout of Towns and Villages, standards for roads and streets, site planning etc. are also given in many of these books. Apart from these books, there are a number of other ancient scriptures like 'Garuda Purana', 'Narada-Sanhita' and 'Arthashastra' of 'Kautilya' which give information regarding various aspects of Town Planning.

The region now known as Gujarat has a history dating back to the Stone Age. The researches carried out in recent times have revealed human settlements in Gujarat which can be traced to the Pleistocene period extending into Paleolithic period. Lothal, in Ahmedabad District near the village Saragwala situated 68 Km. south west of Ahmedabad, was one of the very important centres of the Indus valley civilization. Located on a high mound, the settlement was well planned with a bazaar in the centre flanked by houses provided with drains. A dockyard excavated at Lothal, evidences the ancient maritime activities of these people. Sites comparable to Mohan-Jo-Daro and Harappa, have been unearthed also at Rangpur, Amra, Lakhabaval and Rozdi in Saurashtra, where Harappa cultural flourished. The various phases of the history of what is now known as Gujarat and its civilization can be roughly classified as:

1. The pre-historic period.
2. The early historic or the 'Pauranic' period (approx. 500 B C)
3. The Hindu period under the Maurayas, Indo-Greeks, Kashatrapas, Guptas, Maitrakas and Solankies. (till 13th century A D)
4. Muslim period.(13th to 18th century A D)
5. The Maratha period.(18th century)
6. The British Period.18th to 19th century A D)

Prehistoric & Pauranic Period

The excavations at Lothal and other sites mentioned earlier are an evidence of the high standard of Town Planning achieved during the pre-historic period in Gujarat. The ancient history of Gujarat begins with the Pauranic age. During this period, the new capital city of Dwarka was established as an important settlement of the Aryans in Saurashtra where Yadavas established their kingdom after leaving Mathura. The settlement was originally known as Kaushathali which was renovated and named Dwarka.

Hindu Period

Culturally, Gujarat has been intimately associated with north India from the beginning of history. It was a province of the Mauryan Empire during the days of Chandragupta Maurya.

The documented history of Gujarat starts with the reign of Chandragupta (322-298-B.C) whose Governor constructed a dam and built a beautiful reservoir near Girinagar (Junagadh). Later, Gujarat became a part of the Kushana Empire of Kanishka. Then it came under the Kshatrapas whose empire included Malwa, Saurashtra, Kutch, Northern Konkan, the Mahishmati region of Narmada, the Sabarmati valley, Marwar, part of Sindh etc.

The reign of Kshatrapa Kings covers a long period of about 3 centuries (100 to 400 A.D) in the early history of Gujarat. The period marks the ascendancy of Shaivism, Buddhism and Jainism in Gujarat. It also marks close commercial contacts with the Roman Empire, Bhadoch being the most important centre of maritime trade with foreign countries.

Around 470 A.D. the Maitraka family established a kingdom at the new capital city of Valabhai on the eastern coast of Saurashtra. The University of Valabhai ranked only next to that of Nalanda in Magadha. From the 4th to 6th Century A.D. what is Gujarat now, formed part of the Gupta Empire. It was then known by the names of Anarta, Saurashtra, Lata and Kutch. In A.D. 941 Mulraj founded the Chalukya dynasty which ruled over Gujarat for more than four centuries.

A new capital city at Ashapalli on the eastern bank of river Sabarmati was constructed by the Solanki King Karna Deva I (1064-84 A.D) who renamed it Karnavati. The location of this town can be placed somewhere on the eastern end of Sardar Bridge of the present day Ahmedabad.

It was the king Jayasimha, who gave form and content to the present day Gujarat. The power and prestige of 'Gujjarbhumi' or Gujarat as the Kingdom came to be known, reached its zenith at the time of Sidhraj. He can easily be identified as the founder of Gujarat.

The capital city of Sidhpur bears testimony to the great works of art created by Sidhraj. He reconstructed a lake at Anhilwad (which had originally been built by Durlabhraja) on a very elaborate scale. The remains of it excavated by the archaeological department, give some idea of what it must have been. It was not so much a lake as a vast structural arrangement of scientifically planned lakes and canals, the water of which flowed round temples and pleasure houses erected on artistically constructed inlets. This huge water garden, if one can so term it, was girdled by 1000 temples of Shiva, 'Sastrasalas' for the Brahmins for sacrificial purposes, 108 temples to goddesses, a temple of 'Dashavatara' and 'Mathas' for resident teachers and students proficient in different branches of learning. Jayasimha is also credited with having founded Sidhpuraa (modern Sihor) near Shetrunja which was a city of temples and was surrounded by a high wall. Anahilwad was a fabulously wealthy town with the trade, commerce and maritime activities which its merchants carried on from Cambay (Khambhat) and Broach (Bhadoch), then ports of international trade.

Muslim Period

During the Muslim period, Gujarat saw a period of plenty and prosperity. The principal centre of trade were Patan, Cambay (Khambhat), Ahmedabad and Surat. During the early period of Muslim rule in Gujarat the town of Patan, now occupying the site of the ancient city of Anhilwad was a place of considerable importance. From here, the first Muslim Governors administrated the area. Broach was an ancient port but flourished under the Muslim rule.

Around 1325 A.D. Muslim rule in Gujarat appears to have been administrated from the ancient sea port town of Cambay.

Ahmed Shah I, founded a new town to the north of old Ashapalli (Karnavati) and named it Ahmedabad in 1411 A.D. Shortly afterwards, he shifted the capital from Anhilwad to Ahmedabad, which thenceforth flourished as the capital of Gujarat. At that time, Ahmedabad was established on the left bank of river Sabarmati and the citadel with its palace, as was the custom, occupied a prominent position within a rectangular enclosure on the river front. Away from the citadel, and towards the centre of the city itself, Ahmed Shah began construction of the great Jami Masjid, connecting this mosque by means of a wide thoroughfare thus creating a grand processional route starting from the main gate of his own fortified palace. Had the orientation of the mosque permitted, this 'Kingsway' would have centered on its principle portal, but that entrance having to be on the east, necessitated the road being aligned so as to pass on its northern side. Along the way a stately triumphal arch was erected - the 'Teen Darwaja' - so as to constitute the main entrance to the outer courtyard or royal square of the citadel. The entire concept was an effort at Town Planning of a highly spectacular order.

An Architectural Complex of considerable importance was established at Surkhej some 6 miles south west of Ahmedabad, during the reign of Mohamed Shah in 1451. Surkhej became, in the course of time, a place of retreat for the Muslim rulers. So, in addition to the original tombs, there arose palaces, gardens, pavilions, gateways and a large beautiful lake, all on the same grand scale and of a high architectural order. This complex is a remarkable example of civic design of very high standard with its inter play of solids and voids natural scenery and man-made edifices.

Mohamed Begada established two important towns. Across the river Sabarmati and beyond Ahmedabad, he established Usmanpura. He started building his new capital at Champaner in 1485 A.D. The city of Champaner is situated 47 Km. south- east from Ahmedabad. The site having proved agreeable and commendable to the ruler after his capture of the fort there from Jaysing Rawal in 1484. The city took some 23 years to build and on its completion was occupied for little more than an equal period after which it was deserted. Champaner was planned with a walled citadel containing the palace as its focal point, while around this was grouped the outer city.

Maratha and British Periods

After the decline of the Mughal Empire and during the Maratha period a number of principalities were formed in Gujarat. Each of these rulers established small independent states which continued their existence during the British period and had their capital cities well planned and architecturally embellished.

During the British period, Ahmedabad continued to grow as the major centre of trade and commerce and by the end of 19th century, it became a major industrial centre. Broach declined as a port-town while Surat continued to grow due to certain smaller industries. Baroda, which was the capital of the State of Baroda, had the benefit of the advice of Patrick Geddes, an eminent sociologist turned Town Planner. The capitals of various principal states like Jamnagar, Rajkot, Gondal, Morvi, Palitana, Bhavnagar, Probandar, etc. were developed by their respective rulers.

2. EVOLUTION OF TOWN FORM AND STRUCTURE

The physical form of towns in Gujarat has been very much dictated by the socio-political conditions in this region during the Hindu and Muslim periods. There are certain distinct characteristics of towns in Gujarat which make them different in their physical form and structure from the other towns of similar period in the rest of the country.

A typical town in Gujarat was normally situated along a river or had a large water body in its centre. The residence of the King or the Ruler of the area occupied a prominent or a central location around which were grouped residences of the persons of higher status. The only major road of the town centered on the palace of the ruler and was generally very wide leading to a mosque or temple at the other end. Along this street developed commercial bazaar and the people of lesser means and other classes were normally clustered on the fringes of the town close to the city walls.

One of the most important and striking feature is the large water bodies normally found in the various cities of Gujarat. Such impounded Reservoirs or Lakes have not only contributed to the aesthetic appearance of these towns, but have also helped to modify the micro-climate of the cities.



Photo By Atul Kapoor

Surasagar Lake at Vadodra, Gujarat

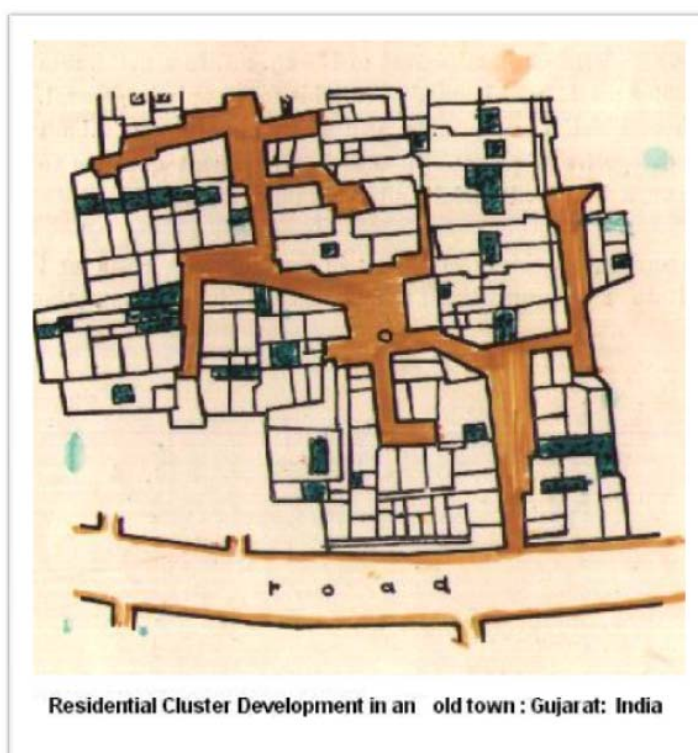
Baroda has a beautiful lake called 'Surasagar' right in centre of the town, so is the case with Girinagar and Vadnagar. One of the most beautiful lakes to come up near a city was the 'Sahasralinga' lake near Anhilwad (Patan). This lake was created by bringing water by canals from the river Saraswati and was beautifully landscaped with trees and man-made structures like temples etc. The Kankaria lake of Ahmedabad is a well-known landmark.

Most of these lakes not only serve to beautify the city but were also the source of water supply and many of them had a perennial supply of water through live streams and sometimes a very elaborate system of canals and underground channels with flood gates etc. One of the most striking examples of civic design in Gujarat is the Architectural Complex of palaces and other buildings grouped around a vast lake at Surkhej. Water is a dynamic element in the landscape. Ancient city builders utilized this element to the best advantage. They created large bodies of water which gave relief to the solid masses of stone and brick structures around.

Another striking aspect of the town structure in Gujarat is the city walls. Being a region away from the direct control of Emperors in Delhi, during the Muslim period, Gujarat was generally ruled by a Governor, deputed by the Central authority. The region was also the scene of constant fights and contests between various kings. It was, therefore, always prone to enemy attacks. This was the main reason why a number of cities in Gujarat are found to have city walls. These city walls surrounded thickly populated areas of the town. In fact, these served as the limits of the town, though the poorer or lower classes of people used to live-even during these times-beyond city walls. During troubled times such population would shift within the city walls and the city could be defended well as the wall acted as a physical barrier to the enemy. These walls were normally surrounded by a very wide moat. Few cities except those in Gujarat and Rajasthan had city walls. Delhi had a city wall, but apart from that example, there are few other towns in northern India which had such a feature seen as extensively as in Gujarat.

It is interesting to note that the city wall was a common feature in the cities of those times in countries of Europe also. There, the city walls normally assumed a star shape. The city walls in Gujarat did not have any particular shape. The walls were pierced at places by city gates to give access from different directions. These gates were entrances to the city and were treated as important Architectural features to beautify the city. 'Hirabhagol' at Dabhoi (Bhagol=Gate) is an excellent example of this type.

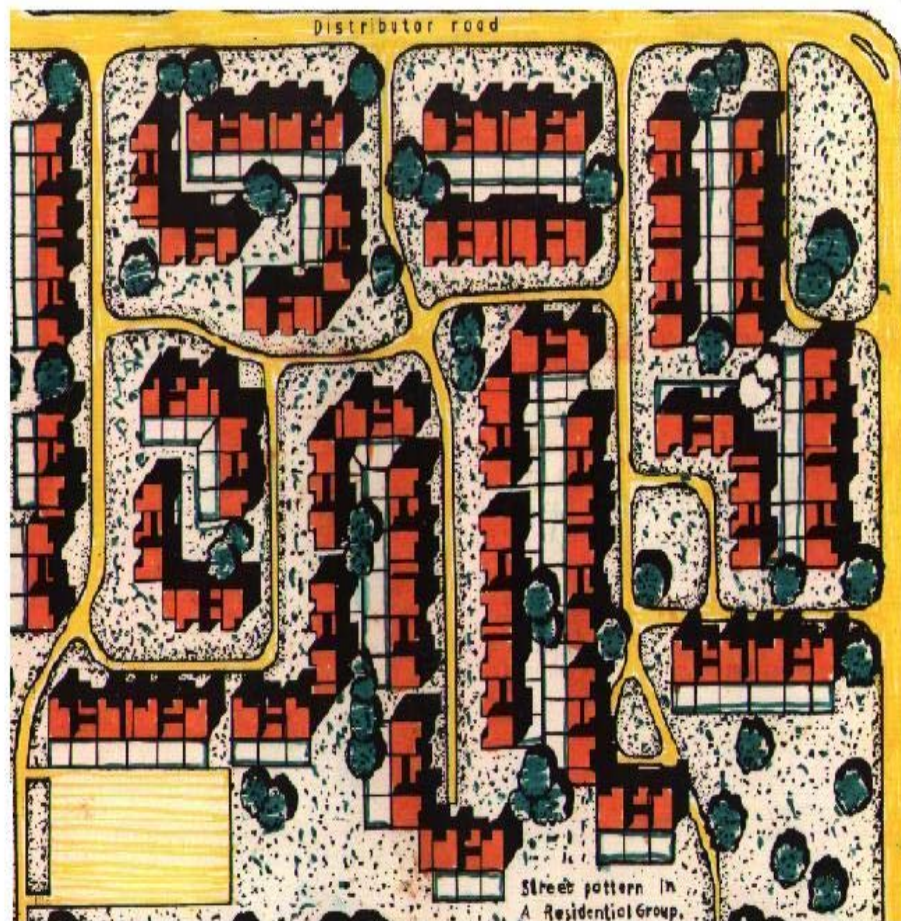
The clustering of various communities grouped in the form of 'Pols' (narrow lanes) which is a common feature in the cities of Gujarat, also evolved due to the consideration of safety and security.



These 'Pols' acted as the second line of defense in case the city wall gave way. A typical 'Pol' was a narrow street bounded by residential buildings with gates at either end of this street where it joined the main roads of the town. Once these two gates were closed it was difficult to enter the area. Within these poles we find the community structure grouped on the basis of cast or kinship consideration. The 'Pol' had its own small civic square with a place of worship and also a permanent source of water supply which was normally a well.

A number of houses had underground tank for the storage of water and in times of difficulties the 'Pol' could hold out against enemy attack for quite a long time. This fact, combined with the cast or kinship relation created a very close community feeling in the residents of the area.

Researches, carried out in the field of social sciences, have borne out the fact that the degree of community relationship between residents on a dead end street is far more intense than between residents grouped around a large open space. The 'Street Pattern' of grouping of residences is therefore preferable to the 'Square Pattern' for achieving a community feeling in the residents of the area. The 'Pol' is a classic example of such grouping even in the context of present day circumstances in terms of physical planning.



Interpretation of the "Pol" structure in the government housing cluster plans in Gandhinagar.

3. HISTORY OF AHMEDABAD

A brief history of changing physical patterns, in the walled city of Ahmedabad during the various periods, roughly illustrates the evolution of the present day development. At the time, when the city was established in 1411 A.D. the town had good streets and squares and houses of stones, white washed, with large courts and internal wells and water pools. The buildings were high with terraces. The city was planned as per Hindu planning principle though instead of a temple the main mosque (Jami Masjid) occupied the central position.

During the 16th century temples were constructed in houses and the sub-streets, with a well for water supply, so that during the crucial periods the life would continue in the security of the narrow lanes. The Maratha periods saw constant strife and destruction but at the same time a number of temples were also constructed. People preferred to live in the interior streets from safety point of view, and the lands in the interior were sold at higher price than lands on the main roads or streets. During the British period, due to security of life and development of business and commerce there was a spurt in building activity and that emphasizes the change from the interior street to the main road again.

In the early half of the 20th century a number of industries, particularly Textile Mills were established and with other smaller ancillary industries getting established a mixed land use started. Business, trade and commerce increased. New roads were constructed and due to changes in the land use pattern, residential houses were converted into shops and commercial buildings. With a better law and order situation during this period, development spread outside the city wall and suburban areas started developing rapidly. New bridges on the river Sabarmati were constructed and in Ahmedabad the development went across the river on the western side.

This process of development from the Mughal period to the early half of the 20th century is typical of most of the urban areas in Gujarat.

A study of a typical residential area within the walled city of Ahmedabad reveals the general character and from of the development that took place over the centuries and can be generally considered as a typical example of city development in any of the old cities of the region. A typical residential area normally clustered around a street connecting two major roads. From this street, take off-streets called 'Pol' or 'Sheri': There are normally a number of such sub-streets in a main Pol. The sub-street is accessible by the main road and alleys (Khancha or Khadki) are accessible by this sub-street. The number of such alleys in a sub-street varies depending upon the length of the sub-streets. The main street can be compared with a neighbourhood unit having local commercial facilities, public building like schools, library etc. The sub-street is a residential area where people from a single group (on the basis of cast or religion) stayed together. The Khadki is a residential unit at micro level. Generally, people of the same cast or kinship stayed together here.

The British Period

In the year 1915 the Bombay Town Planning Act came into existence and a Town Planning Department was established. When the present state of Gujarat came into existence in 1960, the Bombay T.P. Act was made applicable to the entire state. The objective of the act was the improvement of the physical conditions in the towns. Considering the time at which this act came into existence, it was definitely a very progressive piece of legislation. A great asset of this act was its basic principle which was to make the owner of the land a co-partner with the local authority in the proper development of the entire area. The town

planning act conferred upon the local authority, the powers to undertake Town Planning Schemes for the developing areas within its jurisdiction. The advantage of the act was that it enabled the local authority to pool the lands, irrespective of ownership, for the purpose of planning and redistribute the lands to the owners concerned in planned manner in the form of properly reconstituted plots provided with good roads, services and amenities like water supply, drainage, schools, play grounds, parks, markets etc.

Under the Town Planning Act of 1915 Schemes could be prepared only in respect of developing areas of suburbs and open lands and there was no provision for undertaking improvements within the built up area of the town. To remove this deficiency, the Bombay T.P. Act 1915 was repealed and replaced by the Bombay T.P. Act 1954 which made it obligatory for the local authority to prepare a comprehensive development plan for the area under its jurisdiction and undertake T.P. Schemes within the built-up area also.

The modern town planning efforts in Gujarat were pioneered in Ahmedabad. The basic awareness, that the urban areas have to be planned to provide for the changing social and economic structure of the people enabled the local authority to undertake physical planning programme in the city of Ahmedabad. The study of Town Planning efforts in Ahmedabad city therefore generally give an idea of Town Planning in the region which was subsequently followed in other cities of the State.

Ahmedabad was the first local authority to avail of the powers conferred under the T.P. Act and undertake the preparation of T.P. Schemes for various areas of the city from time to time. Until 1960 i.e. till the bifurcation of Bombay State, about 60 T.P. schemes covering an area of about 11000 acres were completed and work on another 60 schemes covering an area of 21000 acres was in progress.

After the year 1960 with the progress in building technology and rising land values the process of vertical development began. Multi-storied buildings started coming up along the main roads. The emphasis having changed from the sub-streets to the main roads, there was no development in the small residential area of the interior and the character of this area has substantially remained the same over a number of centuries.

Four Reasons for writing this book;

The realization that, no one but me, knows and can recall the true circumstances and events that preceded the establishment of the new capital city is ***the first reason for writing this book.***

.....after 50 years some architects now seek to disfigure the plan of the city and dismantle its very concept! This is what would appear to be the attempt if one were to evaluate objectively the new plan prepared by the Consultants of the Gandhinagar Urban Development Authority (GUDA). It also could be that the profit to be gained by the trading of lands –with the advance knowledge of the intended plan proposals- for urbanization is the prime motive in the dismantling of the planning concept of Gandhinagar! ***That is the second reason for writing this book.***

....I realized the value of the written word and resolved to pen all my professional thinking and project design work for the benefit of the future generations. ***That is the third reason for writing this book***

The Gandhinagar plan is often compared with that of Chandigarh and branded as a poor copy of it! Nothing could be farther from the truth! ***That is the fourth reason of writing this book.***



**Author & wife Suneela in Ahmedabad
Before taking up the assignment to
Plan the new Capital city: 1965**

4. CAPITAL CITIES OF GUJARAT

Town Planning or Planning of new towns is not new to India. In Gujarat, many rulers had established new towns or renewed old ones. However these were essentially built by rulers as a mark of personal glory and followed the basic principles laid down in the old scriptures.

After independence a completely new set of circumstances necessitated establishment of new towns or renovation of the old. These circumstances were created by the firmly established financial system based on paper currency which gave rise to wide spread business and commercial transactions, rapid industrialization, resulting in concentration of population, a phenomenal increase in social welfare activities by the State, involving establishment of educational, cultural, medical and other facilities, rapid increase in population resulting in a surplus of manpower in the agricultural occupations etc. With the partition of the country the problem of refugees was also added to these circumstances.

The history of Gujarat has a tradition of building new capital cities. The earliest was Dwarka which was the Capital of Yadavas in the Saurashtra region. It is however considered that it was not an entirely new town but was developed on the location of an existing village called 'Kushasthali'. Gujarat was known by the name of Anarta and one of its earlier capitals was Anartapur or Anandpur, a place which is probably the present day Vadnagar. The next reference to the Capital of 'Saurashtra' is to the town of Girinagar which existed near the present day Junagadh. This capital was established during the Gupta period i.e. sometime around 300 B.C. It remained the capital during the Maurya, Kshatrapa and Gupta period.

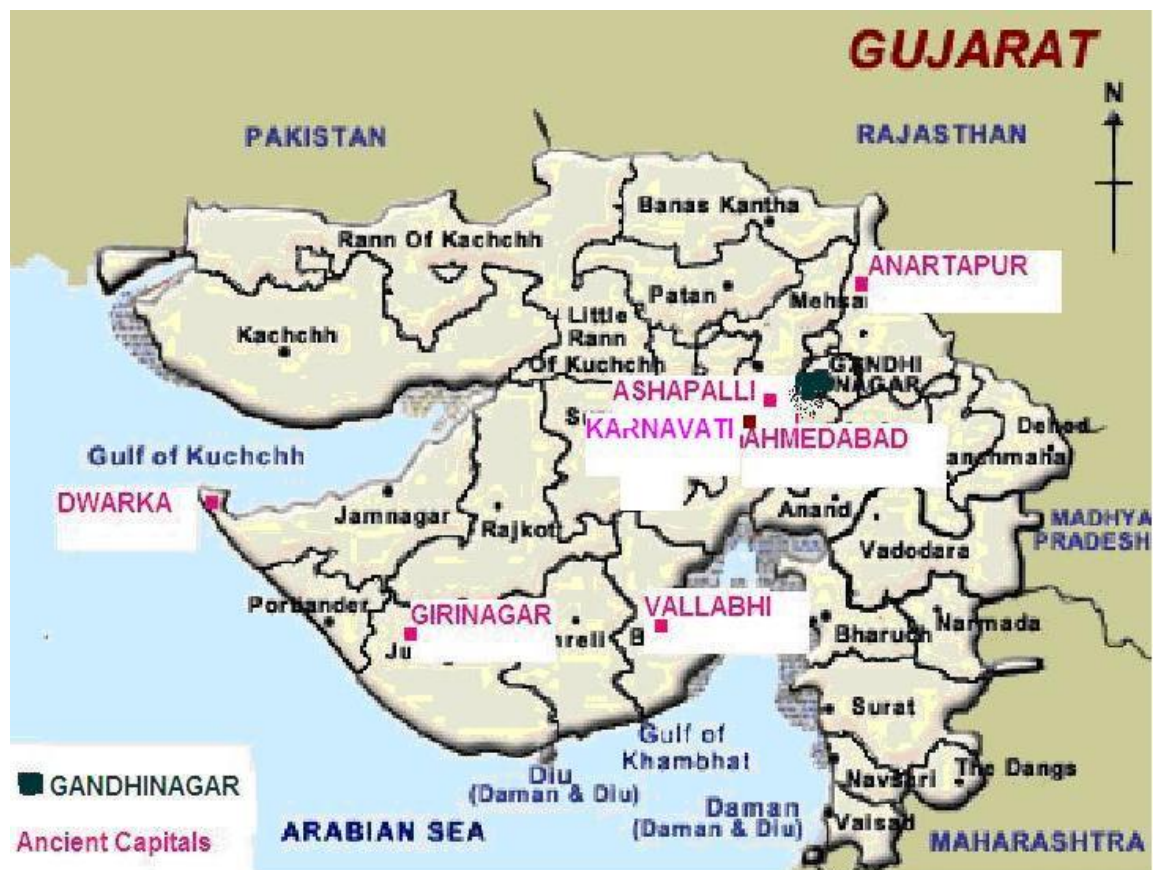
The next new capital for which reference is available is Vallabhi in Saurashtra situated at about 33 Km. east of Bhavnagar and 83 Km. north of Shetrunja, probably at a place where the present day village of Vala exists. This was the capital of Maitraka Kings and was established around 480 A.D. According to the description of the Chinese traveler Hu-en-Tsang who came to Valabhi around 641 A.D, the Capital was spread over an area of 8 Kms. and was densely populated. There were a number of temples and palaces of rich families. From the copper plates excavated, it appears that there was a very good city administration system with a number of city officials having different powers.

The next reference to a Capital is of 'Bhinnamal' which was the Capital of 'Gujjardesh'. It was also known by the name of 'Shrinal'. The capital also was visited by the Chinese traveler Hu-en-Tsang. It had an area of about 25 Sq.kms. with gates on all sides and storied residences within.

The next reference to a capital is to Ashapalli or Karnavati during the region of Solanki Kings in 1040 A.D. With the advent of Mughals, Ahmedabad was established in the year 1411 A.D. which remained as a capital of the State until 1970, except for a brief period from around 1500 to 1525 A.D. when it was shifted to Champaner.

