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Urban Planning of Rural Village in a Developing Nation

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Abstract: ***To create a safely healthy physical environment in which: Children will have on traffic streets to schools which are within walking distance from home, An environment in which women may have an easy walk to a shopping centre where they may get the daily house hold goods, Employed people may find convenient transportation to and from work, Well-equipped playground is located near the house where children may play in safety with their friends for healthy development of their mind and spirit. The art and science of ordering the use of land and siting of buildings and communication routes so as to secure the maximum practicable degree of economy, convenience, and