In Gujarat, a few new towns have been established since independence. Most of these new towns however are not really self-sufficient units but are actually more like colonies established near existing urban centres. Gandhidham, Sardarnagar and Kuberanagar are the three rehabilitation towns established in Gujarat. All the three are more of refugee colonies than self-sufficient towns. The last two now form part of the city of Ahmedabad. . Ankaleswar and Mithapur were two of the earlier industrial towns established in Gujarat, the first near Broach and the other in Saurashtra. A complex of three small townships for the oil refinery, the Fertilizer Factory and Petro-chemicals plant also came up near Baroda. Kandla is the only new port town established in the State. The development of this town mainly depends upon Kandla new port.

Gandhinagar was established as the new Capital of the State and became functional in 1970 with the shifting of the State Government offices there.



Map of Gujarat with historic capitals and new capital Gandhinagar

Ashapalli and Karnavati are the ancient names of the present day Ahmedabad.

Dwarka was the ancient capital of Gujarat during the Pauranic period said to have been created by lord Krishna. Its remains are now under the sea near Porbunder.

Anartpur was another historical capital close to present day town of Mehasana.

Girinagar was located in the present day Gir forest well known for its Lion reserve.

Vallabhi is located near the gulf of khambat

5. APPOINTMENT OF CHIEF TOWN PLANNER FOR GANDHINAGAR

After the bifurcation of Bombay State, a separate State of Gujarat came into existence on 1st May 1960. The Chief Minister designate, Dr. Jivraj Mehta, had declared on 19th March, 1960 that the State will have a new Capital City to be named GANDHINAGAR, on a site about 24 kilometers north of Ahmedabad.

No progress could be made towards the execution of the project as the Oil and Natural Gas Commission was exploring the area for Oil. In July 1964, the Commission declared the proposed site to be free of Oil and clearance to go ahead was obtained. A separate Circle (Engineering division) was formed in 1964 under a Superintending Engineer, P.W.D. for the preliminary survey works and execution of the project. A separate Chief Engineer was appointed for the Project in 1967.

H.K.Mewada was appointed the Chief Town Planner and Architectural Adviser for the Capital Project in January 1965 and a separate organization for the Planning and Architectural work was established. Mewada invited me to join the project. I was then working as Senior Planner with Asansol Planning Organization of the Government of West Bengal. I resigned and joined the capital project in October 1965. without having applied for the assignment, without an interview or an appointment letter! An unprecedented event and procedure in a state government!

An American Architect Louis Khan was then in Ahmedabad at the invitation of a prominent industrialist Kasturbhai Lalbhai to design the building for the Management Institute. A prominent group of Architects, peeved at the appointment of Mewada and myself to design the city, prompted Louis Khan to approach the politicians to get him and the group of Architects appointed as the consultants to design the city. Mewada had to work very hard and use his considerable politicking skills to keep the job of designing the city with us

Since the machinations of the group of architects kept him on tenterhooks all the time, he entrusted the work of planning to me. I completed the Plan post haste ,and it was approved by the Government in 1966. The construction of the city was then taken up and progressed with speed till the Capital was officially shifted to Gandhinagar on 1st June 1970. I shifted to Gandhinagar and stayed there for an year. Having completed the creative phase of the project, I resigned in 1971 (much against the wishes of Mewada) to join the Housing & Urban Development Corporation of India as its Chief Architect-Planner. To keep me from resigning the job, Mewada got an appointment letter issued to me within 2 days appointing me as the Consulting Surveyor to Government of Gujarat! It was yet another unprecedented event in the history of the state government.

Deciding to drive to New Delhi I left by car but was so overwhelmed at leaving the town which was my 'creation', I kept crying uncontrollably as I have not cried even after the death of my Parents. I cried again after 40 years when another group of Architects sought to distort and dismantle the plan of Gandhinagar in 2005 under the garb of re-planning it!

The Planners of Gandhinagar



Hargovind K. Mewada –



Prakash M. Apte

6. BUILDING THE NEW CAPITAL

The Gandhinagar Capital Project was placed under the administrative control of the State Public Works Department. The Chief Town Planner and Architectural Adviser for the Capital Project, headed the Town Planning & Architectural Department. There were two sections in the department, Town Planning and Architecture. The Town Planning section was managed by a Senior Town Planner, assisting the Chief Town Planner and Architectural Adviser in the comprehensive development of The Gandhinagar New Township and under him, a Deputy Town Planner, Two Assistant Town Planners and other subordinate staff. The Senior Town Planner being the senior most officer also officiated as Chief Town Planner and Architectural Adviser.

The Architectural section was managed by Two Senior Architects assisting the Chief Town Planner and Architectural Adviser in designing the various buildings constructed by the Government in the New city. 4 Deputy Architects, 8 Junior Architects and subordinate staff worked under these two Senior Architects.

In the organizational set up for the execution of the project, initially, there was only a circle office headed by a Superintending Engineer. Subsequently, it was considered expedient by the Government putting the organization of the circle office under a Chief Engineer specially appointed for the Capital Project. The Chief Engineer (Roads and. Buildings) for the entire State P. W. D., who was also the Special Secretary to the Government, was designated as the Chief Engineer for the Capital Project.

The post of the Superintending Engineer was upgraded to Deputy Chief Engineer. Under the Deputy Chief Engineer, there were 5 divisions each of them headed by an Executive Engineer. Out of these five, 3 Executive Engineers dealt with the civil construction works, one with the Water Supply and Sewerage Project for Gandhinagar and one was in charge of the Mechanical Division. An additional division headed by an Executive Engineer dealt with the electrical work of the project and was placed under the Chief Engineer, Electrical. An Executive Engineer with a design division of the regular P. W. D. was also attached with the Capital Project to manage the work of structural designs of the various buildings constructed in Gandhinagar.

A Director of Parks and Gardens at the rank of an Executive Engineer was appointed to manage the horticultural and landscaping work.

The Chief Engineer Mr. M.D. Patel used to reside at Sohrabji Compound in Juna Wadej in Ahmedabad when he was a junior Engineer in the state PWD. He was related to C.I.Patel who was one of the 5 officers in the state of Chota Udepur and was a very jolly person and a good friend of my father. C I Patel had built a bungalow in Wadej and rented the upper floor to us when we shifted to Ahmedabad. As a student in the school in Ahmedabad, I was close to Mohanbhai (M.D.Patel) who had affection for me as he had no issues then. He was greatly impressed by my creativity as an artist, craftsman and a brilliant student.

When Mewada was desperately searching for a young, talented and highly creative Architect-Town planner to be entrusted with the complete planning of the city so that he could be free to deal with the machinations of the group of architects from Ahmedabad, Mohanbhai suggested my name. Mewada had such faith and confidence in him that he immediately issued an appointment telegram to me while I was working at Asansol in W. Bengal



The Author before joining Capital Project in Ahmedabad, 1965

“Gandhinagar is one of the greenest, best-planned and most sustainable cities in the world. It now faces devastation at the high altar of development, hands of developers and machinations of their handmaidens. Thus, this book comes at the crucial moment in the history of urban planning when we can either save Gandhinagar, or throw it to the wolves of history. Maybe it will live on only as a dream in an antique land of memories of visionaries and idealists, where no one can ever enter.”

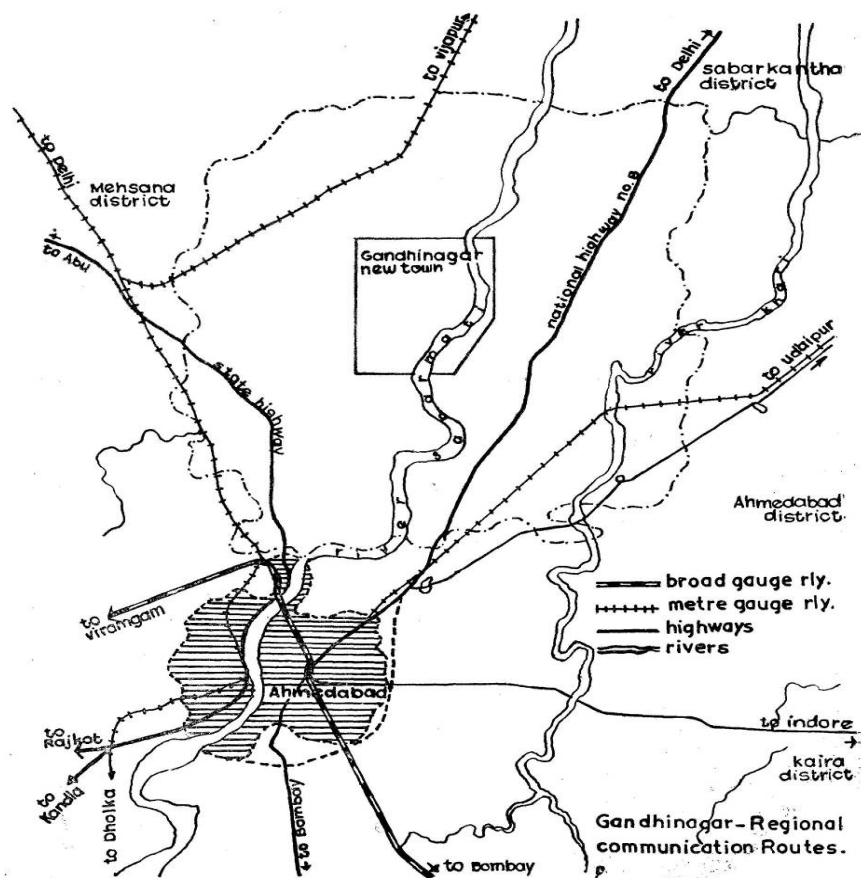
“In this book Prakash Apte lays out the true story of one of the few planners in the world who has designed an entire new city; and that too a capital city. That story has been misrepresented and wrongly told by many amateurs and journalists, and for the first time in this volume we can learn from the guru of Gandhinagar himself.”

Christopher Benninger

7. THE SITE

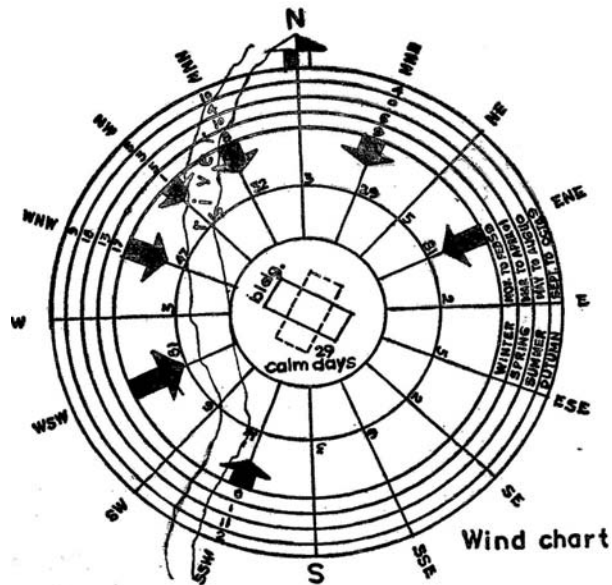
The site, occupying an area of about 5738 hectares (approx. 21 sq. miles) is situated on the banks of the river Sabarmati. The city proper is planned on the western bank. About 31 meters (70 feet) higher than Ahmedabad, the site is level and well drained with a gentle slope from north-east to south-west. This is one of the reasons for orienting the main roads of the city in this direction facilitating water supply by gravity and natural drainage and sewerage. The soil, being mostly sandy loam, is suitable for building construction work. The site is dotted by a number of mango groves.

The Climate does not differ much from that of Ahmedabad, with a maximum average temperature of 40°C. in May-June and a minimum average of 29°C in December- January. Mean relative humidity is highest in August (86 %) and lowest in January (47 %) . Average yearly rainfall is about 825 mm. The prevailing wind direction varies from south-west to west.



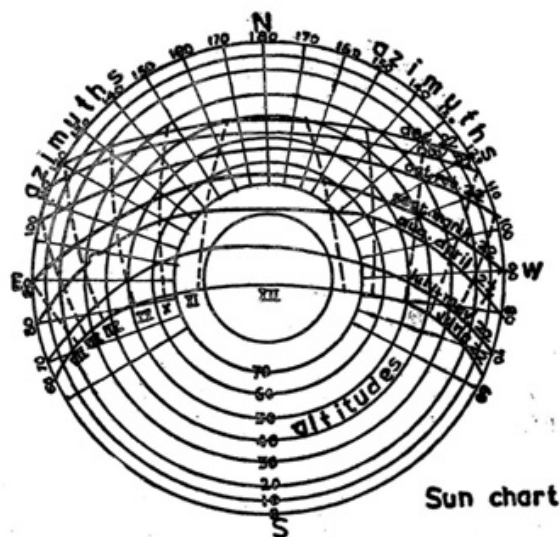
Site of Gandhinagar

The site is conveniently located from the transportation point of view. The existing Ahmedabad Airport is midway between the proposed site and Ahmedabad city. The present railway station of Khodiar on the Ahmedabad-Delhi meter gauge line that is located about 16 kilometers (10 miles) to the north of Ahmedabad was to serve as the railway station for Gandhinagar for some time. The Ahmedabad Mount-Abu State Highway bypasses the site 5 kilometers (3 miles) to the west while the Bombay-Ahmedabad-Delhi National Highway No. 8 passes the site 5 kilometers (3 miles) to the east, across the river.



Wind Chart for Gandhinagar

Orientation of the city main roads in north-east south-west direction and the cross roads in the north-west south-east direction ensures that the sun does not shine in the “eye” of the traffic direction in the mornings and evenings. It also helps the natural drainage and gravity supply of potable water to the city from the main overhead water tank located on the north-east boundary of the city.

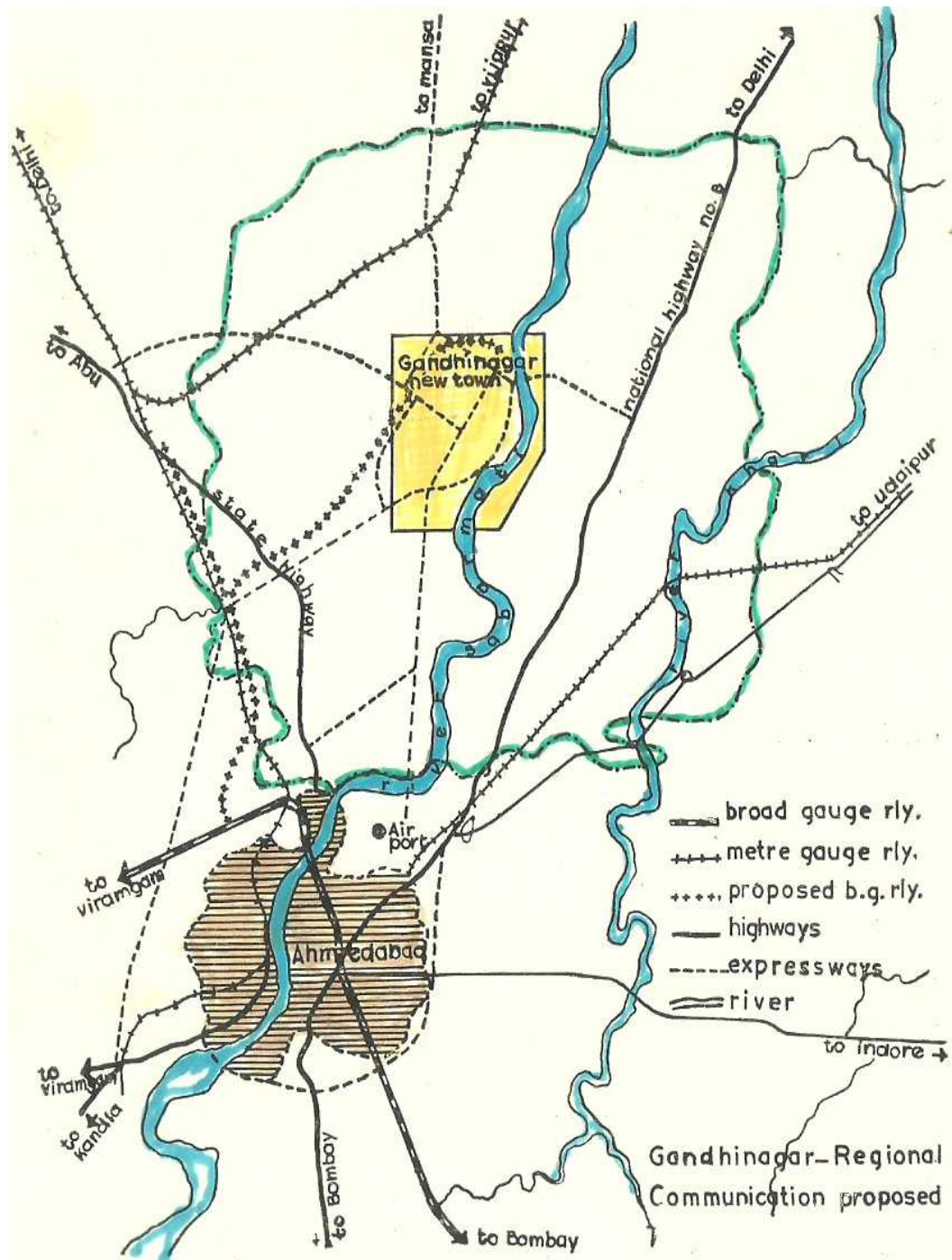


Sun Chart for Gandhinagar

8. THE PLANNING CONCEPT FOR THE CITY

Regional Linkages

The new city is linked with Ahmedabad on the south by a direct road, having a straight alignment and a right of way 91.44 m. wide between the proposed Capital and the railway station of Khodiar about ten kilometers (six miles) to the west.



This road was proposed to be extended further to the south to join the State Highway at Surkhej near Ahmedabad. A road over bridge was to be provided at the crossing of this road and the Ahmedabad Delhi metre gauge line at Khodiar. Thus, traffic from the Saurashtra area could directly reach Gandhinagar without going through Ahmedabad. The road link to Khodiar also connects the new city with the Ahmedabad-Mount Abu State Highway. The site is connected to National Highway No. 8 (Bombay-Delhi) across the river by a 5 km.(8 miles) link road.

The alignment of the proposed extension of the broad gauge railway from Sabarmati to the Fertilizer Complex at Saij near Kalol and also to the Thermal Power Station installed in the industrial area in Gandhinagar, was to run along the western boundary of the township. It was proposed to have a railway station in the centre along the western boundary of the township. The railway line was to run under the proposed road over bridge at Khodiar. Where it crosses the Ahmedabad-Kalol State Highway, there was to be a road over bridge. The new city was thus very well linked by road, rail and air with all parts of the State and the Country.

The City Plan

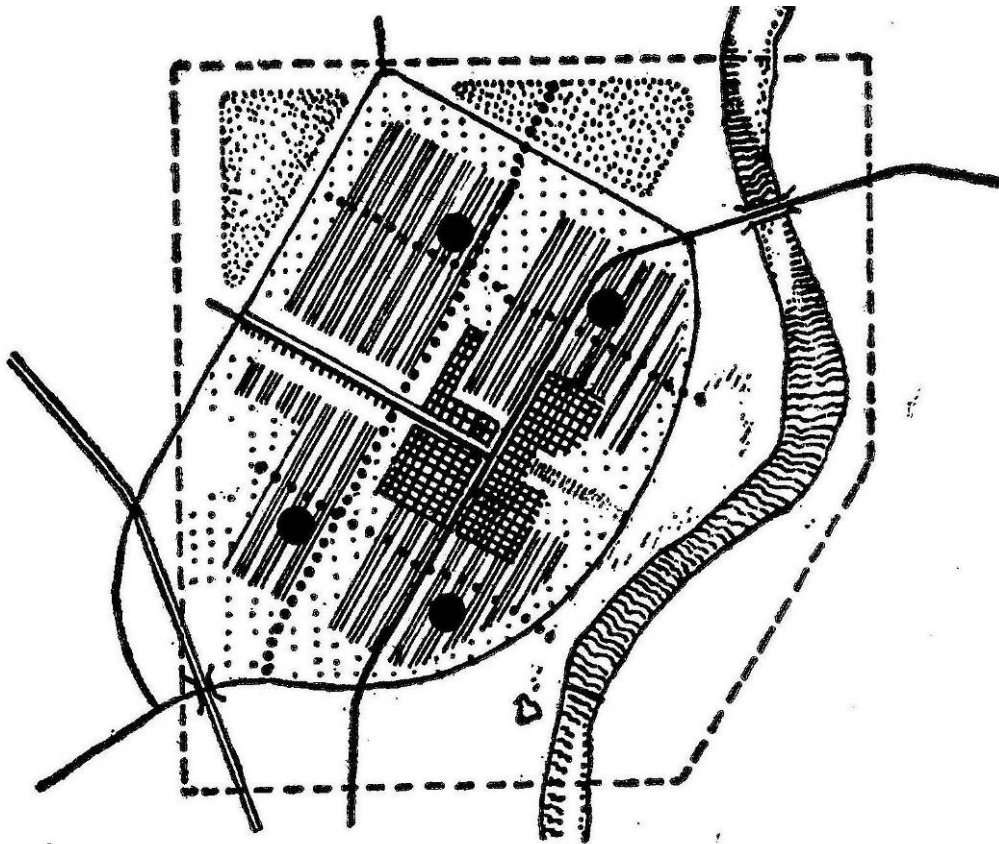
The character of a plan for a new city is influenced by various factors, such as the regional setting, site conditions, dominant function etc. Functionally, Gandhinagar was to be the capital city of Gujarat. The new city would predominantly be the administrative centre of the state and consequently, would acquire many important cultural, civic and allied functions. Initially, the principal employer in the city would be the State Government and as such, the design population was based on the Government employment structure. In 1965 the city was planned for a population of 1,50,000.

The total area of the site is about 5738 hectares (14174 acres) including and divided by the river. The area under the river is about 800 hectares. The new city is planned on the western bank on 4290 hectares (10,000 acres) of land. Out of these, about 700 hectares (1600 acres) along the river front (which is eroded land- ravines) are set aside for river side development and an adventure park. The area of the land in the eastern side of the river, not proposed for immediate use, is about 650 hectares.

The Gandhinagar Town Plan has been conceptualized keeping in mind the development of a balanced and healthy community, socially as well as economically, as its central theme. The living areas, work areas and the recreational areas have been so interspersed and inter-related in the town plan that the time spent by the people in travelling to work and back would be minimum. The leisure time available to them, could thus be increased for engaging in various social and recreational activities during the day.

“When my imagination drifts back to my early years in India, I remember young Apte deep in his studio work, sleeves rolled up, working from tired to tired, over drawing boards in 45 degree temperatures, with no air-conditioning, on a pittance of a salary, on the new capital city of Gujarat. Our mentor, H. K. Mewada, and then Chief Town Planner of the Gujarat, was over-burdened with the new state’s seven cities’ first development plans, and fending off the industrialists in Ahmedabad, who wanted to manipulate the planning of the new capital city. He wisely left the new capital plan to his young colleague. Those were heady days of creativity, imagination, of devotion to ideas and to causes long forgotten.”

Christopher Benninger



Gandhinagar -Town concept

	Residential
	Industries
	Work centre
	Recreational
	Motor roads
	Pedestrian & cycle ways
	District centres

Road System

The approach roads from khodiar railway station and Ahmedabad, join towards the south of the city forming an entrance to it. At this location it was planned to erect a traditional entrance gate to the city (Bhagol). The pattern of main city roads is generally rectangular forming a grid one of kilometer by three fourths of a kilometer. The roads have been

oriented to run 30° north of west and 60° north of east to avoid directly facing the morning and evening sun during journeys to and from work areas. This orientation is suitable for the design of buildings and enables them to be sited conveniently to avail of the natural breeze. The river side road follows the natural features and forms a crescent, skirting the proposed recreational area along the river front. The peripheral roads and the access road to the city centre are 65 m. wide. Roads to the Government Offices from the south-west and the north-west and the crescent road are 100 m. wide. Rest of the main city roads are 45 m. wide. City roads oriented North-East to South-West are named after the Devnagari Alphabet. The curved road along the river is 'J' followed by 'CHH', 'CH', 'GH' 'G', 'KH' and 'K'. The roads oriented North-West to South-East are numbered 1 to 7.

Work Areas

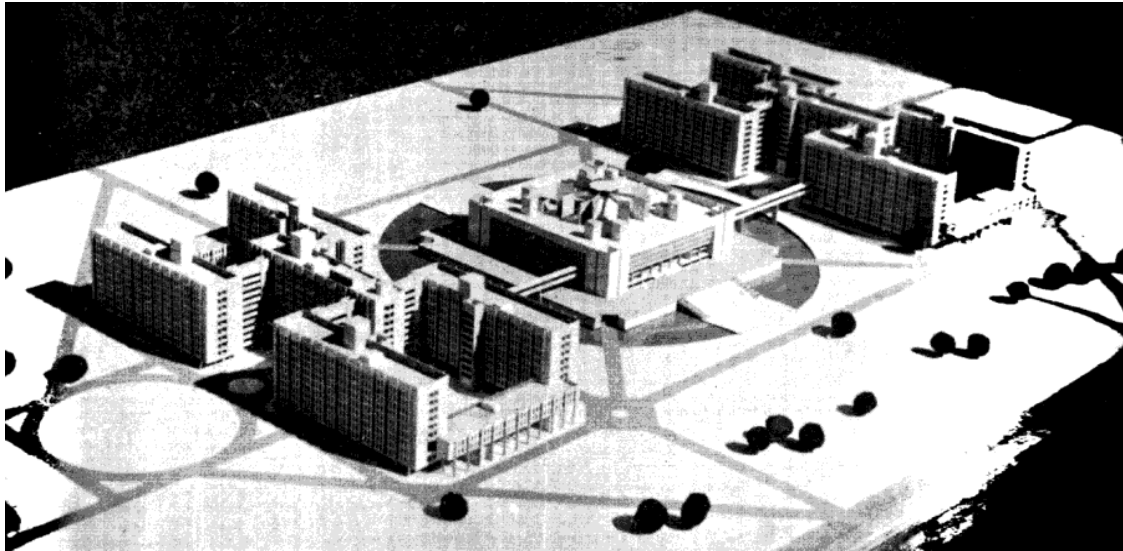
The main work areas in the city are:

- (i) Capitol Complex and Government Offices.
- (ii) Light Industries Areas.
- (iii) City Centre.
- (iv) Public Institutions Area.
- (v) Shopping, Commercial and Warehousing area.

These five areas together, would generate most of the traffic within the city. It was therefore necessary to locate each of these areas in such a way that, the total volume of traffic is well distributed within the city with a balanced pressure on all traffic routes. The government offices have been located to the south-east of the geographical centre of the city while the industrial area is located to the north. The prevailing breeze direction confirmed this location. The city centre and the commercial area is situated a little to the north-east of the geographical centre of the city with the public institutions area in the south.

Capitol Complex & Government Offices

The most important work place in the city would be the Capitol Complex and Government Offices. The Capitol Complex, comprising of the Secretariat, Legislative Assembly, the High Court and Offices of the Heads of Departments is located centrally in one Sector with an area of 75 hectares (185 acres). It has been so planned as to merge gradually with the river front landscape to the south-east.



The Capitol Complex (Model) 1967

The Capitol complex is placed on the south-east end of the central axis road no.4 which is planned as an Avenue having a central green of about 60 mt. width. In the planned expansion of the city, it was proposed to extend the city towards the North-West and extend the road no.4, so that the capitol complex would remain as the focal point of the central avenue of the Capital City. Behind the Capitol Complex on the river front was the designated location of an imposing memorial to Mahatma Gandhi either as a tall statue or a symbolic representation of his ideals. This concept of the memorial & Capitol Complex at the apex of the central axis of the city has not been implemented.



The Capitol Complex as Built

Other Offices of the State Government have been located to the north of the Capital Complex while to the south, the area is reserved for offices of the Government of India. The

[illegible]

A typical town in Gujarat was normally situated along a river (Sabarmati)... The residence of the ruler (Legislative assembly & Secretariat buildings) occupied a prominent location around which were grouped residences... (residential sectors). The major road of the town (road '4') centered on the palace (Legislative Assembly building) and was generally very wide.... along this street developed commercial bazaar (road no."4")

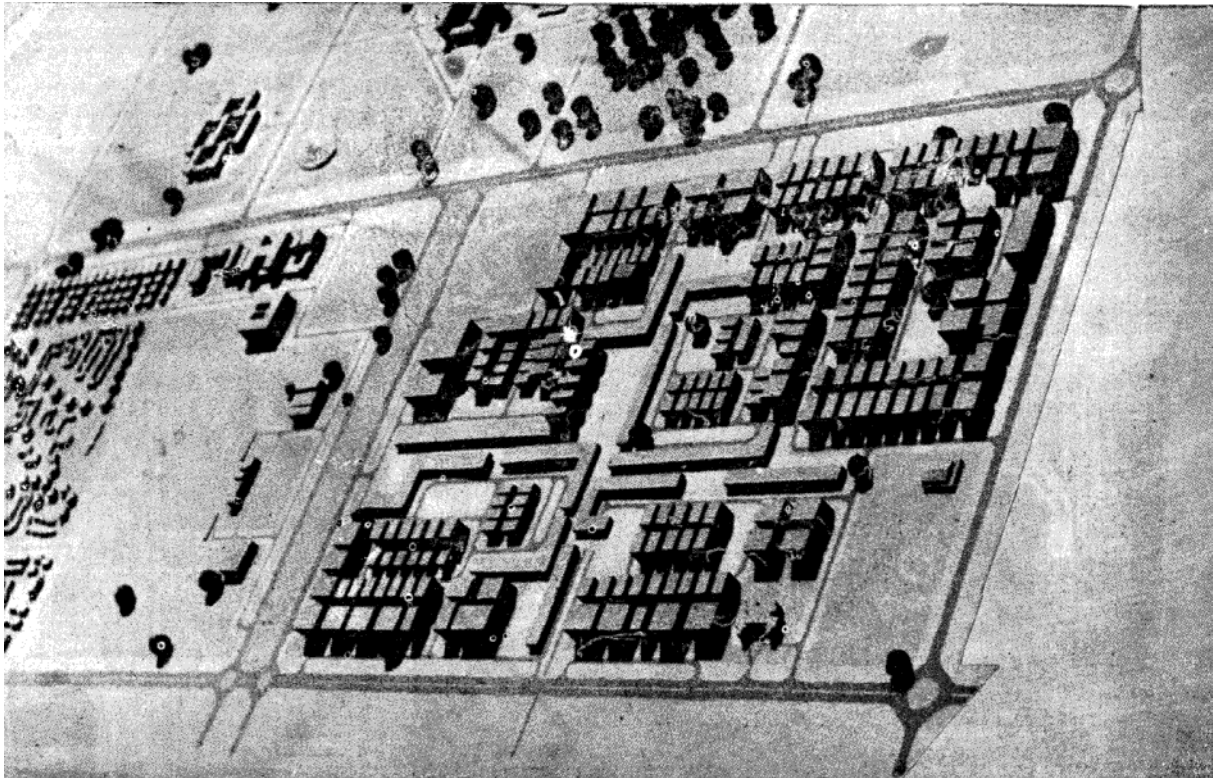
Though Gandhinagar was primarily to be an administrative centre, it must have a diversified economic base to make it a 'living' city. It is therefore desirable that light industries which will not basically alter the character of the city are established there.

45

city. It includes provision for establishment of industrial training schools or such other technical institutions requiring close proximity with the “workshop”.

City Centre

The city centre which occupies an area of 75 hectares (185 acres) will accommodate the major civic, cultural and business facilities for the city. The main bus terminus for regional traffic routes is also located here.



Public Institutions Area

To the south of the city along the crescent (J) road, an area of about 50 hectares (125 acres) has been earmarked for public institutions of state-wide importance. It may also accommodate public schools and colleges with residential facilities.

Shopping Commercial & Warehousing Area

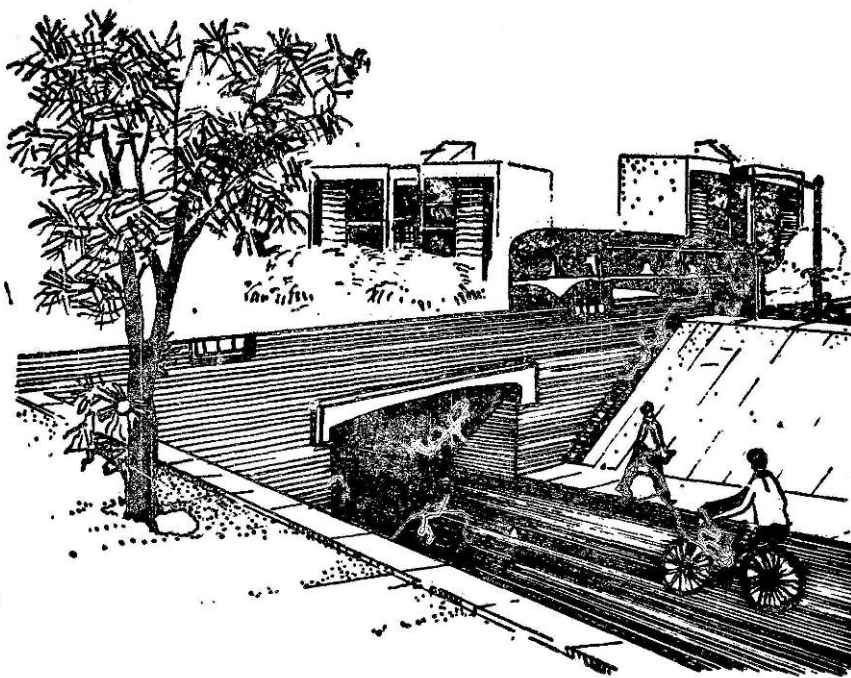
At the intersection of the two central roads in the city is located the main shopping centre for the city. Though it will spread to some extent along these two roads, it has been planned with service roads so as not to cause any hindrance to traffic. This area will accommodate retail shopping facilities as well as other commercial premises. Along the central avenue, connecting the city centre with the capital complex to the south-east and the warehousing area to the north-west, a strip of land is reserved for special buildings requiring larger plots. At the north-western tip of this strip is located the wholesale and warehousing area to which will flow goods from the surrounding region without any hindrance to the traffic within the city.

Residential Areas

The regular pattern of the main roads divides the city into rectangular sectors measuring one kilometer by three fourth kilometer with an area of 75 hectares (185 acres). Each of these sectors will accommodate, on an average, residential community of about 7000 persons (at F.S.I. of 1) with the necessary facilities like schools, shopping, playgrounds, parks, etc. In the future, if the F.S.I. is increased to 4 and multi story construction is allowed, Gandhinagar can accommodate a population of over 6,00,000. Though the families of the government employees may constitute almost 50 per cent of the envisaged population of the city, most of the residential communities are proposed to have population dependent on government service as well as other occupations. This is considered desirable so as not to create isolated Government Colonies.

The government employees are accommodated in different categories of houses to be built by the Government. Eight categories of residential plots, ranging from a minimum of 135 sq. mt. to a maximum of 1600 sq. mt. are made available for people in general. Each residential community has hierarchy of about four categories of private plots and government quarters to achieve a balanced social and economic structure.

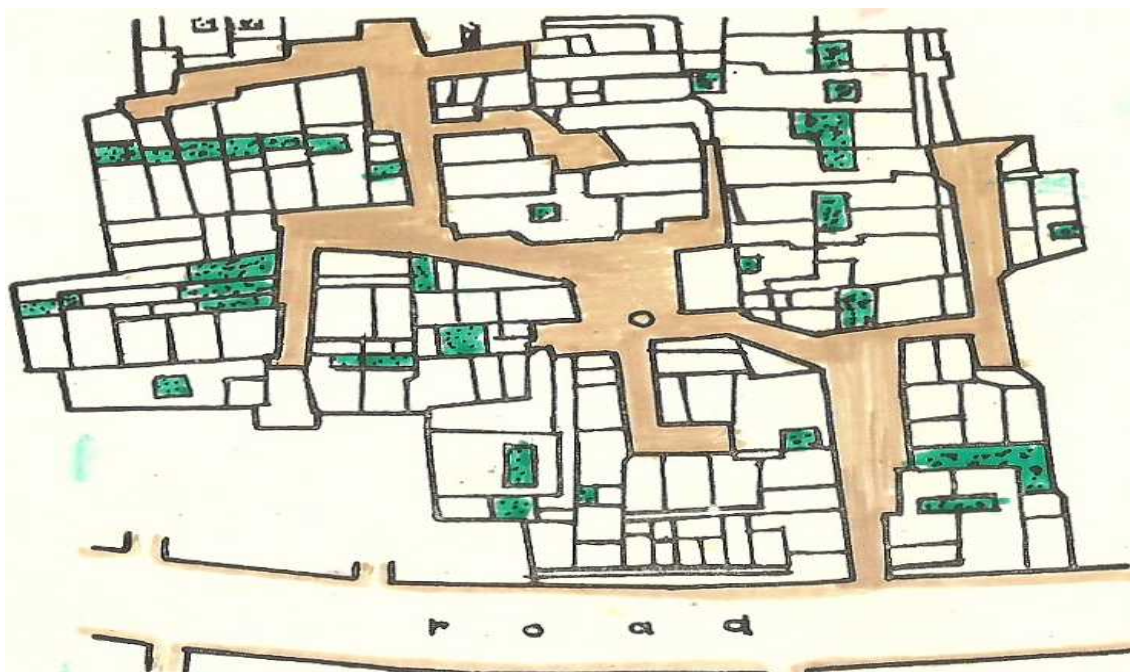
In order to achieve economy in development costs and facilitate maximum benefit from social integration, the residential units are planned in a compact form. Consequently, larger open spaces and playgrounds are available and accessible to the people within walking distance. Each residential community is traversed by a cycle-pedestrian way crossing the main roads by an underpass leading towards the government offices area which is the main work centre and a cycle way leading to the city centre and industrial area. Major facilities like primary and secondary schools, shopping centre, health and community centre, etc are grouped along this cycle-pedestrian way, making them easily accessible to all without having to cross main vehicular roads. For each category of house for government employees, at least two or three alternative designs have been developed so that by using these alternative designs and their combination, a more varied pattern of housing is obtained and there is no monotony in the Government housing area.



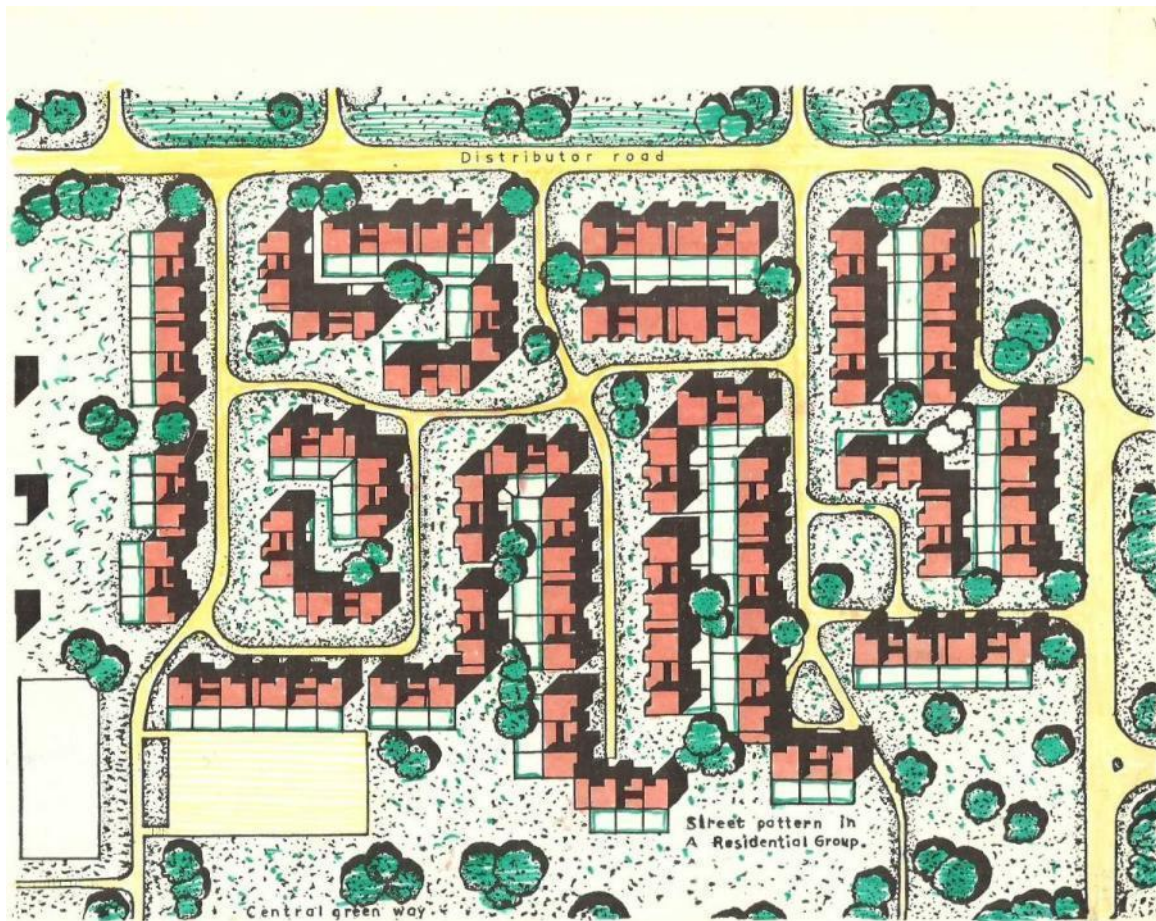
A bicycle Underpass

The smallest category of house for a government employee provides a drawing room, a bed room, kitchen, front verandah, back verandah and independent toilet block with a total plinth area of 450 sq. ft. This is probably the highest standard adopted in the whole of the country for this category of housing. Moreover, in the design of this type of housing, care has been taken to see that while a person on the ground floor gets about 16 ft. wide garden in the front and 20 ft. wide garden in the back, the families on the upper floors get an attached open terrace in addition to the minimum accommodation provided. The housing has been generally designed in the form of row houses so that considerable economy is achieved in the cost of land. In some of the housing categories, flats have been provided while in a few other categories, independent bungalows have been constructed.

These residential groups in Gandhinagar have a basic and fundamental resemblance with the community structure presented by 'Pols' as seen in almost all cities of Gujarat. Just as is found in the case of these houses in the 'Pols', residential houses are grouped along a street, which opens out at places for social inter-course between people of all ages as also for a play space for children. The street pattern in the residential groups are as informal as is found in 'Pols', free of fast traffic and serving only the local traffic generated by the residential groups. In the old cities in Gujarat, the Community Structure presented by the 'Pols' has been evolved as a result of the caste system. In Gandhinagar an attempt has been made to form the residential groups of people of such economic strata as would permit evolution of a fully socially active life. Even the houses designed for- especially lower income groups -in the form of row houses resemble the continuous houses along the streets encountered in the 'Pols' which immensely help in reflecting the community structure obtained in the Pols. Typical street patterns that are seen in the old cities in Gujarat and residential groups in Gandhinagar is illustrated below.



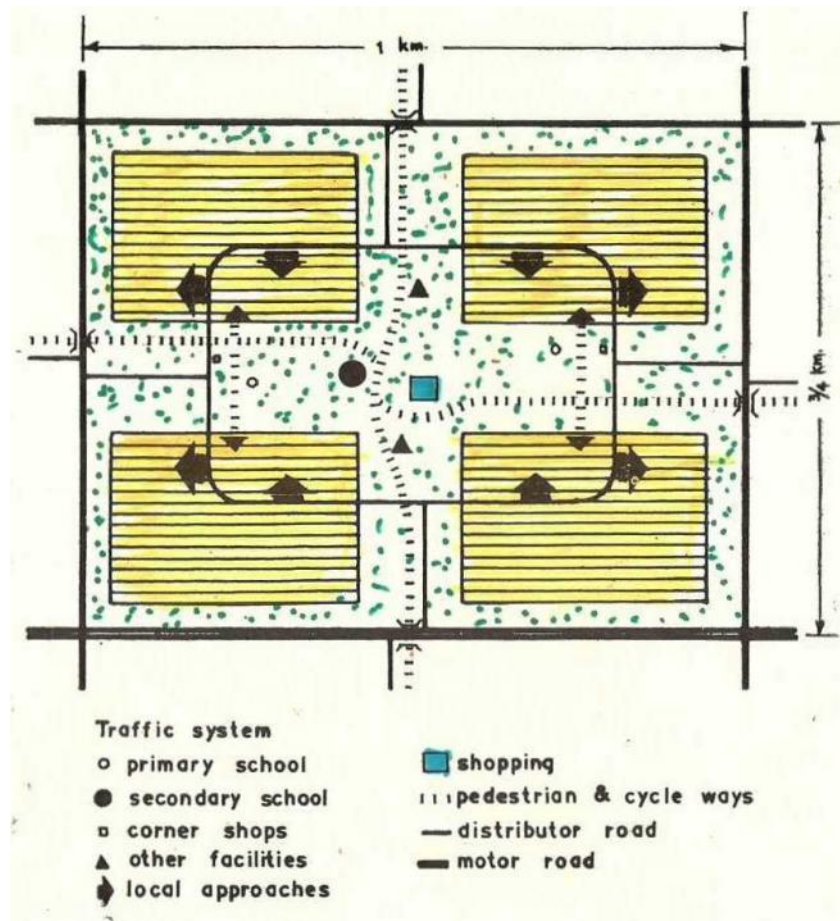
The Historic Pol structure leads to social cohesion and better feeling of neighbourliness than the traditional western European grouping of houses around central open spaces.



The traditional Pol structure of grouping of houses has been very ingeniously translated into the layouts for Government housing areas as illustrated above

Traffic System

The bicycle pedestrian ways are part of the traffic system adopted for the new city. The major factor which creates traffic problems in our country is the mixture of slow and fast moving vehicles. Complete segregation of the two is achieved by a traffic system ensuring relatively safer and swifter passage for both. Basically, the system comprises of a grid (1 km. x 0.75 km.) of motor roads and another grid (1 km. x 0.75 km.) of cycle pedestrian ways superimposed on each other so that each residential community is served by motor roads on the periphery and cycle ways within it. Grade separation by an underpass with an easy gradient (1 in 50) at the intersection of cycle pedestrian ways and motor roads will enable the two systems to work almost independent of each other. As a result of this traffic system, the main functions in the city, like the government offices, city centre, shopping centre, riverside recreational area, industrial area, etc. will be accessible to residential communities by way of cycle pedestrian ways independent of the motor roads. Conversely, a majority of the residential units in the city could be reached without having to travel on or across the main vehicular roads.



Layout Plan of Sector 29 illustrating the traffic design concept

The internal “loop” road takes its shape to accommodate existing trees. In the planning of Gandhinagar in a total area of over 4000 hectares, because of this meticulous attention to retention of existing trees, only 5 trees had to be uprooted all of which were replanted and

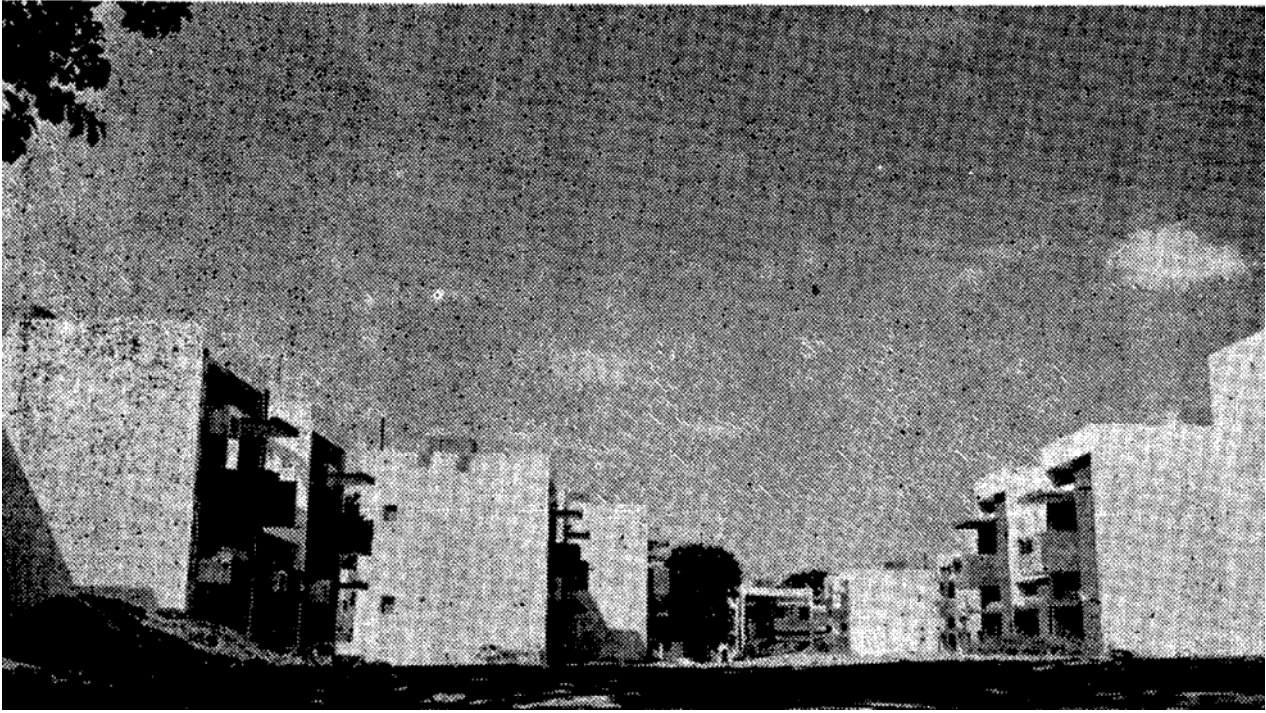
took roots . Where groups of trees existed, as can be seen in the layout plan of sector 29, these were accommodated by locating the main sector open space to include those. Buildings for schools were located within the sectors along the main city roads to provide visual relief and break monotony of residential buildings all along the road.



Street pattern of grouping of houses: Sector 29



Street Pattern of grouping of houses: Sector 29. Note the existing tree retained.

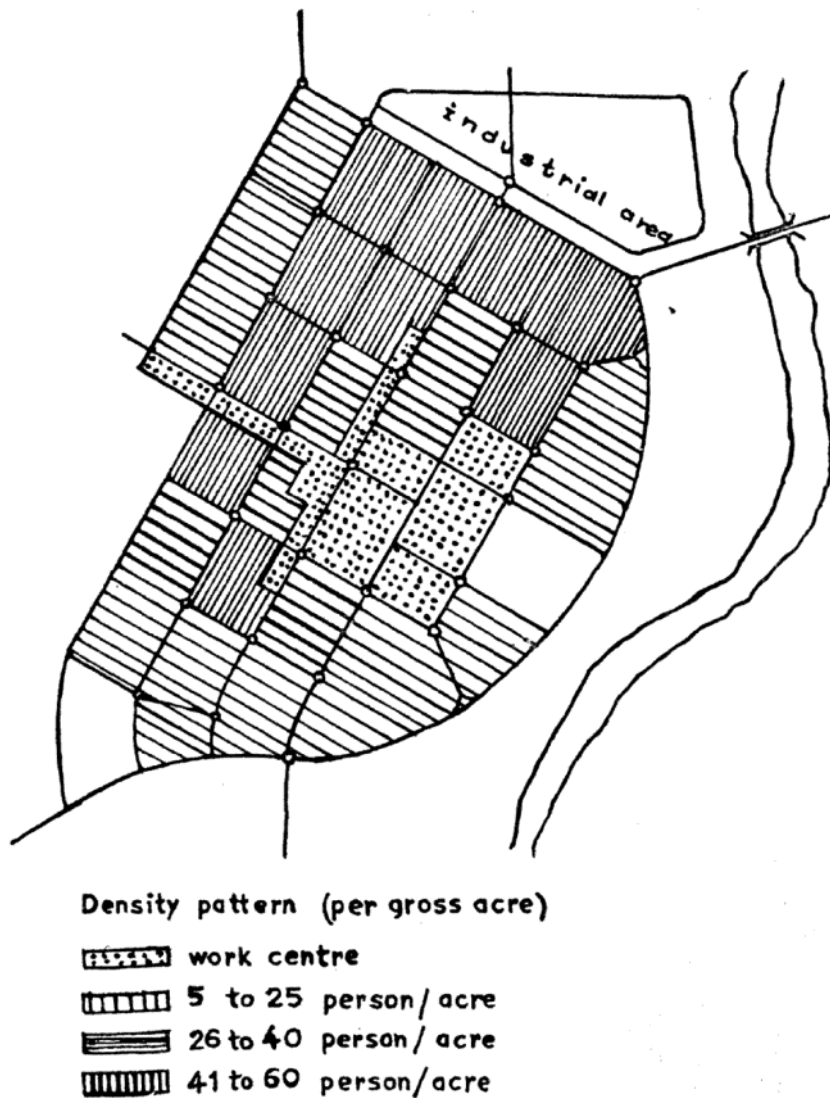


A view of a 'dead end' street: Sector 29

The main town roads have been so oriented as to help in orienting the various buildings correctly with respect to light and ventilation. The alignment of the distributor road within the sectors facilitates orienting the residential quarters in a correct manner. Practically in all the sectors, nearly 60% of the residential quarters have been correctly oriented with reference to light, air and ventilation.

Density Pattern

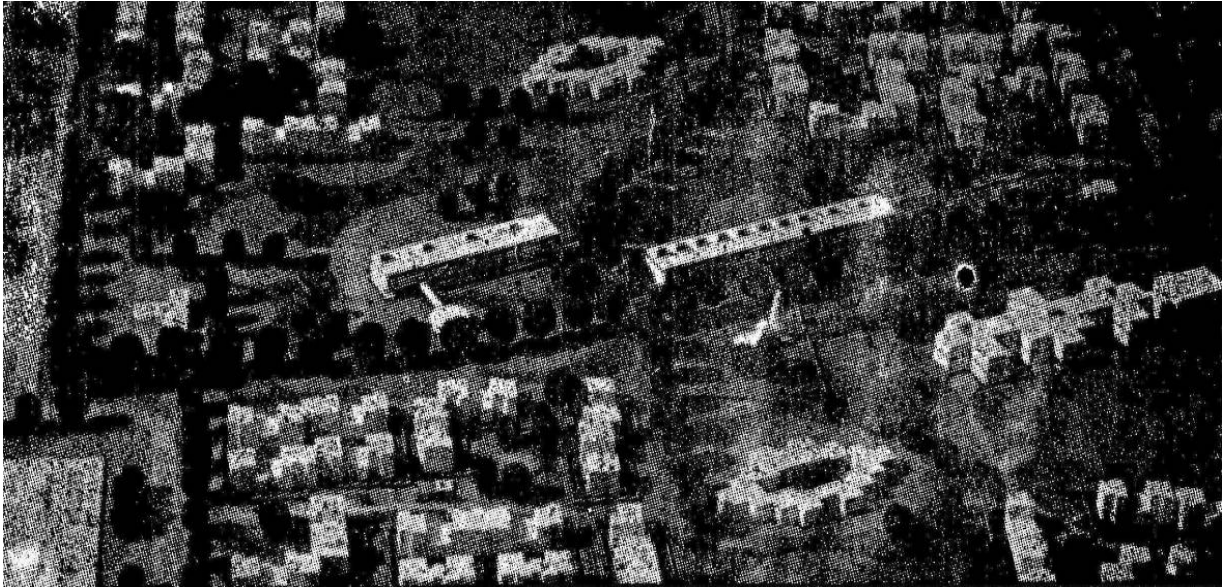
The Government being the largest employer, densities are relatively higher around the Government Offices area (100 to 150 persons/gross hectare or 40 to 60 persons/gross acre) and the industrial area. They are generally lower (10 to 100 persons/gross hectare) on the periphery of the city. On the basis of this density pattern the total population of each sector was worked out.. This total population was then apportioned between those dependent on government employment and the supporting population. The type of government employees to be accommodated was decided by the density. Four different groups of employees had to be integrated in one sector. Plots for the supporting population had to correspond to the economic status of the government employees. Thus four categories of housing for government employees and four corresponding categories of plots for the supporting population were accommodated in each residential sector to fit within the desired density pattern.



Within the residential communities, net densities are as high as 250 persons per hectare (100 persons/acre in Government housing clusters). However in general, medium density development (average density of 100 persons per gross hectare or 40 persons per gross acre) was proposed. in keeping with the character of the new city. Densities are subject to alteration depending upon the housing policy of the Government. Higher densities are possible if a large scale public housing programme is undertaken and FSI is increased in the future.

Community Facilities

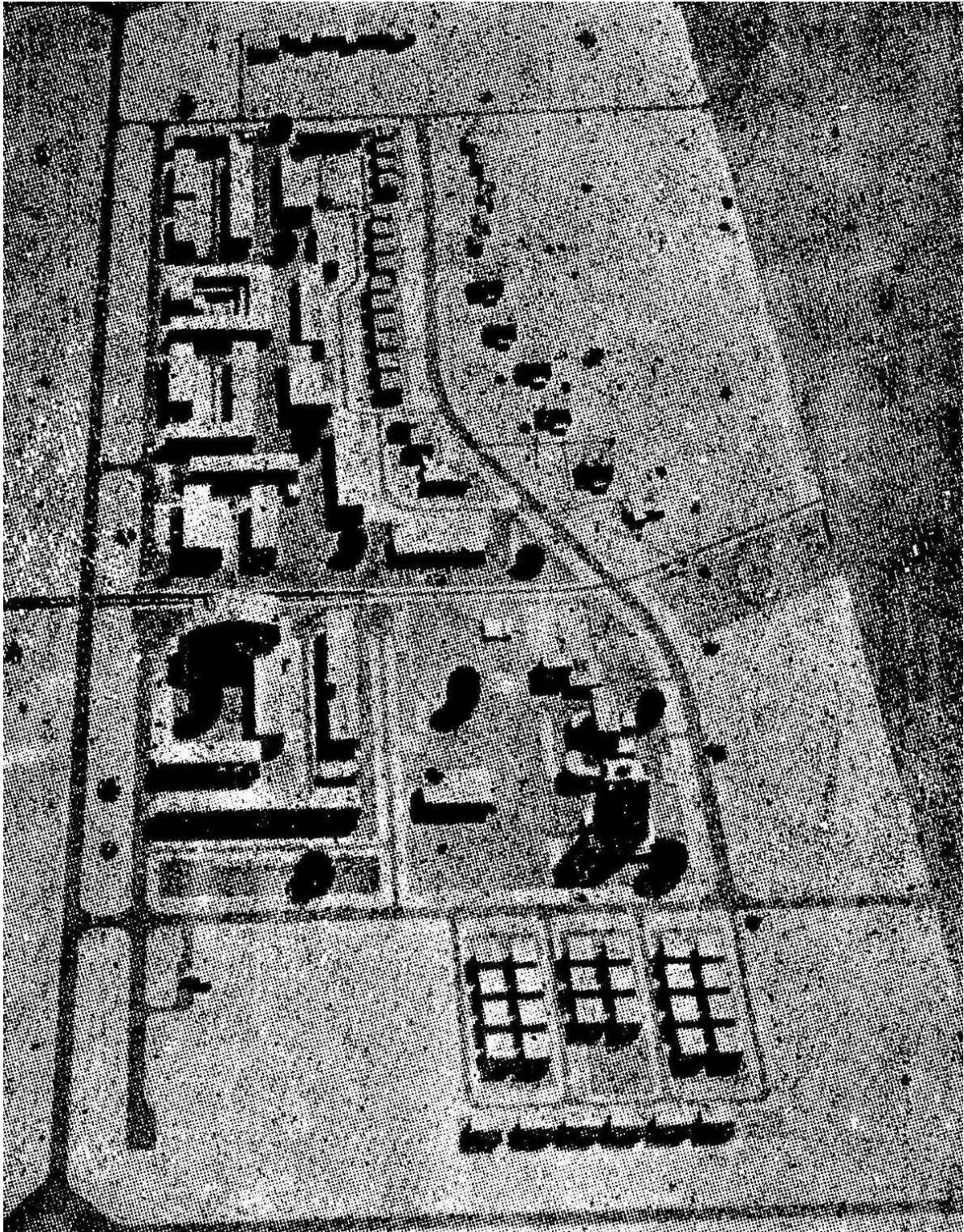
All the community facilities such as primary and secondary schools, shopping centres, community centres, parks and playgrounds, dispensary, police chowky, rangamanch, site for religious purpose etc. are provided along the cycle- pedestrian ways forming continuous green spaces in each sector. On the basis of the anticipated age structure of the population in the new city and based on the age structure as observed in Ahmedabad, it was proposed to provide one primary school for 3000-4000 population and a secondary school for 10,000-12,000 population. Average standard for open space is about 1.5 to 2 hectares (4 to 5 acres) per 1,000 population excluding school play areas and city level parks.



A community centre in the residential sector

An area of about 50 sq. mts. per 1,000 population is provided for retail shopping. A district centre is provided for a group of four or five residential communities. The population served by each district centre is about 40,000 to 50,000. It is to have shops of selective nature, restaurant, cinema, dispensary, police station, post office, banks, club and play field for organized games. There will be four such district centres in the town. These district centres may also serve the adjoining villages of Pethapur, Kolawada, etc.

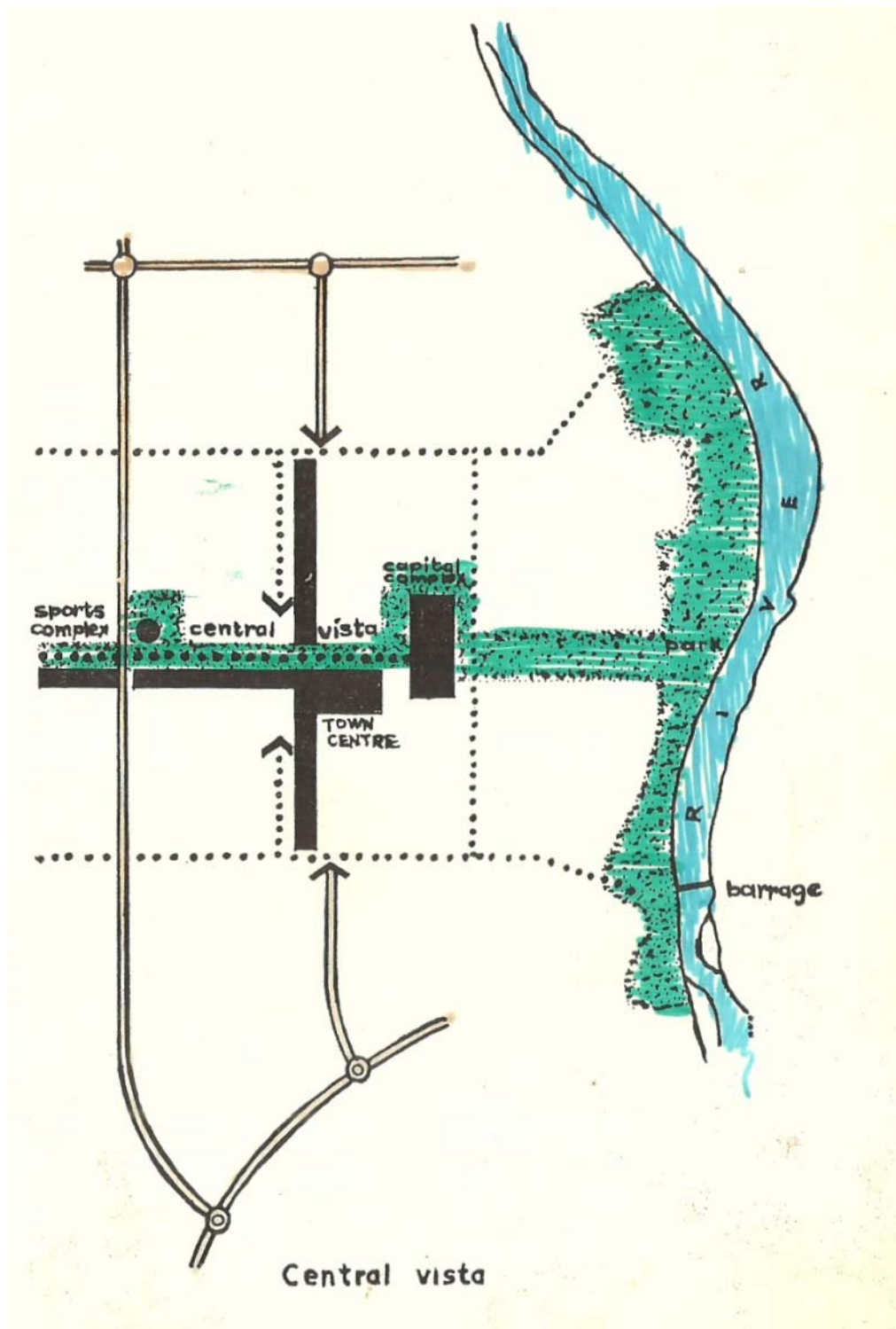
The District Centres provide for higher level shopping, mainly for consumer durables, workshops for equipment and vehicle repairs, quality readymade garments, restaurants, residential hotels and cinema sports grounds etc. These centres also provide for offices for commercial use as well as those for the government and local authority and utility services, banks, post offices etc. They may also provide for parking for commercial goods and passenger vehicles and small warehousing areas. Cold storages and small offices for professionals and coaching as well as training facilities can be provided there. Residential accommodation can be built above the commercial and shopping facilities.



District Centre in Sector 21 with higher level Community & Commercial facilities

Recreation Area

The central vista in front of the Sachivalaya Complex is proposed to be developed as an ornamental garden integrated with the riverside development.

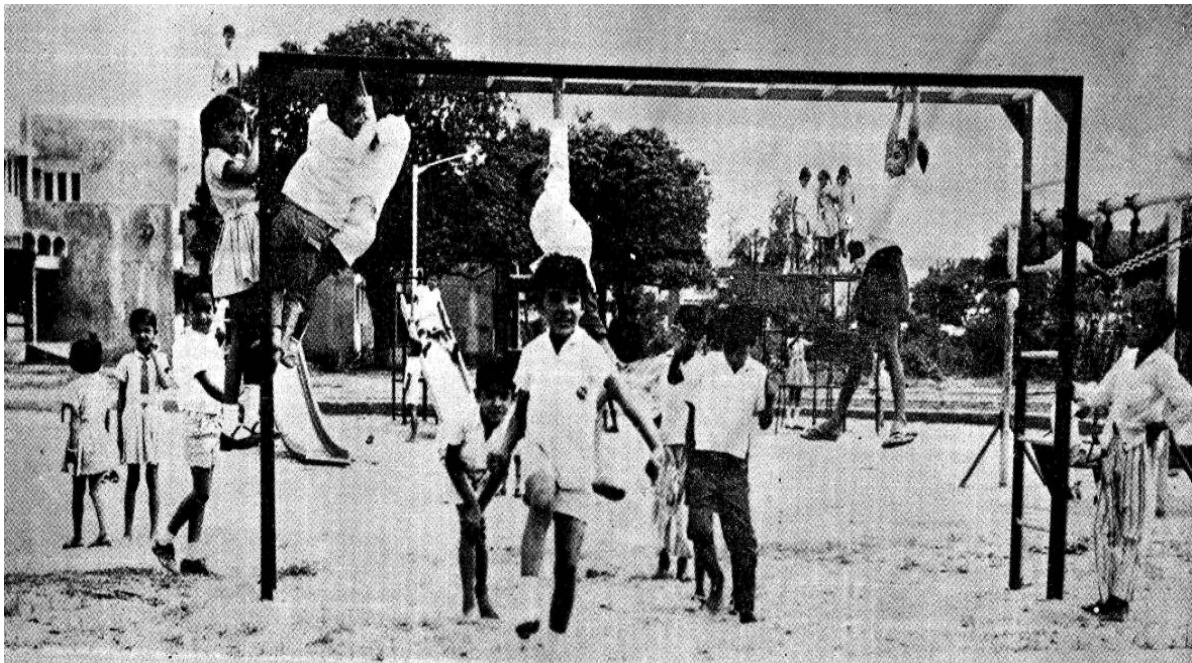


In addition, a large town park and recreational area is to be developed along the river front. A barrage constructed near the village Indroda will turn the river into a big elongated lake with the park fronting on it. This lake will have a permanent depth of 5 to 15 ft. of water and will be used for pleasure and recreation. It will provide opportunities for boating, swimming and fishing. With the formation of the lake, there is a great possibility of converting the ravines along the western bank of the river into beautiful water lagoons with parks and gardens around. This lake and the water lagoons will form an integral part of the river front town park proposed to be developed along the west bank of the river. The crescent road will bridge across small ravines making way for the arterial cycle ways to cross underneath. The riverside park will thus be within the reach of, and easily accessible to, the entire population of the city. The residential communities will have access to the town park by continuous green ways accommodating the cycle pedestrian way system. The park incorporates the lake, the existing landscape features including the Indroda fort etc., The principal features at the park will be:

(1) Large areas of open grass land and wooded areas for picnic, walking, adventure, play area for children, ball games, kite flying etc.

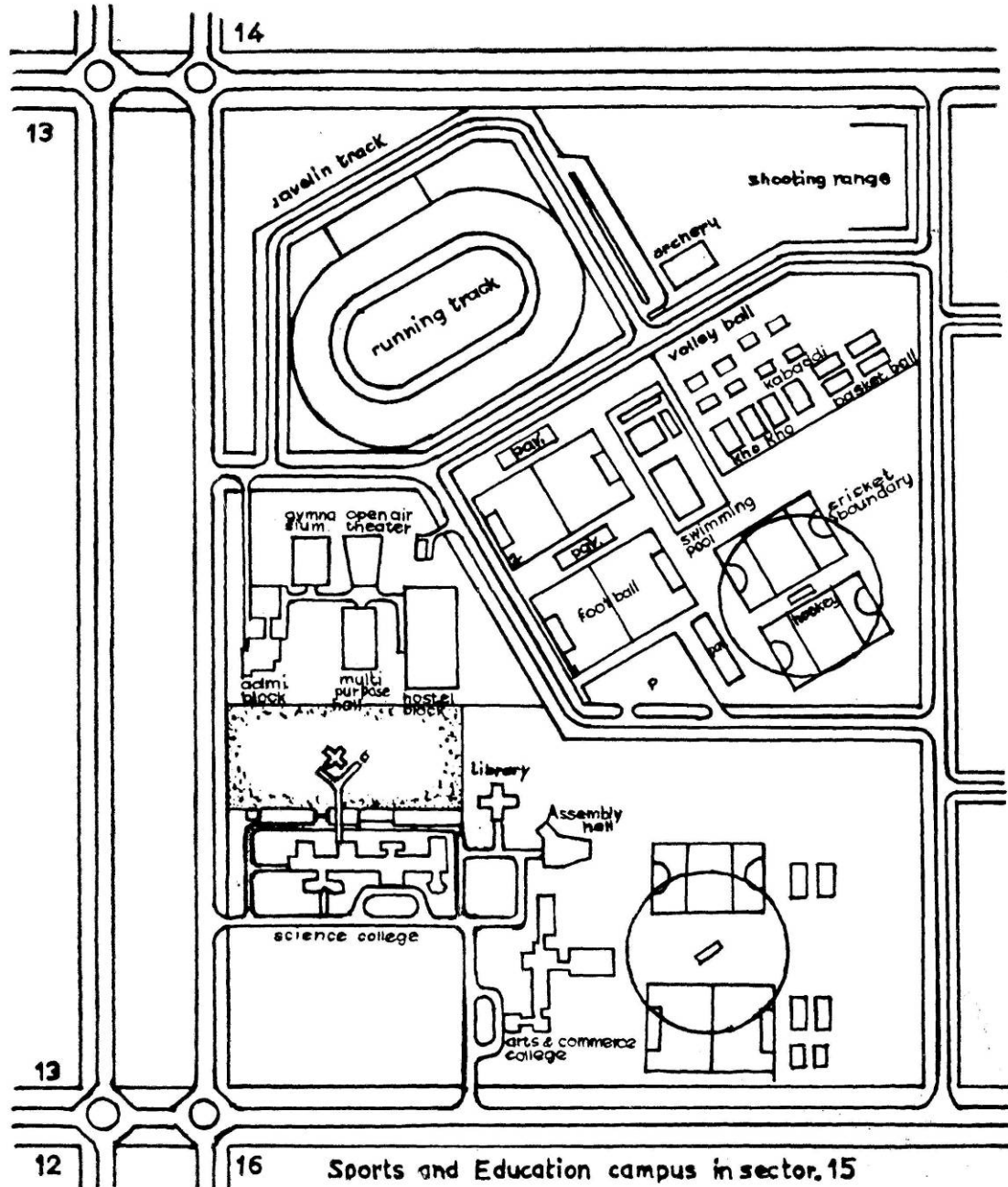
(2) Water lagoons with facilities like boating, bathing, bathing ghats, swimming areas, play sculptures etc.

The city will have a series of parks and play grounds in the residential communities where children from the adjoining areas can easily walk in. Larger play grounds for organized games are provided in each of the district centres.



Sports Centre

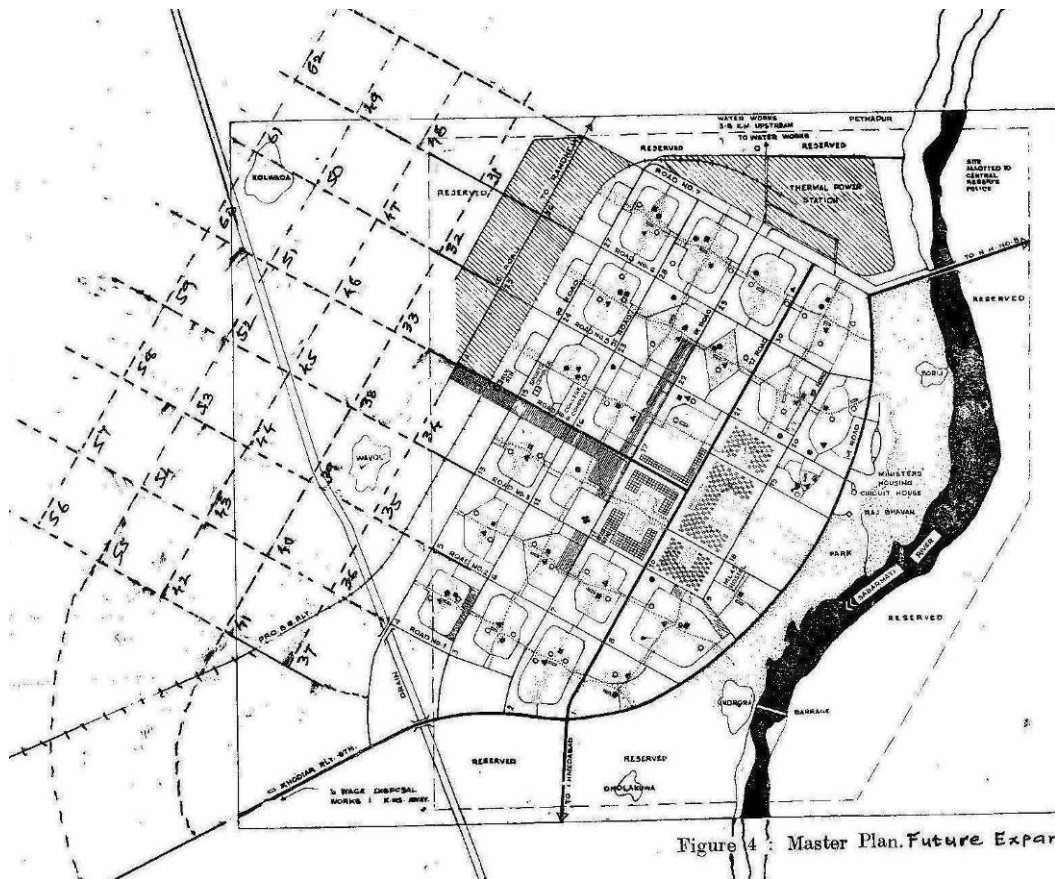
A regional sports centre has been planned on and along the spinal east west motor way of the new city close to the proposed railway station and occupying a central location in relation to the future expansion of the town. This will include, a stadium (to seat 50,000), athletic tracks, practice areas, tennis courts, cricket, hockey and football grounds, swimming pool, shooting and archery grounds, small area game courts and indoor physical recreation facilities.



Other Uses

The main hospital is located in sector No. 12. in the centre of the city so that it is easily accessible to all. The circuit house is located along the crescent road. The residences for the state ministers are planned in a cluster between the crescent road and the river. A large 'maidan' (open ground) is also provided in the centre of the city near the civic centre for annual fairs, religious functions, exhibitions etc It admeasures about 50 acres. A college campus consisting of Arts, Commerce and science colleges near the sports complex is planned in sector No. 15.

Future Expansion



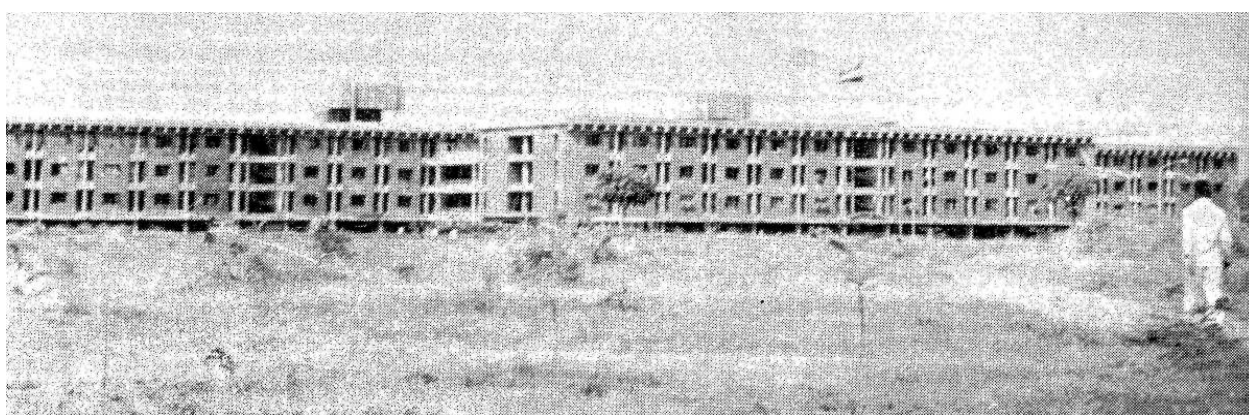
Physical future expansion was planned towards the north-west to maintain the axis of road no.4 focused on the capitol complex -the seat of governance. Population expansion to about 6 lac is possible by increasing the F.S.I.in the private housing areas and to about 7.5 lac by increasing the area as shown in the plan above.

9. PROGRESS FROM 1966 TO 1970

Offices and Other Public Buildings

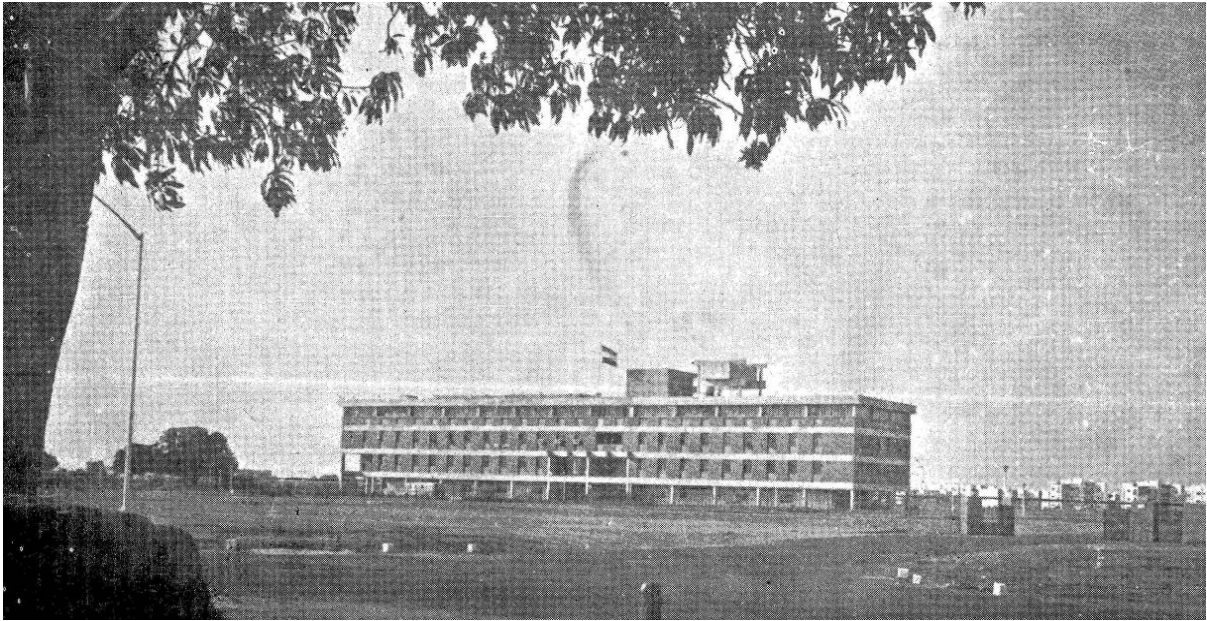
Sachivalaya

The Capitol Complex comprises of the buildings for the offices of the heads of departments, the legislative assembly building and the high court building. The design and layout for this complex were prepared and within a short time, the construction of these buildings was started. In the area designated for the other government offices to the north of the site for the capitol complex an office building was constructed at a cost of Rs.1.25 crores. Till the buildings of the capitol complex are constructed, the entire secretariat was accommodated in this building.



Pro-Tem' Sachivalaya building in 1970 when the State government shifted to Gandhinagar, The building was later converted to house government offices

The building has been so designed and oriented as to avoid direct sun throughout the day. Basically, the design consists of 9 interconnected blocks with ground and three upper floors. The connections provided at all levels are by way of completely covered passages so that all the departments can function with complete physical co-ordination. The central block provides the common facilities and amenities like the post office, bank, canteen etc. One of the blocks accommodates the offices of the ministers. The building blocks form internal court-yards which are spacious enough to accommodate a good landscaped garden and a pleasant environment. The entire building is raised on columns so that covered parking facilities for motorcars, scooters and cycles are provided at the ground level. One of the arterial cycle tracks of the city gives a direct access to this building by way of an underpass across the main roads so that all the people working there could come to work without crossing the major roads. A city bus terminus has also been provided in front of this building to cater to the needs of the employees as well as those visiting the sachivalaya from the surrounding region.

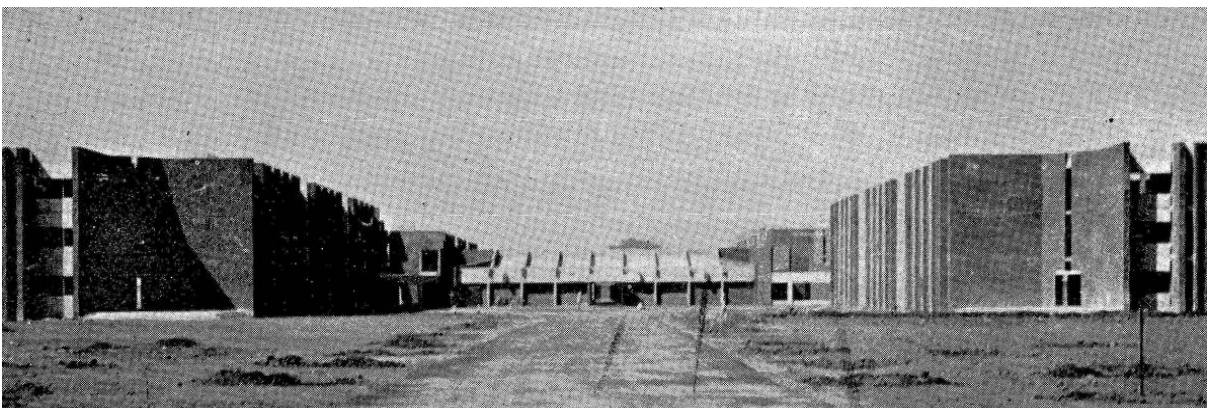


**‘Pro-Tem’ legislative assembly building when the state government shifted to Gandhinagar.
Later it is to house the town hall, museum and central library.**

Legislative Assembly Building

A building for the central library located on road No. 4 in sector No. 17 was constructed at a cost of Rs. 28.5 lacs. As an interim arrangement, the legislative assembly as well as the legislative assembly secretariat are accommodated in this building. This building, a framed structure would form part of a complex of cultural buildings like the town hall, museum and art gallery and the library along the central vista. It has been designed to cater to the needs for the library facilities at the town level for the entire population of the city.

Hostel for members of Legislative Assembly



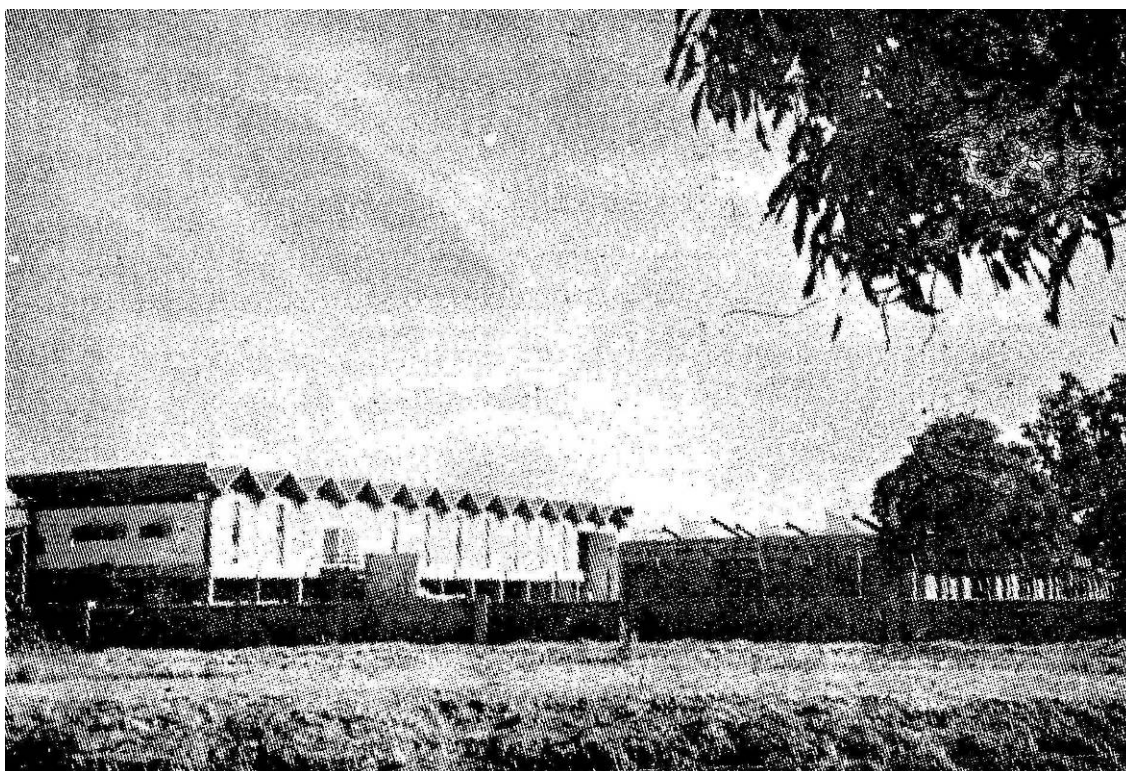
Hostel for the members of legislative assembly: 1970

A building for M.L.A.s hostel at a cost of Rs. 46 lac was constructed in sector No. 9. This is a beautiful building of R.C.C. framed structure designed to accommodate 168 M.L.A.s. It has been designed in the form of a group of clusters. Each cluster has residential units

which overlook a court-yard with lawns. Each residential unit has two rooms, a kitchen, verandah and a toilet. All the clusters are interconnected with each other with covered passages and also to the central cluster of common facilities. In the central cluster, a lounge, library, meeting room, recreation room, kitchen and dining hall circumscribing a central court yard with greenery have been provided. The entire building is in exposed concrete and exposed brick work which offers a beautiful appearance aesthetically.

In sector No. 12, the outpatient department, as a part of the general hospital building was already constructed at a cost of Rs. 9 lacs. An office building, with shops on the ground floor and office accommodation on the upper floors was also constructed at a cost of Rs. 13 lacs in the commercial area of sector No.16.

Government Printing Press



Government printing press: 1970

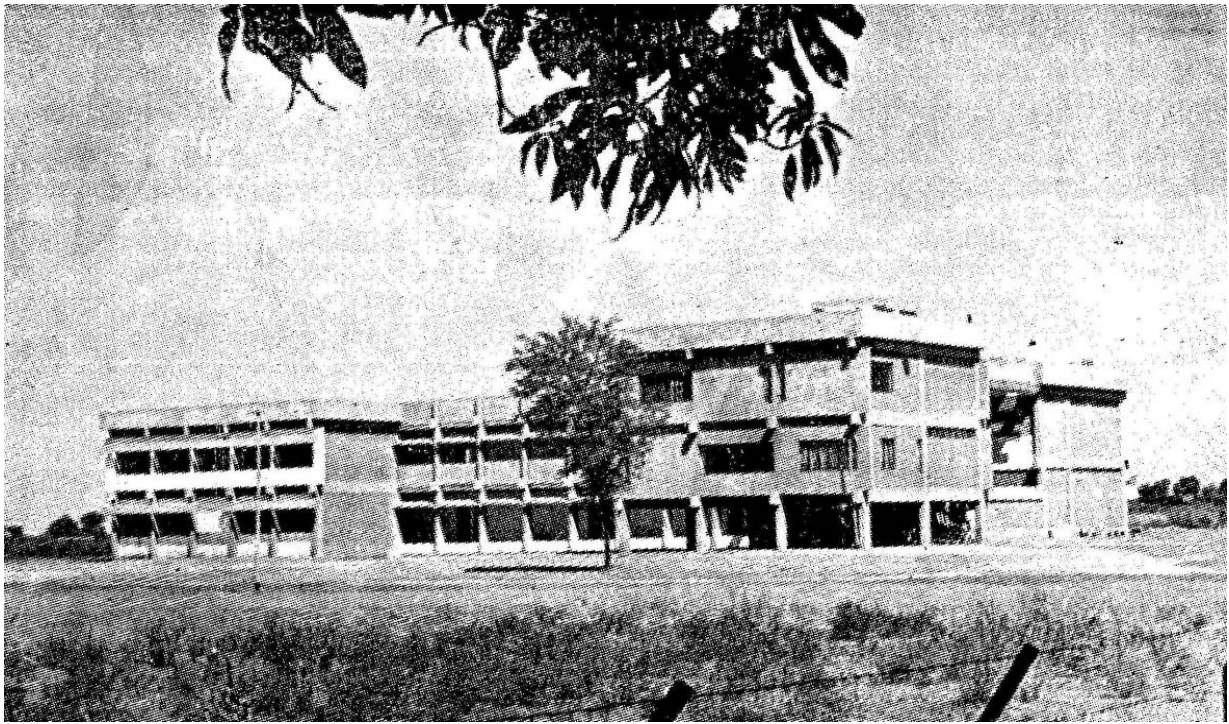
A building costing Rs. 19 lac for the government printing press was constructed in the industrial area. The building is situated along the main commercial road of the town (GH) passing through the industrial area. It covers an area of about 5 acres. The building is designed on the courtyard pattern accommodating composing, printing and other sections as well as the administrative block. Covered parking for cycles is provided below the canteen on the first floor. Skylights have been provided so as to have a uniform lighting during the day-time without glare in the composing and printing sections.

Pathikashram (Visitor's Hostel)



Pathikashram

Just adjoining the site for the main city bus terminus, a Pathikashram was constructed at a cost of Rs. 14 lacs in the city centre in sector No. 11 which provides accommodation for 200 beds in various categories of accommodation. It is to provide lodging and boarding facilities to the visitors to Gandhinagar. The building has been designed in a cluster fashion, so that about 8 to 10 rooms are grouped with common facilities like a lounge, dining room etc. on the ground floor. The building consists of ground and three upper floors. Part of the ground floor area is lifted on columns to provide parking for motor vehicles as well as cycles. The accommodation provided consists of single rooms, double rooms and dormitories with six beds each. The Pathikashram is expected to provide accommodation at reasonable rates to the people at large.

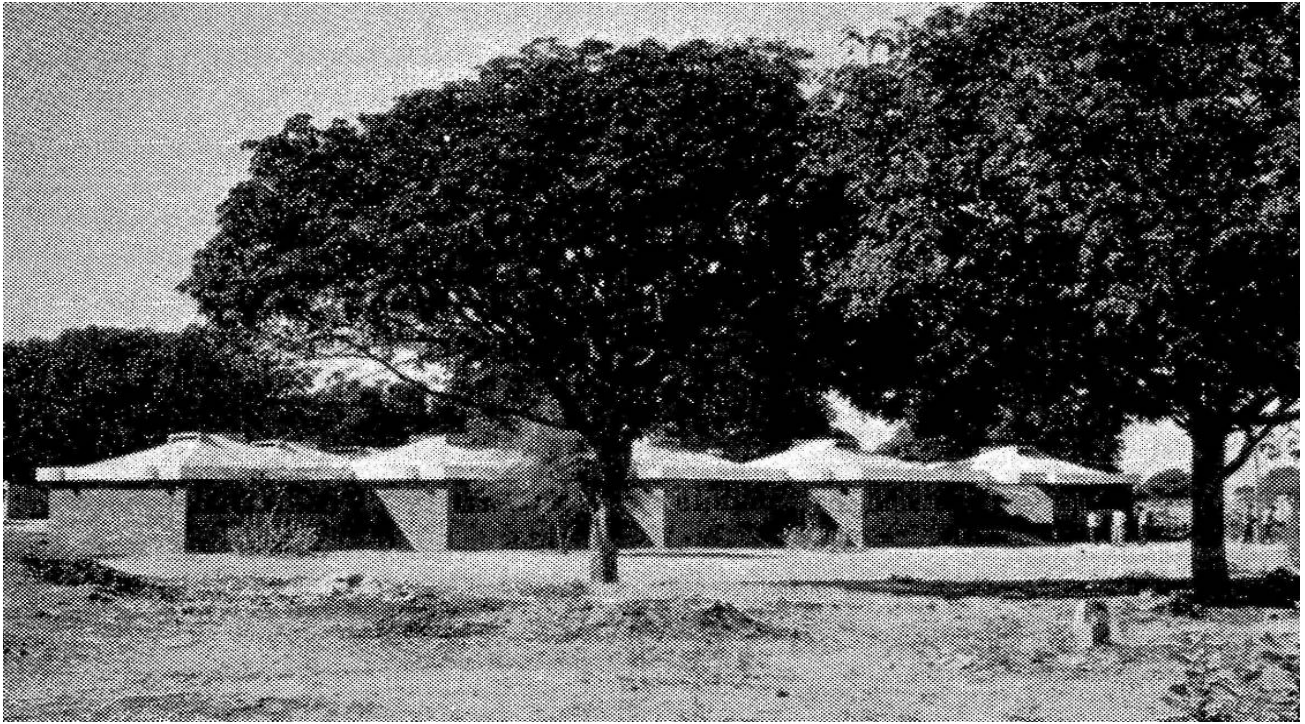


Arts, Science & Commerce College 1970

In sector 15, a building for the arts, science and commerce colleges was constructed at a cost of Rs. 25 lac. The arts, commerce and science Colleges were designed for 1,500 students providing class rooms and lecture theatres. The college buildings have been oriented in such a manner that the class rooms, lecture theatres and laboratories are uniformly lighted with natural light without glare. Special care has been taken in the science college to keep the service lines concealed. Among the other buildings yet to be constructed (in 1970) in the college complex are the library, auditorium and canteen, hostels, and staff quarters. These Colleges have already started functioning.

Schools

Construction of 13 primary schools in nine sectors was completed. Each design accommodates 10 to 13 class rooms for 40 pupils each. One of the designs developed, groups the class rooms around a central court-yard which can be used for open air functions etc. The class rooms, square in plan have a pyramidal roof which gives it a special character and also makes it possible to get indirect sunlight from the top. Three schools of this type were constructed each costing 1.6 lac and in one of such schools, it has been possible to locate and retain a very large mango tree in the centre of the court yard giving the school a serene and beautiful character. The other type of design developed has class rooms grouped in staggered rows with an arched roof. Ten schools of this type were constructed. In sector No. 16, 20 and 29, buildings for secondary schools each costing 5.27 lacs were also constructed. All the schools were functioning.



A Primary School: 1970. Note use of pyramidal roof

A rest house costing Rs. 3 lac for the government officers was constructed in the district centre in sector No.21.

Government Housing

In 1970, 11 sectors *viz.* sector Nos. 9, 16, 17, 19, 20, 21, 22, 23, 28, 29 and 30 were taken on hand for development. Construction of 6250 residential quarters for the various categories of government employees was completed and almost all of them were occupied.

20 bungalows for the ministers were also constructed and occupied. Tenders were invited for the construction of an additional 1,400 residential quarters remaining to be constructed in first stage construction programme.

In order to bring about variety, work of preparing alternative designs of the residential quarters was under progress. The type of residential accommodation provided for the various categories of quarters is presented in the table below.

categories of Government staff housing

Category		Pay scale	Area in Sq. metres
(a)	K		
(b)	KH	Above Rs. 1,900	195.100
(c)	G	Rs. 1,300 to 1,899	144.300
(d)	Gi	Rs. 850 to 1,299	144.300
(e)	GH	Rs. 600 to. 849	86.900
(f)	OH	Rs. 300 to 500	69.500

Special	256.50
Ministers	338.00



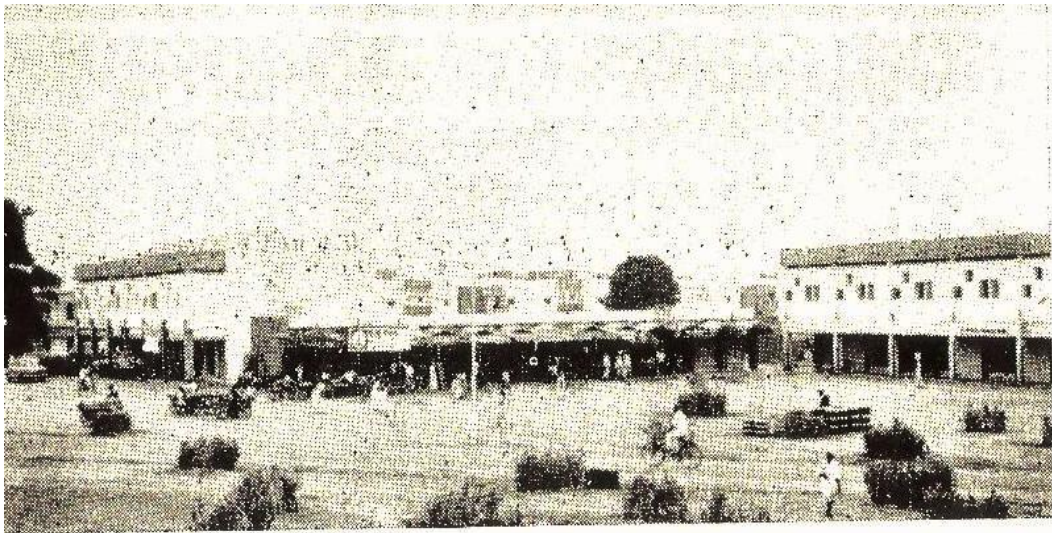
Chief Minister's House: 1971, designed by the Author



G-1 type housing for government officers

Shopping

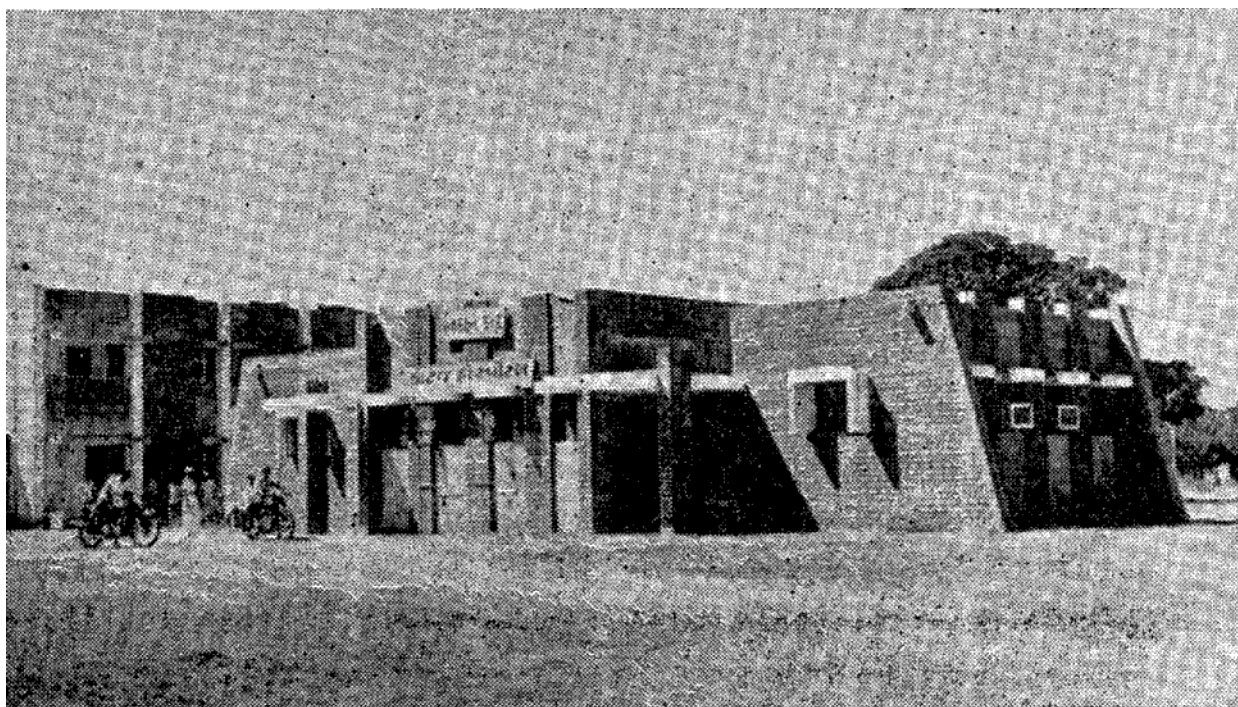
In the master plan, shopping facilities were provided in all the residential sectors, district centres and the main town centre. In the residential sectors, two or three categories of plots for shops were provided for sale to the public. However, in order to give an incentive to the shopping centre to start and for the convenience of the people residing in the sectors, the government constructed the smallest category of shops in each sector. Each of these shops measured 2.5 mt. in width and 5 mt. in depth. These were actually shopping booths in a block of 12 with a toilet at one end of the block. These booths house all the essential shops and services required for each sector until the bigger shopping plots are sold and built upon and a full shopping centre develops. In sector No. 21, even the higher category of shops were built by the government. These consisted of shops 5 mt. in width and 12.5 mt in depth. Residential accommodation is provided on the first floor.



Shopping centre (above) and shops (below) in District Centre in Sector 21: 1970

These were constructed in blocks of 5 each. The access to the residences on the upper floor is from the back where motor roads are provided. The shopping booths and the bigger shops are provided with a front verandah of 2.5 mt. width so that shoppers can move within the shopping centre under cover and shade.

Health Facilities

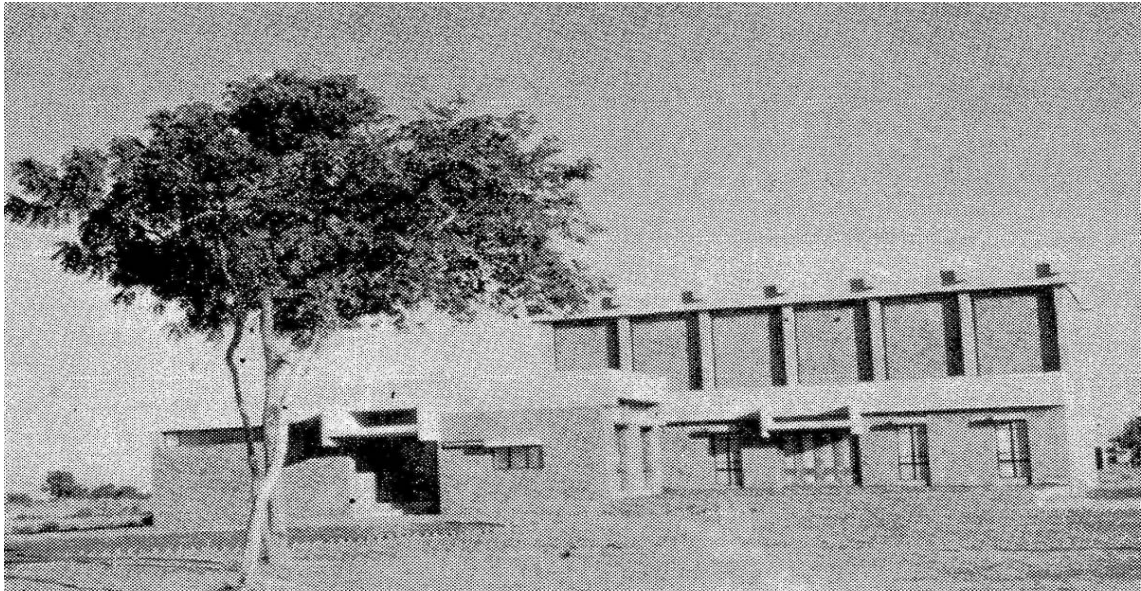


A Dispensary in Sector 21: 1970

A dispensary is proposed to be provided in each of the residential sector. The dispensary has mainly an outpatient department and also a female and male ward with two beds each for emergency cases. The dispensary provides the necessary medical aid to the residents of the particular sector. Five such dispensary buildings at a cost of about Rs. 45,000 each were already constructed in sector Nos. 16, 17, 21, 23 and 29. The dispensary facilities in sector No. 21 were augmented by converting some residential quarters nearby into a cottage hospital with wards so that it could function as a small hospital until the main hospital was constructed. The dispensary there provided specialized medical facilities including a maternity ward.

Recreation Facilities

To provide recreational facilities to the residents of the sectors, two community centres at a cost of Rs. 1.11 lac each were constructed, one in sector No. 21 and the other in sector No. 28. The design of the community centre provides facilities for active as well as passive recreation. It consists of an indoor badminton hall, which can also be used for film projection etc., a table tennis Room, card room, toilet and open terrace. Apart from the building, two tennis courts and two volley ball courts have also been provided within its compound. The community centres are located in the centre of the sectors.



A Community Centre with Badminton Hall: 1970

A P.W.D. store building was also constructed in each sector. Building for a, police outpost in sector Nos. 16, 18, 20, 22, 28 and 29 was also constructed.

Street Furniture

Street furniture, like the street lamp posts and the road signage was specially designed for Gandhinagar. There was great reluctance, particularly to redesign the street light poles. In the design of the poles the electrical boxes normally attached to the poles were hidden by providing a larger diameter base. The road signage was adopted from the New Delhi road sign pattern.



The Author with wife Suneela & son Shireesh at Gandhinagar under construction.1969

10. UTILITIES

Water Supply

The river Sabarmati flowing through Ahmedabad city also passes on the Eastern side on the outskirts of Gandhinagar city. River water is used as raw water supply through the purification plant.

The population was assumed to be 75,000 in the 1st phase. The ultimate population is assumed to be 1,50,000. The 1st phase plant was designed for a population of 75,000 with a rate of 60 gallons per capita per day so that the total capacity of plant is 4.5 m.g.d For public gardens, parks etc. water was proposed to be supplied by individual tube wells.

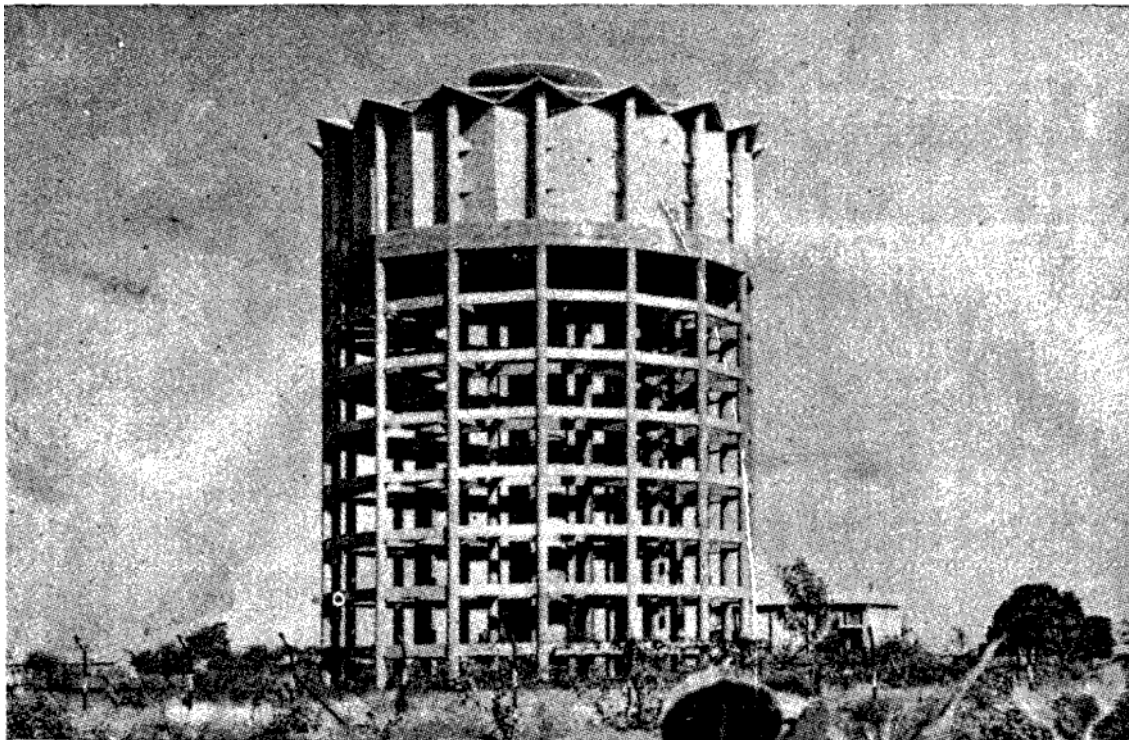
Main Components of the Water Supply Scheme

- (i) Intake well and Jack well with collecting pipes
- (ii) Filtration plant
- (iii) Clear water sump 2 lakhs gallons capacity
- (iv) 30 inch dia C. I. Rising main.
- (v) Underground reservoir in Charedi Store.
- (vi) High level Reservoir at Charedi Store.
- (vii) Water supply mains.
- (viii) Water supply distribution system.

The design of main components such as intake well, jack well, 30" dia C. I. rising main and high level reservoir etc. caters to both the phases, whereas the other units are designed to fulfill the demand of the 1st phase *ie.* a population of 75,000.

The water intake is from river Sabarmati at village Fatepura, through a 10 ft. dia intake well in the river bed. Four inlets of 30 inch dia H. S. pipe are kept in a staggered position at different levels to draw water. The raw water from the intake well then flows to an inspection well of 10 ft.dia about 115 ft. away from the intake well. The water then flows to a jack well from the inspection well by a 30" dia C. I. gravity main.

The Jack well is of 25 ft. dia and nearly 56 ft. in depth. The raw water is pumped from the jack well to the stilling chambers by means of deep well turbine pumps, installed in the pump house just above the jack well. The rate of pumping is 2 lacs gallons per hour and therefore 3 Nos. of pumping sets, each of 75 H.P. ,with a capacity of 1 lac gallons/hour each are installed.



Water Tower for gravity water supply to Gandhinagar; 1970

The filtration plant consists of following stages of water treatment

- (a) Application of alum solution for coagulation
- (b) Flocculation
- (c) Clari-flocculation
- (d) Filtration
- (e) Sterilization of water

In brief, the plant consists of stilling chamber, flash mixer, 100 ft.dia clari-floculator and 4 beds of rapid gravity filters with rate control and air scour. The alum and lime dosing equipments, chlorination unit and ammonia dosing tanks are also provided.

Transmission and distribution

Underground Reservoir

The transmission and distribution system of water for the town consists of the following units:

- Clear water sump
- Rising main
- Underground reservoir near Charedi store
- Elevated Service Reservoir
- Distribution mains
- Internal distribution system.

Clear Water sump

The clear, filtered and sterilized water from clean water channels is stored temporarily in a clear water sump, which is located just adjacent to the filtration plant. The centrifugal pumps each of capacity 45 H. P. (3 lac gallons/hour) are installed on the sump, to lift the water with a 51ft head. Out of 3 pumps, two pumps run at a time, one acts as a standby.

Rising main

The water from the sump is lifted by pumps and conveyed to the underground reservoir by 30" dia. and about 16000 ft. long C. I. pipe rising main.

Under Ground Reservoir

The water from the rising main is stored in a 8.25 lac gallons capacity reservoir. The U. G. R. is located at the northern boundary of the town. Three 200 H. P. (2 lac gallons capacity/hour) centrifugal pumps are installed to lift the water from U. G R. to E. S. R. with 120 feet head. The U. G. R. is designed for 1st phase only.

Elevated service Reservoir

A. R.C.C. circular elevated reservoir, with folded roofs and folded walls is constructed just south of the U. G. R. The bottom level of the E. S. R. is 60 feet above the ground level. The capacity of the E. S. R, is 6 lac gallons.

Distribution Mains

The town is divided into 30 sectors. The distribution mains are laid in such a manner that each sector has mains passing along two sides ie. on east and on west of the sectors, running from north to south. All distribution mains are joined by distribution sub-mains to have sub- mains on both the sides of the sectors i.e. on the north and south side of the sectors running in east-west direction. The whole net-work consists of several, rectangular blocks with different. C. I. lines of varying diameter. For supply of water in the sectors, tapping point is installed in the centre of each side of the sector ie. each sector has 4 tapping points.

Internal Distribution System

All the sectors are provided with an internal water supply distribution net-work. It is designed in such a way that a minimum head of 45 ft. is always available at all terminal ends of each sector. The maximum and minimum sizes of the pipe lines in this sectoral distribution system are 9" to 3" respectively. House water supply connections are provided by ferrule connections from the nearby pipe line.

Drainage

Like the water supply scheme, in the first phase of the construction of the city, underground drainage is provided to serve the population of 75,000. The hydraulic design etc. is planned for the whole city, but in the 1st phase, laying of the intercepting and lateral sewers are limited to serve the first phase population. Some salient features of sewer lines and the treatment plant near Jaspur Village are described below:

- (i) The rate of water supply by capita/day-60 gallons
- (ii) The quantity of daily sewage flow per capita per day-60 gallons.
- (iii) Sewer is designed for separate system only.
- (iv) The design velocity minimum 2 ft/Sec. and max. 8 ft/Sec
- (v) Population assumed at 7-1/2 persons for private plots and 5 persons for each government quarter.
- (vi) The size of sewer is not less than 6 inch dia. R. C. C. up 2 class pipe.
- (vii) The flattest gradient allowed for 6 inch. dia. sewer is 1 in 100 without flushing.
- (viii) All the pipes for Sewer are R. C. C. Spun pipes.
- (ix) The 6 and 9 inch dia. Sewers are designed to run approx. half full or less at twice the average rate of dry weather flow, coinciding with $c = 90$ in Hazen and William formulae.
- (x) The Sewer of 12" dia. and above to run approx. 2/3 full or less at twice the average dry weather flow, considering the $c = 90$ to 100 in Hazen and William formulae

Drainage collection system

The city is divided into 30 Sectors.

A net work of Sewer lines is laid in each sector for the purpose of drainage disposal. The trunk main lines are laid on GH and CHH road from north to south. One more main line was to be laid on KH road.

These three main sewers will serve the city. The sectoral drainage lines meet the main sewers at various places. The size of the Sewers vary from 6" dia. to 60" dia. R. C. C. Np.2 class pipes are used.

All the three sewage mains then meet at a drainage pumping station situated at Gandhinagar end. From this pumping station, the sewage is further taken to the second sewage pumping station situated near the sewage treatment site through a 48" of R. C C. Np2 class pipe outfall sewer of a length of about 12 km. The sewage is then lifted to the treatment plant.

Sewage Plant

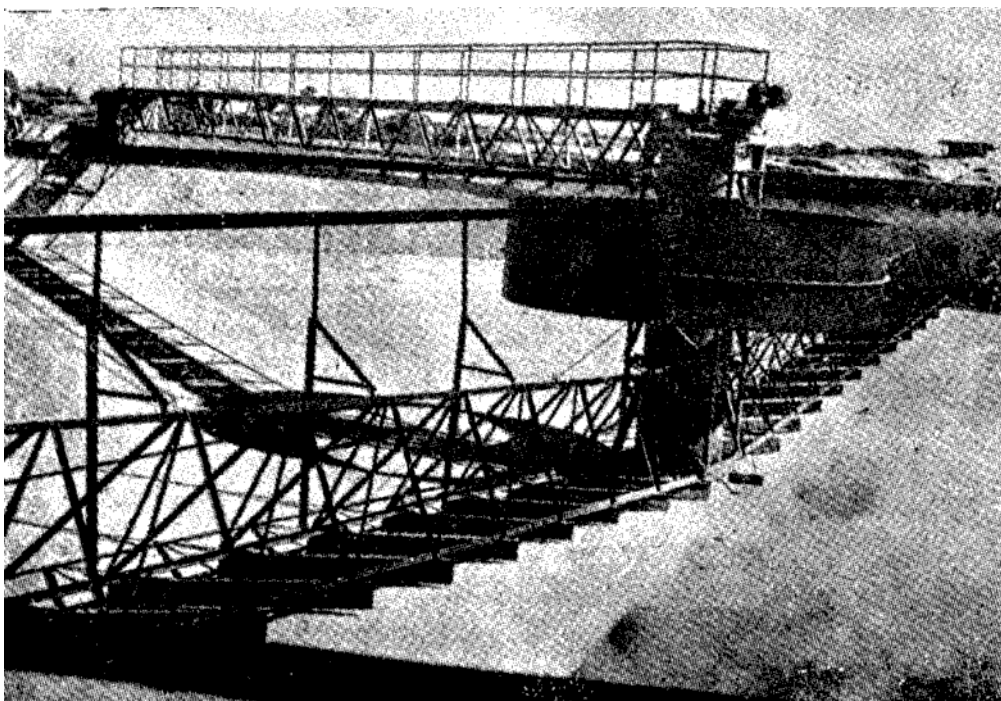
A complete conventional sewage treatment plant of 4.5 mgd capacity is constructed in the village limit of Jaspur- Khodiar on Government land of about 79.0 acres near Khodiar Railway station on the Ahmedabad Kalol railway line. The plant is constructed by the public health engineering wing of Hindustan Construction Co. Ltd. in collaboration with Ms Door-Oliver (India) Ltd.

The plant is known as a two stage plant. The technical description is given below

The plant is designed on the following data:

- (i) Daily raw sewage flow 4.5 mgd.
- (ii) Peak rate of raw sewage four times average.
- (iii) The 1st phase population 75,000,
- (iv) B. O. D. in raw sewage 0.12 lbs capacity/day i.e. 200 ppm.
- (v) Suspended solids in raw sewage 300 ppm
- (vi) Top water level at entry of the plant R.L. 211.75.
- (vii) Final effluent level R.L. 196.00 .

The plant is designed to produce a final effluent with suspended solids of about 30 ppm and B. O. D. of 20 ppm. from raw sewage of the quality stated above.



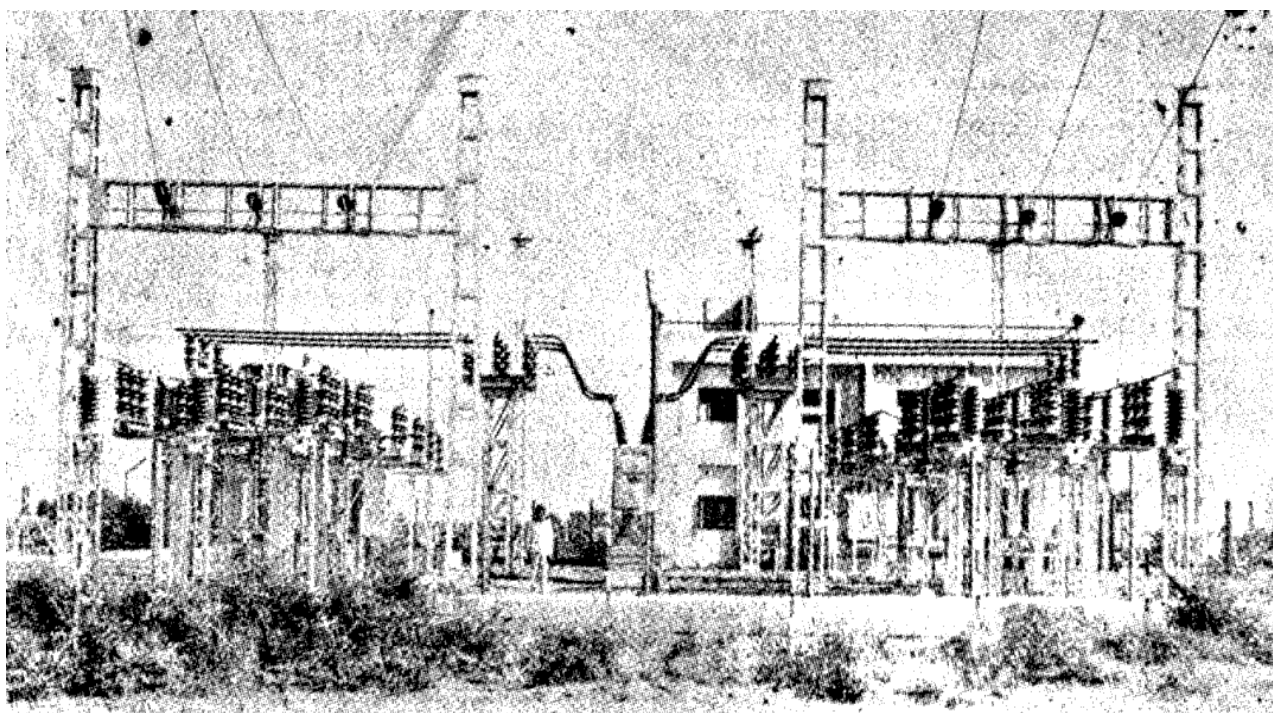
Sewage Treatment Plant

The various steps consist of screening, de-gritting, primary clarifications, followed by the oxidation into bio-filters in serial parallel flow sheets arrangements with subsequent sedimentations in a final clarifier and digestion of the sludge produced in closed digestion tank followed by its drying in open beds.

Electricity

Initially the electrification work for Gandhinagar was entrusted to the Gujarat Electricity Board. Accordingly, the work of 11 K.V. Power supply line from Kalol-Pethapur headwork costing Rs. 3,52,000 was carried out as approved by Government. But later on; the proposal was reconsidered and the work was entrusted to the Ahmedabad Electricity Co. The A.E. Co. had a license to supply electrical power in Ahmedabad area since a number of years. The State Government therefore decided to extend the license area of the A. E. Co. up to Gandhinagar. With the consent of the Gujarat Electricity Board in 1968, the licensing area was further extended to include Gandhinagar city. There was therefore no cost to the Government for laying transmission line, Transformers etc. up to the consumers connection points.

The street lights within the township are provided government cost. The likely cost was estimated at Rs. 118 lacs for the area already marked for development till 1970. The Electricity supply line to the city was laid with underground cables. The main power receiving station was constructed by the Ahmedabad Electricity Co., and construction of sub-stations in Sectors under development and in the minister's housing was completed. The street lights on all main roads were provided with mercury vapour lamps, while the internal sector roads and street roads are provided with ordinary incandescent lamps.



66 KV main electric receiving station :1970

11. PARKS & GARDENS

Forestation Schemes of Kótars (ravines) of Sabarmati River

Activities of Parks and Garden were on two fronts:

(1) Arboriculture

(2) Layout of Parks and Gardens.

Till 1970 about 49,000 trees were planted within Gandhinagar city and also on the approach roads connecting Gandhinagar with other parts of the State. About 60 acres of Gardens were laid out. Besides Parks and Gardens, a 10 acres nursery was also established and maintained.

Keeping in mind, the population in 1970, a small garden was laid out in each of the sectors marked for development. In sector No. 28, where there is a very big existing Mango grove, a large garden measuring about 10 acres was laid out. Children's play equipments is provided, in each of these gardens. A large play field is also laid out in the district centre of sector No. 21. In the sports complex in sector No. 15 near the college area, athletics tracks for the athletic events and the play fields for cricket, foot ball, hockey, archery, shooting and other games have been laid out. Sports events at the Inter-State level and the Inter-District level have been held on these play fields.

In order to stop erosion of land along the river, the forest department reclaimed about 1,400 acres of Kotar (ravine) lands on both banks of Sabarmati River. About 1,41,155 seedlings of trees were planted. The department also maintains nurseries at Indroda, Palej and Borlj.



Landscaping in the central green area on Road no 4 to Capitol Complex

12. PROGRESS TILL 1972

Roads

Construction was completed on the Surkhej -Khodiar-Gandhinagar expressway, Ahmedabad-Koba-Gandhinagar expressway, the expressway linking Gandhinagar with the N. H. No. 8 across the river Sabarmati and the Gandhinagar-Mansa expressway. The bridge across the expressway linking Gandhinagar with the N .H. No. 8 was under construction. The express way linking Gandhinagar with the Ahmedabad Airport was also under construction. The bridge across the river Sabarmati along this road is yet to be constructed.

The first stage construction work of all the main town roads of the city was completed. It has already been proposed to widen these roads by additional traffic lanes in the second stage. The roads as well as the cycle-pedestrian ways in the residential sectors which have been marked for development are also constructed. Nine underpasses have been sanctioned to be constructed at points where these cycle pedestrian ways cross the main town roads. Out of these, five have already been constructed. Tree planting has already been done on all the main town roads as well as the distributor roads of the sectors.

Development Works

Against the estimated cost of Rs.2,954 lacs for the first phase programme, actual expenditure incurred till March 1972 was about 2,424 lacs. The main works already executed and completed in Gandhinagar till 1972 were as listed below.

- (i) Acquisition of private lands measuring 10,550 acres.
- (ii) Residential Buildings, quarters of various categories, chief minister bungalow and minister's and deputy minister's bungalows down to Class IV quarters 5898 units were completed, 344 units were in progress.
- (iii) Water Supply and Water Works for the first phase population
- (iv) Non-residential buildings, Interim sachivalaya, Interim assembly, primary and secondary schools, dispensaries, rest house, club building, government press building etc.
- (v) All internal roads including asphaltting, development of gardens within sectors, head works, rising main, 144 supply mains, internal supply distribution system of sectors.
- (vi) Drainage: Internal drainage system pumping station. Outfall sewer and sewage treatment plant.
- (vii) Electrification: Street lighting and 11 KV L. H. T. lines.

Plots were laid out for residential as well as for commercial use for sale to the general public in the sectors which were marked for development. The smallest residential plot is of 135 sq. mts. and the biggest one is of 1600 sq. mts. In sector No. 29, some plots for residential purpose were sold by public auction while in sector No. 23 and 19 some plots, according to the policy of the Government were allotted to the government employees and to the co-operative housing societies.

In the district centre in sector No. 21, commercial plots for shops, offices and banks as well as the plot for a permanent cinema building were sold. Till the permanent cinema building is

constructed by the purchaser of the plot, a plot of land was also been leased to him for the erection of a temporary cinema house. A temporary cinema house was constructed and was functioning. in sector No. 16 .

Some commercial plots were sold, while the Bank of India, the Dena Bank and Ahmedabad Electricity Company had applied for purchase of commercial plots in sector 21. In the town centre, in sector No.11 plots were sold to the P.&T. department for the construction of a telephone exchange building and a building for the microwave station. The microwave station has already been constructed.

A Plot was sold to the L. I. C. of India for construction of their office building. In sector No. 17, on CH road. A plot was sold to the Panchayat Parishad where, it had already constructed a building of the Panchayat Bhavan. Sites for Secondary Schools have been sold to the St. Xavier's School in sector No. 8, and to the Mount Carmel School in sector No.1 and to Surya Vidyalaya Education Society, Kadi, in sector No. 23. About 370 acres of land was allotted to the Gujarat Electricity Board for the installation of the north Gujarat thermal power station in the industrial area. The construction of a thermal power station was already started. This thermal power Station is designed to have an automatic combustion feature to ensure complete fuel combustion, mechanical separator, electrostatic precipitators and very tall chimneys to minimize atmospheric pollution. Plots of land have also been sold for religious purposes. In sector No. 22 a temple has been constructed while in sector No. 29 a mosque has been constructed.

Future Expansion

The present development plan provides for a population of about 160 to 175 thousand. Apart from the new city itself, there are a few bigger villages like Kolwada, Pethapur and Wavol just around the capital site which together have a population of about 25000. In future, this population is very likely to avail of, and depend on, economic and social services provided in the new city. However, if need be, there is scope for the physical expansion of the city towards the North-West. It is also possible to increase the FSI and fill up open areas in sectors with vertical development . This can increase the population of Gandhinagar up to 7,50,000.

Gandhinagar District

Four small settlements having a total population of about 3,200 fall within the area of the New Capital Site. The Government constituted, by special notification, a district of Gandhinagar having an area of about 58000 hectares (225 sq. miles) forming roughly an eight kilometer (five miles) zone around the site of the new city. The District of Gandhinagar comprises 79 villages with a total population of about 200581 as per the 1961 census. All development in the district is controlled and regulated by the New Capital Periphery Control Act, enacted in September 1960 by the State Legislature. This act has been subsequently repealed to allow urban development in the district and benefit the private developers who had bought extensive lands at very low prices. This is another bonanza offered by the Consultants of GUDA to benefit many land speculators.

આવતા પાંચ વર્ષમાં અદ્યતન શહેર તરીકે આકાર લેનારે ગાંધીનગર

અમદાવાદ, રવિવાર

(કાર્યાલયના પ્રવાસી પ્રતિનિધિ તરફથી)

દનિયાબરમાં એક નવા શહેર તરીકે અને ભારતમાં ચંદીબદ્ધ અને ભુવનેશ્વર ખાતે સ્વયંની સ્વયંનીઓમાં હવે ગુજ-
રાતના પાટનગર ગાંધીનગરનો નંબર ત્રીજો આવે છે. અમદાવાદથી લગભગ ૨૪ કીલોમીટર દૂર સાબરમતી નદીના કાંઠે ૧૩૫૦૦
એકર જમીનમાં આકાર લઈ રહેલ ગાંધીનગરની અમદાવાદના પત્રકારોએ આજે મુલાકાત લીધી હતી.

આંખો, રાશી, આમલી અને બીજા ઝાડોથી ઘેરાયેલ આ વિસ્તારમાંના એ ૫૦૦૦ જટલા વૃક્ષોમાંથી એક પણ વૃક્ષનો
નાશ કર્યા વિના પાટનગરની બાંધણીનું કામ આપણા યુવાન ઉત્સાહી ઈજનેરોની એક ટુકડીએ મુશ્કેલી ધોરણે શરૂ કર્યું છે. જે કોઈ
બીજી મુશ્કેલી નહિ આવે તો સને ૧૯૭૧માં નવું પાટનગર ગાંધીનગર કામ કરતું થઈ જશે.

નવા પાટનગરના બાંધકામ કાર્યમાં સર્વશ્રી એચ. કે. મેવાડા ચીફ ટાઉન પ્લાનર એન્ડ આર્ચિટેક્ટ એમ. ડી પટેલ મુખ્ય ઈજ-
નેર પાટનગર વિભાગ, આઈ. કે. મોદી સુપ્રી. એન્જનીયર, પી. એમ. આપ્ટે સર્વેયર-ટાઉન પ્લાનર, બી. એ કડીયા સીનીયર આર્ચી-
ટેક્ટ અને શ્રી. એમ. જી. શાહ ડાયરેક્ટર પાર્કસ એન્ડ ગાર્ડન તરફથી જે તનતોડ મહેનત અને કાળજી લેવાઈ રહી છે તે પ્રસંશનીય છે.

ગુજરાતની નવી રાજધાની : ઉભારણીએ કામ વેગાત સુરુ

અમદાવાદ, વિ. ૨૮ (ટા. વ.)—ગાંધીનગર યા ગુજરાતની નવી રાજ-
ધાનીની ઉભારણીએ કામ ૨ ઓક્ટોબરની આત પૂર્ણ કરણાની પરાકાષ્ઠા તેથી
૫૦૦૦ હન અધિક કામગાર કરીત આહેત. ૨ ઓક્ટોબરપાસુન સંત્રી તેથે સ્થલાન્તર
કરણાની વિચાર કરીત આહેત.

બાંધણાત યાવયાને અમુત ત્યાતલે
૨૬૦૦ પૂર્ણ જાલે આહેત. ૨૦ લક્ષ રૂ.
જાવયાને સરકારી મુદ્રણાલય યેત્યા સહા
મહિયાંત પૂર્ણ હોઈલ.

‘મથિકનિવાસ’ નાવાને ૨૦૦ લોકાની
સોય અસનારે તીનમજલી હાઉસ વર્ષ-
મરાત તયાર હોઈલ.

સરકારી કર્મચાયાંસાઠી સરકાર
બાંધીત અસલેલ્યા ગાઠયાંવ્યતિરિક્ત
ગુજરાત મૂહનિર્માણ મંડલ કમી વ મધ્યમ
ઉત્પન્ન ગંટાંતીલ લોકાંસાઠી ઘરે બાંધીલ.

લાસ સાયકલ-રસ્તે

પાણીપુરવઠા વ રસ્તે યાંચ્યા સોયીહિ
જાપાદચાન હોત આહેત. જ્યેઠ નગર-
રચનાકાર શ્રી. પી. એમ. આપ્ટે યાંની
નવી રાજધાનીતીલ રસ્તાંને વૈશિષ્ટ્ય
સાંગિતલે, તે અસે કી, સાયકલીંસાઠી
મોઠ્યા રસ્ત્યાખાલન લાસ માર્ગ કાઢ-
ણાત આલે આહેત. ત્યામુલે પાદચારી
વ મોઠી વાહને યાપાસુન સાયકલસ્વાર
વેગલે રાહતીલ.

13. GANDHINAGAR TODAY

The city has developed in four distinct phases:

- Phase 1: After the city's infrastructure was completed in 1970, and until 1980,
- Phase 2: Between 1980 and 1990, a time of slow development
- Phase 3: After 1990, the city developed faster and became known as the 'Green City.'
- Phase 4: In 2002, the state government aimed at a new, triple focus for the city: it should be green, it should utilize solar energy, and it should be cosmopolitan.

Population

Gandhinagar had a population of 195,891(2011 census) Males constitute 53% of the population and females 47%. Gandhinagar has an average literacy rate of 87.11%,: male literacy is 82%, and female literacy is 73%. In Gandhinagar, 11% of the population is under 6 years of age.

Economy

The Infocity: Information Technology (IT) park project is developed based on a 24/7 work culture, IT plots, residential units, club-house and lifestyle facilities, educational facilities. are developed on 116 acres. Infocity provides 4-m. sq ft of IT built up space and supporting infrastructure and services.

Gujarat International Finance-Tech City (GIFT)

The government of Gujarat formulated GIFT as a mega project. Land has been allotted for the development of a Central Finance and Business District (CFBD). GIFT is conceptualized as a global financial and IT services hub. The project itself will have a green area covering 65% of the total land.

Transportation

Gujarat State Road Transport Corporation (GSRTC) buses provide transport in and outside the state. Gandhinagar is connected to Surat, Mumbai & Navi Mumbai by National Highway no 8 A. It is connected to Ahmedabad by N.H.8 C.

Metrolink express for Gandhinagar-Ahmedabad

The government of Gujarat decided to start a Metrolink Express From Gandhinagar to Ahmedabad; the contract was awarded to the Delhi Metrorail Corporation which carried out a pre-feasibility survey in 2004-05. In 2003, when the project was conceived, its cost was estimated at Rs 4,500 crore.

The following 4 corridors have been suggested by Delhi Metro

- Corridor 1: North-South Line (Gandhinagar-Nabhoi-ONGC-Sabarmati-Ranip-Ashram Road-Paldi-Vishala; 34 km)
- Corridor 2: East-West Line (Thaltej-Gurukul-University-CG Road-Gandhi Bridge-Delhi Chakla-Dariyapur-Kalupur; 10 km)
- Corridor 3: SG Highway Line (Changodar-Sarkhej-Thaltej-Sola-Adalaj-Gandhinagar; 40 km)
- Corridor 4: Ring Road Line (Sarkhej-Vishala-Shivranjani-AEC-Akhbar nagar-Wadaj-Ranip-RTO-Subhas Bridge, 16.5 km)

Railway and air services

Capital Railway Station is Recently Developed by Capital Project Division & Gandhinagar Road & Building Department. The Indian Railways connects Gandhinagar to northern India & eastern India from Kalol Railway Station. Sardar Patel International airport provides domestic and international flights.

City bus service

Gandhinagar started its own city bus service in August 2009. Gandhinagar BRTS is a highly ambitious rapid transport system developed by Gujarat Infrastructure Development Board (GIDB), recognizing that no single mode would cater to the mobility needs of the city and that 'Bus' forms the most critical segment of the public transport system in the city. A part of the first corridor was opened to the public on October 14, 2009. Phase 1 will include 50 buses and 30 stations. Phase 2 will bring the total number of buses to 280 and the total number of stations to 170.

Education

There are all streams colleges & institutes available in the city.



A college in present day Gandhinagar



Gujarat State Assembly Building: Focus of State Capitol Complex at the apex of road no.4



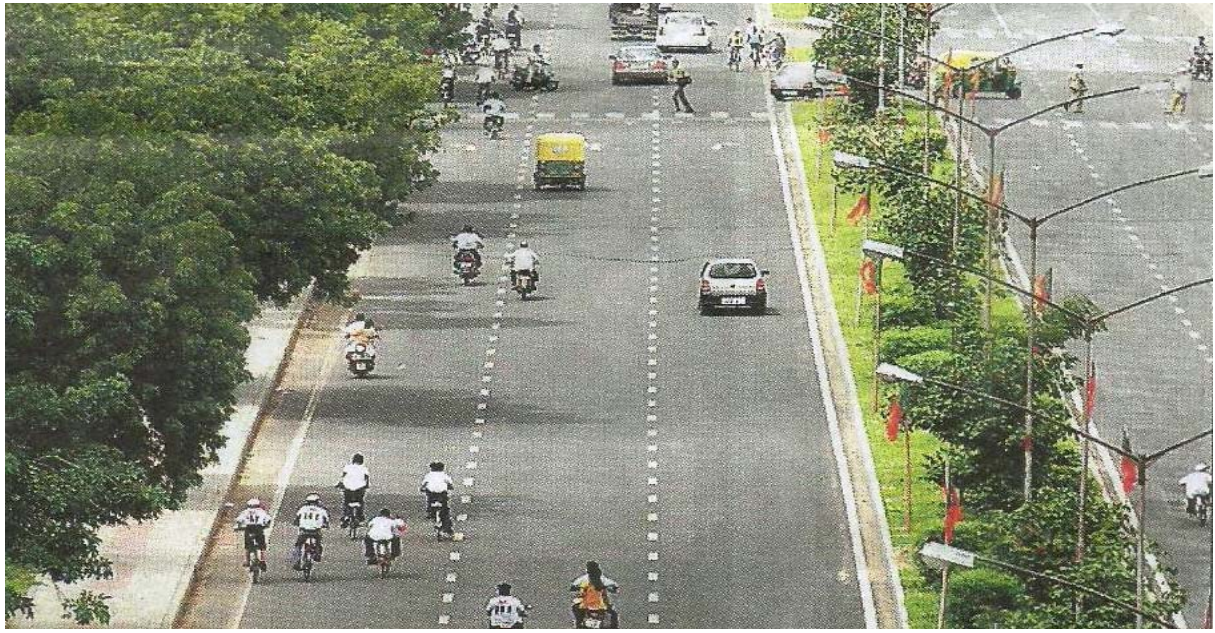
Assembly building flanked by Sachivalaya buildings



Udyog Bhavan housing offices of state industrial enterprises



City Civil Hospital



Gandhinagar Roads

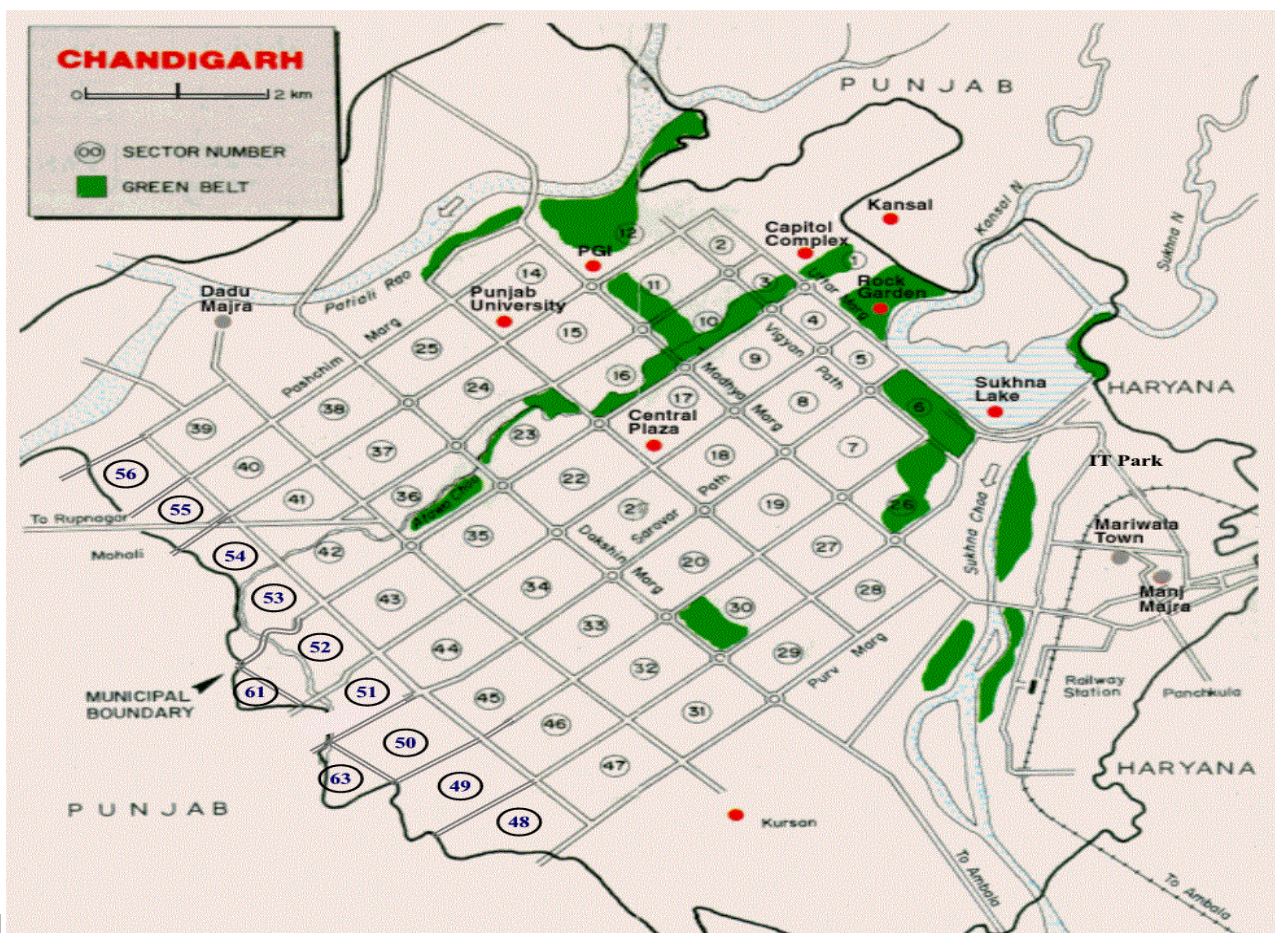


A view of Thermal power station in industrial area North of Gandhinagar

14. A TALE OF TWO CAPITALS: CHANDIGARH AND GANDHINAGAR

There is a fallacy among the common people and even among the planners to term the Gandhinagar plan as a copy of the Chandigarh plan. In fact, apart from the similarity of the rectangular residential sector, the two are quite different. At this point It is necessary therefore to bring out the basic differences in the planning of Gandhinagar & Chandigarh.

When India gained independence in 1947, the division of the subcontinent severely affected Punjab which lost its capital (Lahore) to Pakistan. With his zeal and visionary – almost dream like character, the then Prime Minister Jawaharlal Nehru thought of building a new capital city. The minds of Politicians and Administrators steeped in the subjugation of the British for 150 years could only look towards the west to find a ‘White’ man to design the capital. Unfortunately we have followed the same concept in framing our constitution which is based on the British model. The American model would have been a more appropriate.



Chandigarh Master Plan: Imperial/Colonial heritage of seat of Government at the Apex

Their first choice of Albert Myer as Town Planner and Peter Nowicki, a Polish Architect, as a team was; in retrospect, most appropriate. The plans drawn up by the team, particularly the housing clusters (I have seen the original sketches of these plans in the office of the chief town planner, but I don't know if those are still preserved) showed a very sensitive

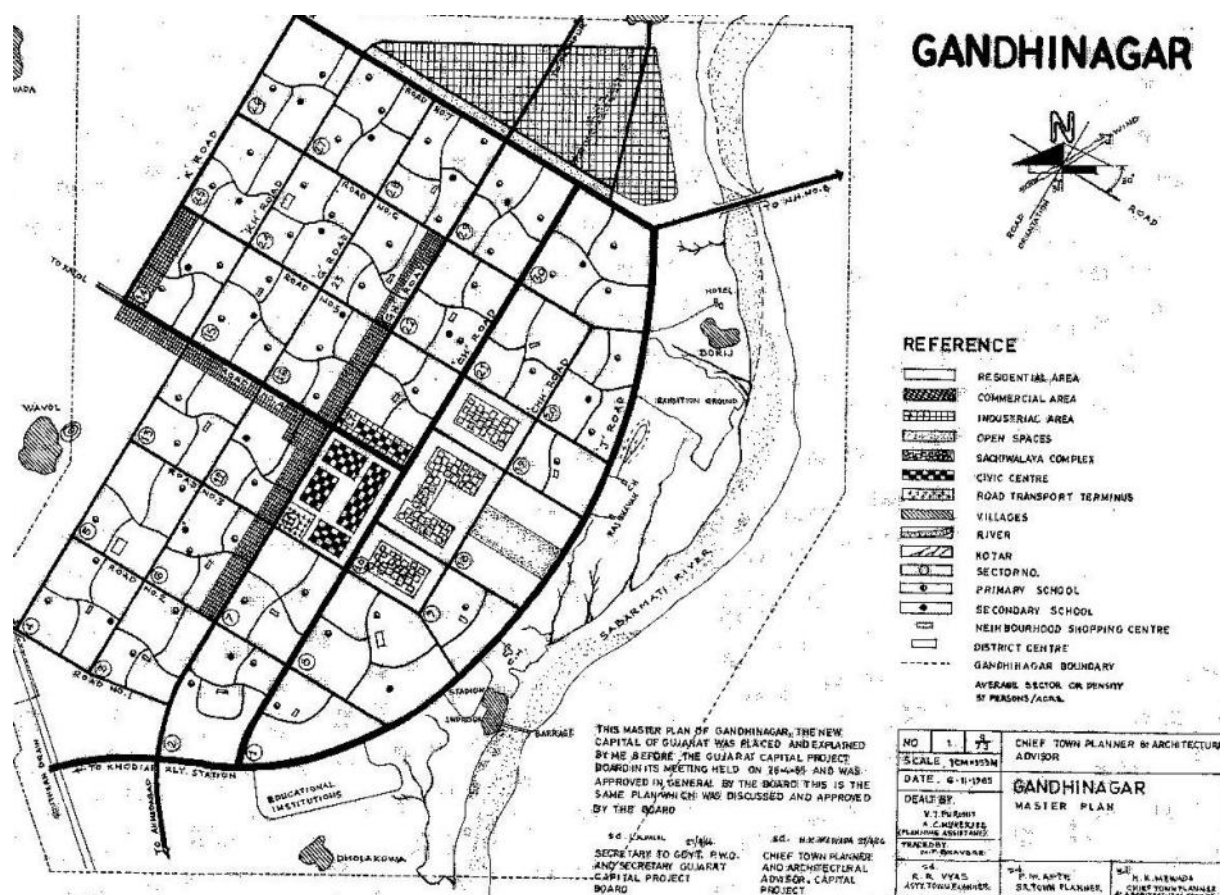
mind which tried to capture the spirit of town planning and architecture so as to adapt it to the arid climatic zone of India. Unfortunately, Nowicki died in an air crash and later, Le Corbusier managed to secure the commission to plan Chandigarh.

It is my personal opinion that Le Corbusier was a sculptor of excellence but certainly not a “Functional” Architect and by no means a town planner. His buildings in Chandigarh and all over the world are an evidence of the sculptural quality of his architecture. I recollect a conversation with a practicing attorney in the high court building at Chandigarh. He was quite sarcastic and critical of the design of the high court building because he had to use an umbrella to go from one court room to another within the building when the sun beat fiercely or rain poured down! The building is very monumental but hardly functional!

The Chandigarh town plan is static, devoid of any Indian character in the design of residential areas. Houses are just concrete boxes. It is “truly” a monument to Indian independence but far alienated from its people as all monuments are. Later, Maxwell Fry and Jane Drew showed better sensitivity and understanding of Indian life styles and the ‘ethos’ while designing housing clusters and layouts for residential areas. The lowest level of employees of Government are located farthest from the Secretariat and government offices, and one has to stay there to experience the fierce heat and discomfort for those who peddled on their bicycles to go to work! Each level of govt. employees is grouped separately in separate ‘sectors’ and the hierarchy is accentuated more in line with the imperial British rule rather than a true democracy that India aspired for.

All these shortcomings were avoided in Gandhinagar. I was personally responsible for working out the ‘mix’ of populace from different income groups and governmental hierarchy in a single sector which has both government and private housing and has at least 4 types of hierarchical housing mixed together. The housing clusters follow the “street” concept of the Gujarat cities leading to a far greater social cohesion than ever possible in Chandigarh. That, to my mind, is the real success of the town plan and architecture, it truly represents the Indian (more specifically, “Gujarat”) character.

I planned, designed and saw the completion of the first phase of the city and stayed there for an year. It has been an experience no other Indian planner has had so far and I am very proud of it. Gandhinagar has no ‘monuments’ or ‘master pieces’ of architecture as, admittedly, both myself and Mr. Mewada are not considered great Architects. But we have succeeded in creating an urban environment which the local populace can identify themselves with, and feel at home!



Gandhinagar Master Plan: Democratic concept of residential sectors grouped around Government Offices

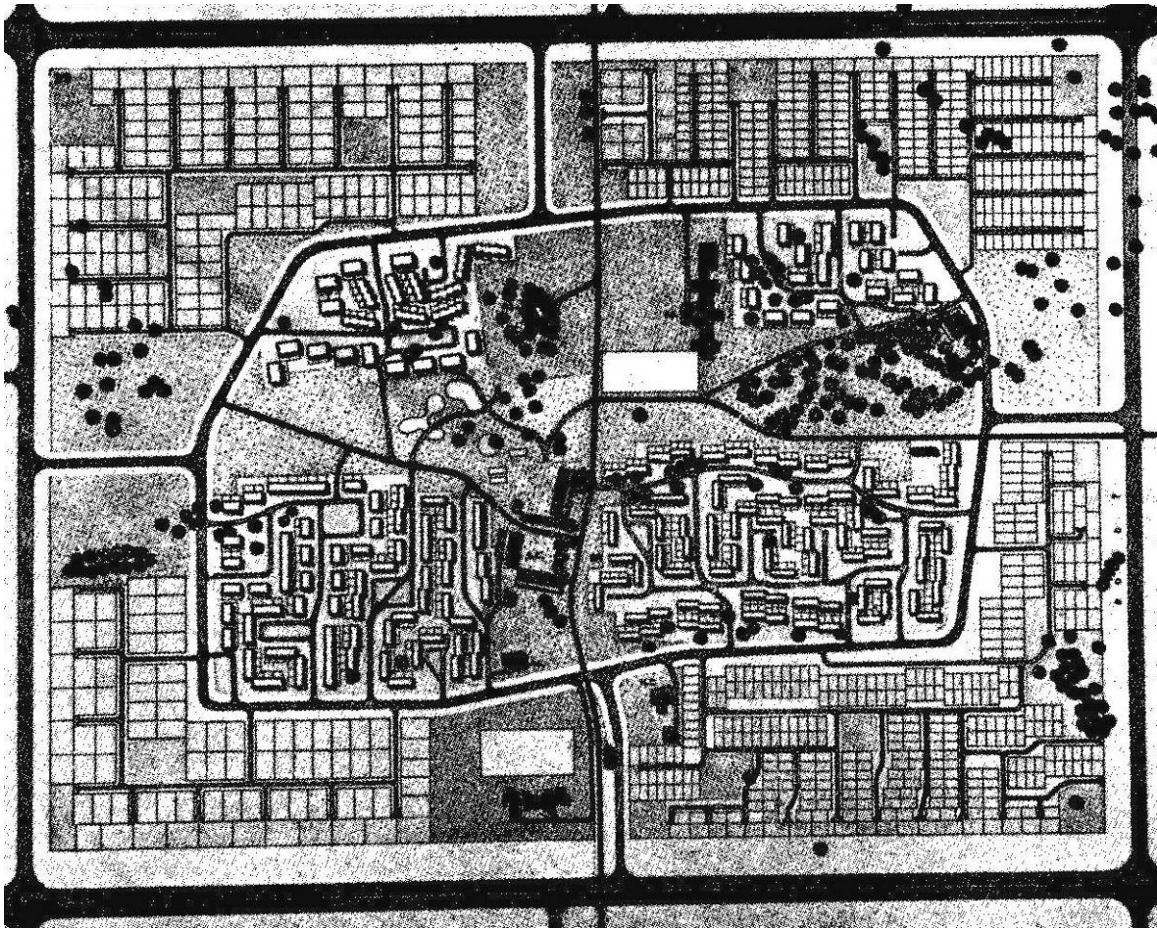
Many Architects or planners who have written books/articles eulogizing the planning of Chandigarh, seem to consider the planning of Gandhinagar not worthy of notice just because it was planned by government employed town planners! They do not attempt to objectively assess the merits of Chandigarh & Gandhinagar. There is an undertone that practicing Architects and Planners are superior to employed ones! In fact, the real difference between employed and private practicing Architects is more a matter of temperament than merit! Architects who do not have the knack to do “business” prefer to go in for employment.

I am sure this book will give an insight into the reasons for, and the genesis of the Gandhinagar plan. It is deeply rooted in the planning tradition of Gujarat. After having planned the government housing clusters on the basis of the Pol (narrow street) pattern of old Gujarat towns I had conducted a social survey of the neighbourhood and community relationships in these clusters. It was gratifying to find from the results that, the feeling of neighbourliness and Interpersonal relationships was much better than in the western concept of grouping houses around a square open space which was followed in Chandigarh.



Chandigarh Residential Sector plan; Regimented Grouping of plots/houses around central open spaces

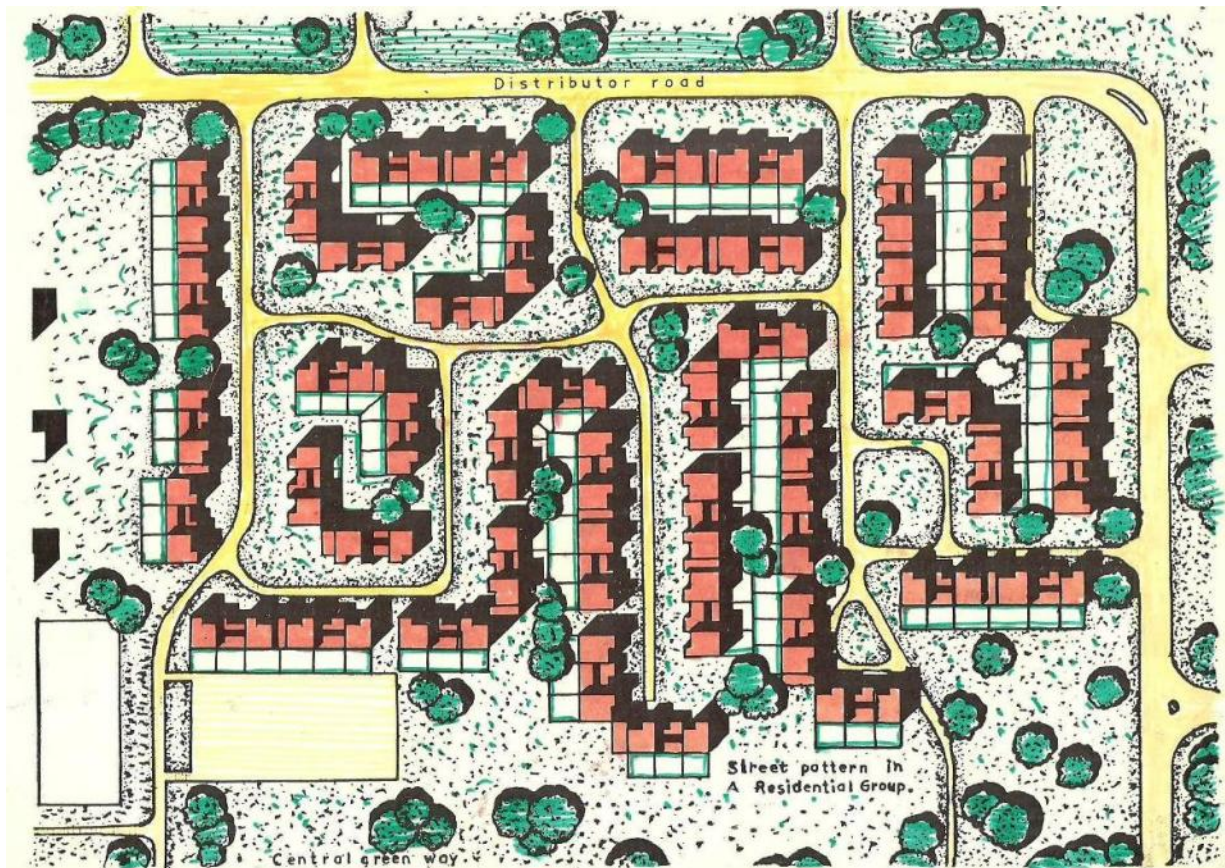
Not many people in India remember that Gandhi hailed from Gujarat! He was a national figure. People of Gujarat of course take pride in his origins. We did make a conscious effort to build into the fabric of the city his principles of equality and conscious interaction between people from all strata- economic, social, religious and professional. The planning of each sector where at least four hierarchical categories of plots for general public or government employees were mixed together is an example. However we had to be practical and try and mix those social and economic categories that could get along with each other and not be overtly idealistic by trying to put together the highest and the lowest. But this is a distinctive character of the city as against the ghetto like clusters created by Le Corbusier.



Gandhinagar Residential Sector Plan: Informal street pattern of houses, typical of Gujarat towns

In terms of ideas, we tried to follow our traditions, cultural heritage and the teachings of Gandhi. But at the same time, we adopted the state of the art building materials and technology. So, one can find concrete pyramidal roofs over classrooms in the design of primary schools (long before Architect Charles Correa used the same concept for his museum in the Sabarmati ashram of Gandhi near Ahmedabad) because, traditionally, the beginning of education was in the home of the “Guru” staying in a hut with a pyramidal roof of bamboo and straw. There are many such examples where we have combined the Indian thought but interpreted it in the language of modern materials, construction systems and functionality of design. Every building in Gandhinagar is specifically and deliberately designed to fulfill the function for its existence. These were intentionally not meant to be masterpieces that carry the personal stamp of the architect.

I did work in Chandigarh and visited it often later. The planning team there was very slavish about the ideas of the “Master”. I remember having argued with Piere Jeanneret who headed the team in absence of Corbusier about the rigidity of the ideas governed by his unit system that was based on the normal European height of a man as 6 ft. 2 inches as against about 5 ft. 10 inches in India!



Informal 'streets of houses' typical of Gujarat heritage

I will therefore say with confidence that the town planning of Gandhinagar is a logical and conscious synthesis of our town planning heritage. The design of buildings and the urban design of the various complexes is a result of attention to functionality of buildings rather than their external appearance and impact.

Those who deride the planning talent of natives like me and Mewada consider Chandigarh as a symbol of building national identity in post colonial India. But to me, it is in fact a blatant reminder of India's colonial past. Gandhinagar is the true identity of India.

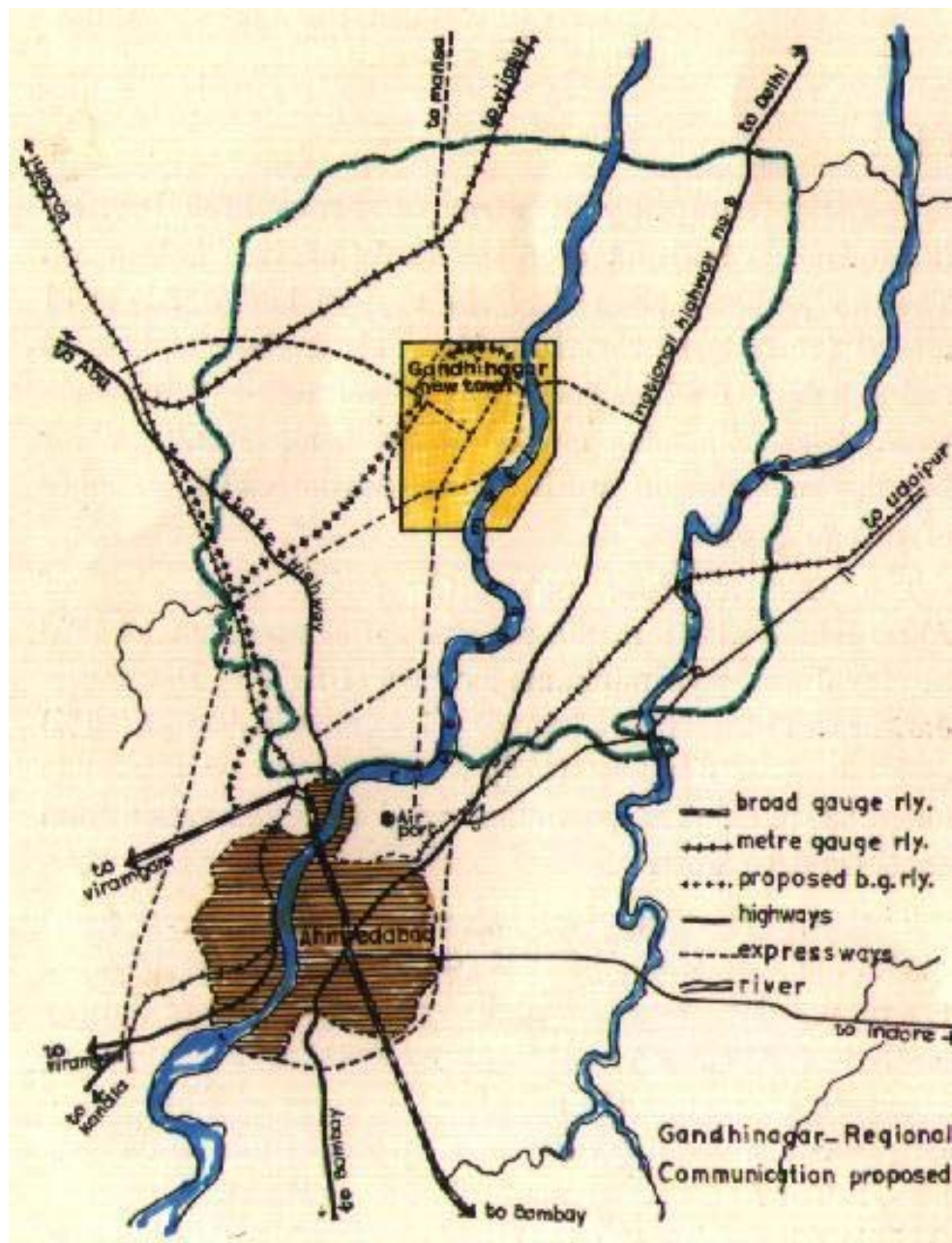
15. GANDHINAGAR ENDANGERED: A CAPITAL'S PLAN DISMANTLED

In the first pages of the Preface I have stated the four reasons that made me write this book. The last and the most important reason is to preserve for posterity, the original concept of the new capital city as was envisaged by myself and Mewada.

Either by design or imbecility, the re-planning of Gandhinagar by the Consultants of the Gandhinagar Urban Development Authority (GUDA) has obliterated its identity as a capital city. It's consciously designed and planned axial plan & egalitarian Gandhian ethos has been dismantled. The juggernaut of unbridled capitalism has led to its debasement and inorganic extension resulting in Gandhinagar becoming just another suburb of Ahmedabad.



The city was planned and implemented between 1965-1970 by myself and H.K.Mewada. An influential group of Architects from Ahmedabad, with active support from some industrialists had tried then to usurp the job by bringing in American Architect Louis Kahn who was in Ahmedabad to design the buildings of the management institute. The state government was however determined to have the city designed by Indian town planners in the best traditions of Gujarat's rich heritage of town planning and principles of Mahatma Gandhi who had his "Ashram" just south of the proposed site of the city on the banks of river Sabarmati. The government therefore persisted with its choice of Mewada to plan the new capital city.

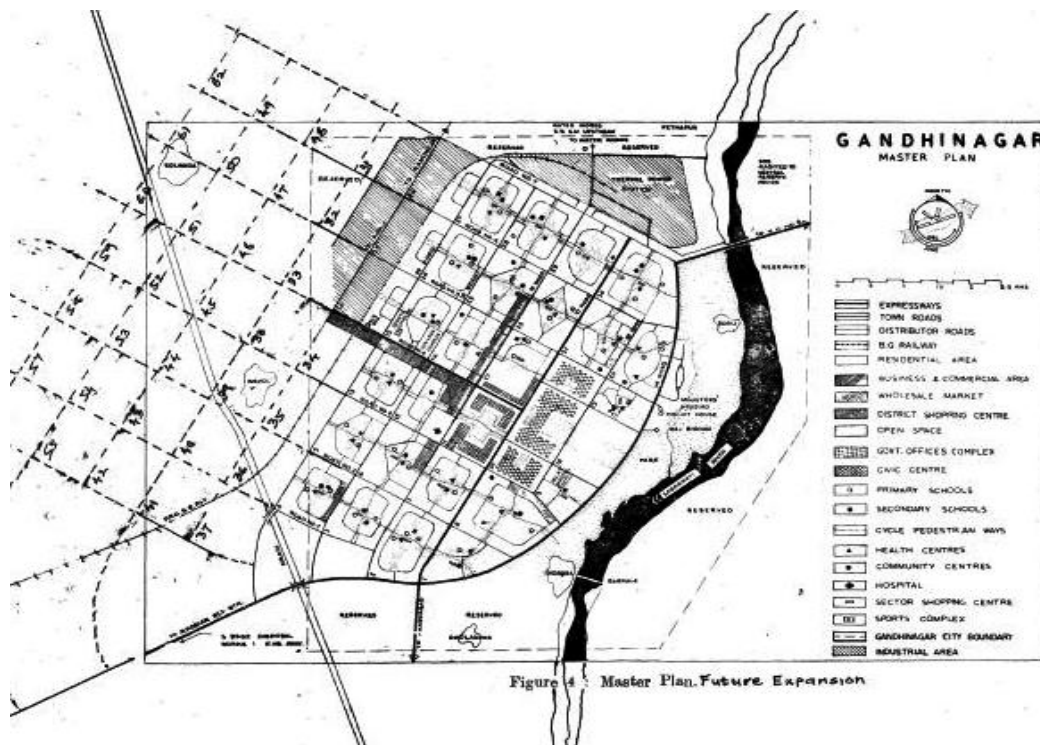


Regional Plan : Gandhinagar new Capital City :Gujarat:India

Unlike Chandigarh, designed on barren lands with no sizable existing human settlement near about; Gandhinagar's site is just 23 km. north of Ahmedabad, a flourishing city. Hence, to establish and maintain a separate identity of the new city, an area of about 39 villages around was brought under a Periphery Control Act (as in Chandigarh) that permitted new development of farm houses only. The area later constituted the separate administrative district of Gandhinagar.

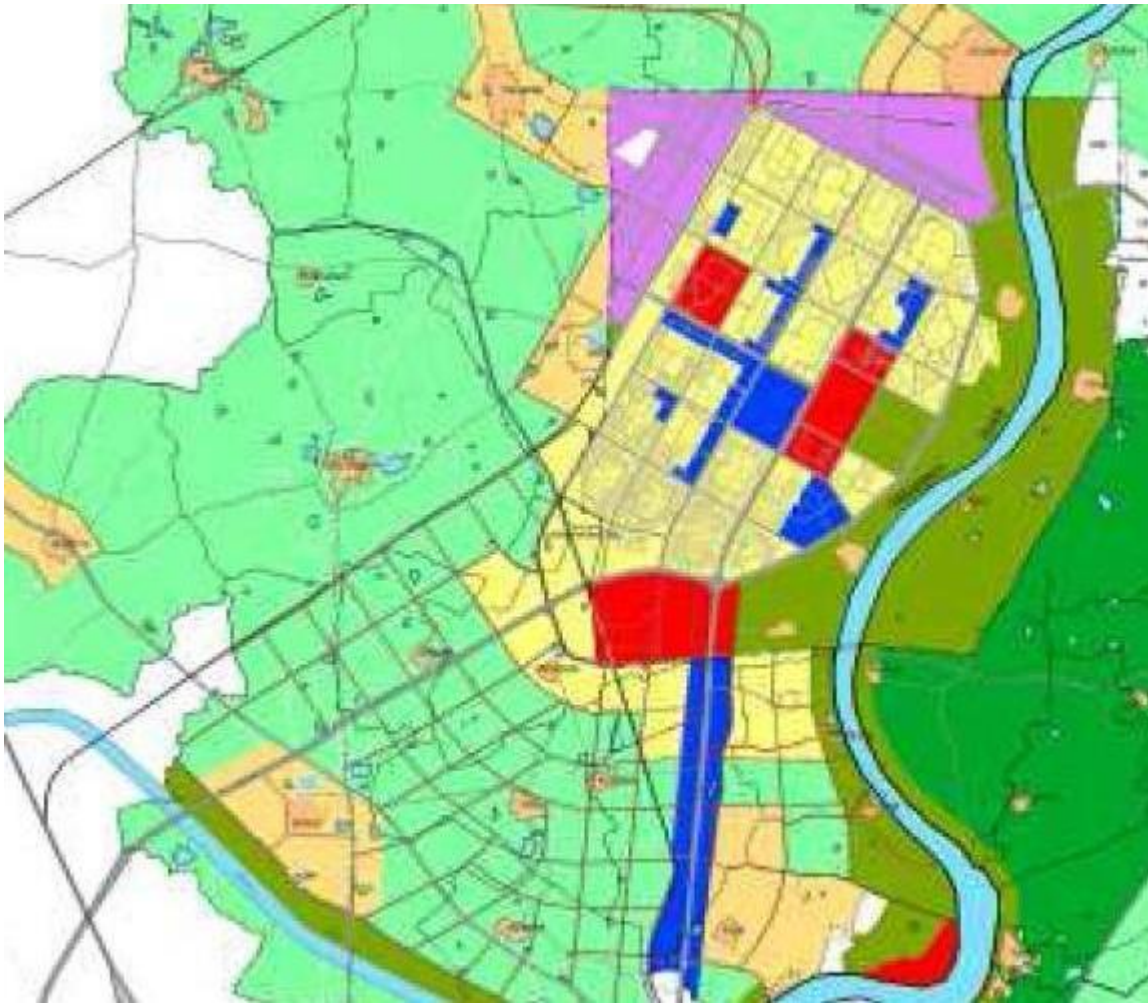
The city is planned on the western bank of river Sabarmati. Due to a constant military confrontation with Pakistan, whose borders are close from the city, a large military presence was required here. The land acquired on the eastern bank, adjacent to National Highway no.8, was therefore allotted to the Border Security force and military cantonment. Considering the mostly south-west to north-east wind direction, the land to the north of the city was allotted for the then biggest thermal power station and the adjacent areas were zoned for industrial use. This area was distanced from the township by a 600 mt. wide

green strip of thick vegetation. Being planned as the administrative capital of the state, current and future population employed in state government offices was distributed in 30 residential sectors around the State Assembly-Secretariat complex. About 50% of population accommodated in each residential sector is/will be employed by government. Plots on the periphery of each sector are meant for private & supporting population that constitutes another 50%.



Gandhinagar's Original concept for future expansion & physical extension maintaining the Axis and Urban design

The city was planned for a population of 150,000 but can accommodate four times that population with increase in the Floor Space Ratio from 1 to 4 in the areas reserved for private development in all residential sectors. The river being the border on the east, and the industrial area to the north, the most logical future physical expansion of the city was envisaged towards the north-west. To retain the identity of the city as a new city and the capital, the planners provided for its growth AWAY from the city of Ahmedabad, which is to the south. Hence in a rational extension of the road grid to the north-west, the planners had envisaged 30 additional residential sectors that could accommodate a population of 450,000. Thus, the growth potential of the city by densification and area expansion to the north-west is for a population of 750,000. The consultants appointed by GUDA want the expansion of the city to take place to the south so that the lands between the two cities (Gandhinagar & Ahmedabad) that have a large market value could be exploited by private developers, and in the process every one could get a share of the pie!



Consultant's redesign of Gandhinagar extending towards south.

The consultants, neither reviewed the original city plan in the context of the concept of a new capital, regional economic/industrial development or growth matrix of a new town, nor did they consult planners of the original master plan, thus eliminating the possibility of informed and constructive criticism.

The proposals of the consultants, driven purely by the profit motive, raise serious doubts about their honesty, integrity, and professional competence. Would any town planner have dared to make such proposals if Gandhinagar was designed by Louis Kahn or Le Corbusier?

A southward expansion proposed by the Consultants will merge the new city with Ahmedabad and finally become its SUBURB destroying its separate identity. Do the consultants aim at this objective? Probably, yes. They have a cynical and malicious purpose in totally obliterating the plan of Apte-Mewada whom they considered as third class planners as compared to the "great" the Architects who had 50 years back tried their best to grab this prestigious project for themselves and failed!

If the city is to be expanded and extended, it can be done as originally envisaged. It will be rational, in keeping with the original concept, retain the urban design and the central vista and yet will be capable of absorbing new design ideas without destroying the basic concept.



The Central vista sought to be destroyed by Consultant's proposals



The Capitol Complex viewed from the central vista: But the Axis is destroyed by Consultant's plan

This extension to the south will completely destroy the most important and the monumental concept of the central vista (Road no.4) that focuses on the capitol complex and was naturally to be extended to the north-west maintaining the axis and expanding the city physically in that direction. The location of a Gandhi memorial on this axis, originally provided for, has been removed! In fact the road no.4 has been converted into a dead end street!

The consultants while extending the city to the south have designated a 5 km. long and $\frac{1}{4}$ km. wide belt of land on both sides, of the Koba-Gandhinagar expressway (an area of 2.50 sq.km.) for commercial uses with an FSI of 2.00. This, despite over 50% of the designated commercial area in the city still remaining unsold! Over 6000 acres of green cover to the south west of the city has been designated for residential use in an attempt to join with the city of Ahmedabad. All this land, when developed, can accommodate a population of over 600,000. The vested interests have in all probability bought these lands in advance of the

proposals. The consultant's proposal thus seeks to destroy the identity of the new capital city and make it a suburb of Ahmedabad.

The Gamthan (built up land in a village) areas of 7 villages just abutting the city limits of Gandhinagar are increased arbitrarily (much beyond their natural growth requirements) to allow private residential development. These enhanced Gamthan areas together may accommodate a population of over 1,50,000. thus totaling 750,000. Ironically the original plan of Gandhinagar did provide for similar expansion of population to the city area yet retaining its identity, concept and urban design.

The Consultant's proposals, thus dealing a death blow to the organic growth of Gandhinagar, have helped private developers to get cheap lands to develop commercial & residential apartments with access to free physical infrastructure (roads-water supply etc,) health, education and cultural facilities provided in Gandhinagar by the State Government.

Not content with this abuse of the basic concept, the consultants propose to dismantle some important urban design features of the plan of Gandhinagar. A major area for cultural facilities, in the city square in sector 17 -city centre- is proposed to be converted to commercial use, thereby killing Gujarat's traditional concept of a 'city square' & destroying a major element of 'urban design' of the new capital city.



Gandhinagar :Satellite picture from Google

An area along J road (along the river Sabarmati) across sector 9 covered by ravines, was proposed in the original plan for conservation as an adventure park. It is now designated by the consultants for residential use taking away a unique recreational facility.

The open spaces at the junctions of all the main roads of the city, left open in the original plan to improve road geometrics in the future, ornamental landscaping, road signage, guide maps etc. are proposed to be filled up with roadside petty shops & hutments for the immigrants giving the city a slum like look. This will result in the "original" city looking like a slum and the "NEW" one a jewel!

Thus, the future generations may not even recognize what the Gandhinagar plan was like! Is that the intention of the Consultants? It certainly appears to be so! As the planner of Gandhinagar I strongly feel that the only purpose of the proposed plan by the consultants is to completely obliterate the identity of the capital city as a distinct identity and make it not only look like a suburb but integrate it into the city plan of Ahmedabad so that Gandhinagar will be one of its suburbs. But the vileness of the scheme does not stop there. It appears to be the intention of the Consultants to implant a new capitol complex (discarding the present one as a substandard Architectural complex) at the junction of the road from Ahmedabad with the road 'GH'! Thus –they can claim that- while going from Ahmedabad to the suburb of Gandhinagar the New Capitol Complex will be the focal point!! This is an example of debasing the work of co-professionals out of personal vendetta, for personal glory and greed of name fame and of course money! The proposed extension plan for Gandhinagar by the consultants makes this objective clear for anyone to see and perceive.

Whatever it may be, this book will provide the future generations of planners a record of the original plan of Gandhinagar to compare, analyze and make their own value judgment of the merits or otherwise of re-planning the city the way it has been proposed



Issues raised by PM Apte

- Extension to the south of Gandhinagar has completely destroyed the most important and monumental concept of the central vista — touching Udyog Bhavan — that focuses on the capitol complex and was naturally to be extended to the north-west..
- The government has dismantled a major area for cultural facilities in the city square in sector 17 — the city centre — is proposed to be converted to commercial use, killing Gujarat's traditional concept of a 'city square'.
- The road leading to the CM's bungalow (by the river) across sector 9 covered by ravines, was originally proposed for conservation as an adventure park. Consultants now want residences there, taking away a unique recreational facility.

Renaming defies Gandhian values

Paul John & Kevin Antao | TNN

Ahmedabad: The state government, via a notification earlier this month, made an attempt to gift Gandhinagar its set of road and junction names which are intended to become landmarks for the city. But this is not what was intended by its planners HK Mewada and PM Apte originally.

The entire city was planned on Gandhian principles and ethos, and was to represent an egalitarian settlement. It is for this reason that names of national and religious icons was avoided to name principle junctions of the city — just as Mahatma Gandhi would have desired for a city.

Moreover, since the city was designed in the form of a grid, it allowed Mewada to use codes to define different elements of the city. This way, Mewada introduced a new system of locating places in the city, making it simpler to remember and navigate.

Ravi Kalia, author of the book 'Gandhinagar: Building National Identity in Postcolonial India' points out that Mewada and Apte insisted on an abstract Gandhi memorial on the banks of the Sabarmati. Drawing inspiration from the memorial, they drew the city's blueprint around it. The architects also did not want Gandhiji's statue anywhere in the city. Instead the state government announced a Mahatma Mandir in sector 13, on May 1 this year. On top of this, Gandhiji's statue was installed right in front of the state assembly.

'Times of India : Ahmedabad, June 1, 2011: 50th year of Gandhinagar '

I have no animosity towards the Consultants (progeny of the failed Architects who could not get the opportunity to design the new city in 1965) whom I only pity for their petty mindedness and foolhardiness in thinking that by such antics they can "win"! I can only pray to god –like Jesus Christ- "Forgive them, for they know not what they are doing".

16. EPILOGUE

There is a system in State & Central governments, particularly in the technical departments- especially engineering departments- to display the names of the Chief Engineers with their period of tenure on a board in the chamber of the Chief Engineer. There is no such system in other departments, certainly not in the Town Planning departments. Hence it is unthinkable that the State Government of Gujarat, in some way would recognize the contribution of its Town Planners in the planning of the new capital Gandhinagar. Fortunately the planning and Architectural community in India does- so far- recognize the role I played in the planning of the new city. But more important is the record of how the city was planned, why it is planned the way it was till 2005 when the GUDA was led down a garden path by its pseudo- consultants in “re-planning” the city. This book has therefore a ‘historic’ role in making available to the critics and evaluators of the future, the original concept of the city for comparative analysis and assessment.

In the book I have used the old original drawings, maps, charts, models and photographs that I have preserved. The quality of these graphics may therefore leave much to be desired but at the same time it gives an authentic aura to the text. The present images of the city are there for all to see personally or in the commercial/tourist literature. Except for the photographs depicting Gandhinagar today (which have been downloaded from free web sites on the Internet) all the other photographs are my own.

In a way, I must thank the GUDA and its Consultants. Had it not been for their attempts to dismantle and destroy the original concept of Gandhinagar as Mewada and myself had envisioned, this book might not have been written because there would have had been no need for it to be written! I must also thank all those who still consider the ‘white man’ or the practicing Architect-Town Planner as the only real genius and look down upon all other architects and planners in government service as an inferior species! A comparative study of town plans and buildings designed by me has proved that I have planned a far more “functional” town and buildings than most of the so called great architects who like to project themselves as town planners.

A city is an organism that will grow and flourish with time. Given due care and respect to the basic purpose for its planning and establishment will always satisfy the needs of its citizens. I have no doubt, that despite the efforts of the imbecile and/ or profit mongering pseudo planners, Gandhinagar will develop as we had envisioned.

Prakash Madhusudan Apte
February 2012

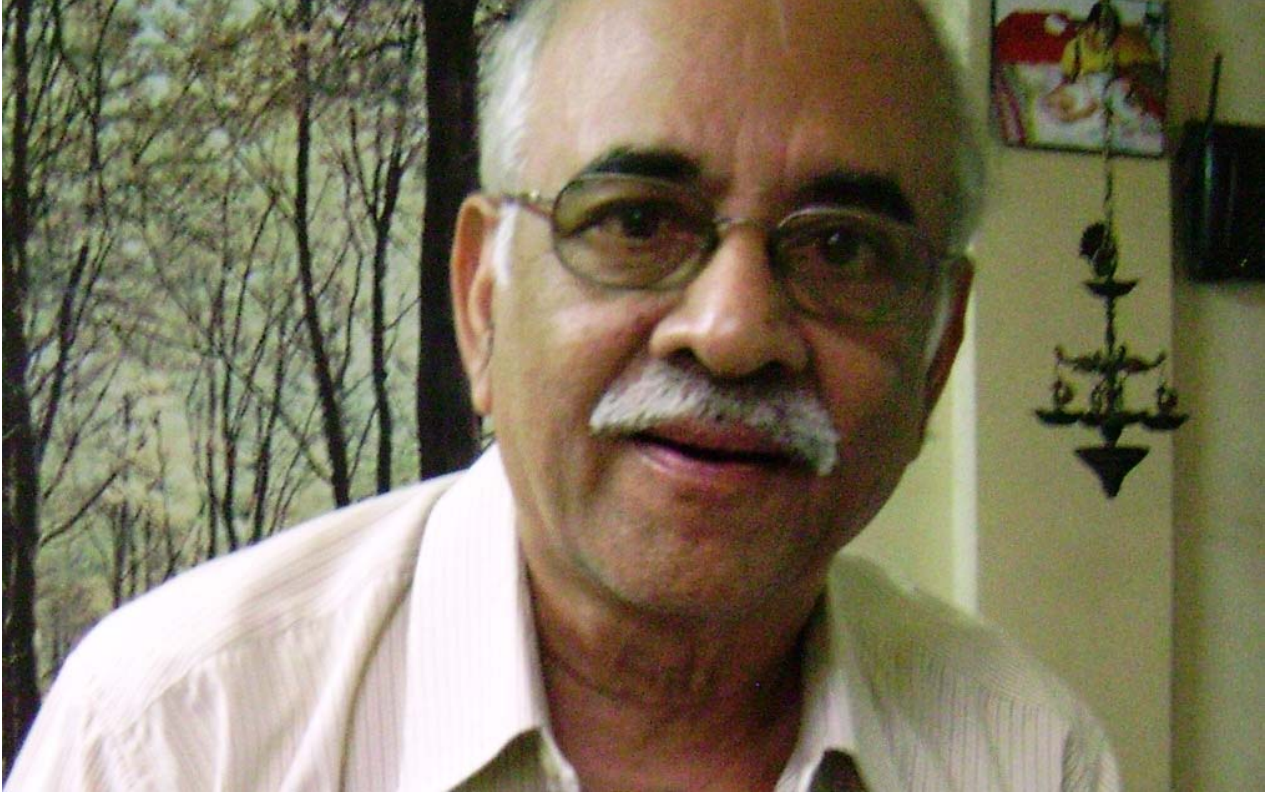
In this book, any reference appearing or deemed to be offensive to individuals or organizations is not intentional and should not be so construed.

GLOSSARY

Ahmedabad	Largest city in Gujarat and its Capital till 1970
Amdavadi	Resident of 'Ahmedabad'
Apna Bazar	Cooperative consumer goods store
Babu	Government administrative officer
Brahmin	Hindu Highest caste
B.S.F.	Border Security Force
C. M.	Chief Minister
Crore	100 Lac = 1,00,00,000
Chandigarh	Capital city of Punjab State in India
Chowky	Guard house (for police)
Devnagari	An Indian script
Dia.	Diameter
E.E.F.	Eisenhower Exchange Fellowship
G.U.D.A.	Gandhinagar Urban Development Authority
Gandhi Cap	A white cotton cap worn by followers of Gandhi
Gamthan	Built up area in a village
Gulmohor	Tree with red Flowers (<i>Leguminosi</i>)
Guru	Teacher
HUDCO	Housing & Urban Development Corporation of India
I.A.S.	Indian Administrative Service
Jodhpuri	Indian National dress Jacket
Kautilya	3 rd BC Adviser of "Nanda" dynasty
Khancha/Khadki	A narrower sub-street of 'Pol'
Lac	100,000
Makar Sankranti	The transmigration of the Sun from Sagittarius to Capricorn
Marathi	One of Indian languages
Maidan	Open Ground
M.L.A.	Member of Legislative Assembly
Neetishataka	Sanskrit treatise
N.H.	National Highway
Pathikashram	Traveler's lodge
Pol	A narrow residential street in the old towns of Gujarat
Puja	A religious ceremony
P. & T.	Post and Telegraph
P.W.D.	Public Works Department
Rajyabhishekchandrika	ceremony at ascending of the "Throne" of a king
Rangmanch	Stage for live performances
Rupee	Indian currency
Sachivalaya	Secretariat of a government
Sanskara	Upbringing
Shiva	A Hindu deity
Shukravar	Friday
Sthapatya	Engineering
Theodolite	A land survey instrument
Upanayan	Ceremony among high Caste Hindus
Vastushastra	Architecture
Vidhansabha	Legislative Assembly of a state

INDEX

Achwal M.B.	11, 12, 22
Ahmedabad Municipal Corporation	14
Ball State University	19
Baroda (Vadodara)	8,9,10,11,12,17,18,22,25,27,34
Benninger Christopher	7,19,22
Bombay Town Planning Act	30
Chandigarh	13,19, 20, 38, 89, 90, 91, 92, 93, 95
Correa Charles	92
D. Subbarao	22
D'Souza J.B.	18, 22
D'Souza Neela	22
Daji Nagesh Apte	9,17,22
Dave M.B.	22
Desai Morarji	16-17
Desai Hitendrabhai	17
Doshi B.V.	14
Drew Jane	89
Eisenhower Exchange Fellowship	19
Fry Maxwell	89
Gaekwad Fattehsingrao	17
Gaekwad Sayajirao III	9
Gandhi Mohandas Karamchand	45, 91, 92
Gandhinagar Urban Development Authority (GUDA)	9,11,18,21,93,100
Kahn Louis	9, 14-16, 35, 94, 97
Kanetkar	16
Kasturbhai Lalbhai	14, 35
Keshub Mahindra	18
Le Corbusier	14, 89, 91,92,97
Mistry Dr. V.J.	14
Myer Albert	89
Nehru Jawaharlal	88
Newcombe Vernon Z.	16
Patel M.D.	8, 14, 37
Patel J.T.	8, 14, 37
Pierre Jeanneret	92
Puranik N.B.	22
Rahalkar B. N.	12
Sabarmati River	10, 11, 16, 24, 25, 30, 39, 42, 76, 79, 80, 82, 94, 95
Sarabhai Dr. Vikram	8
Sethia Ram	14
Shah M.Z.	12
Shiva	10, 24
Thackeray Bal	18
Thackeray M.Y.	18



Prakash Madhusudan Apte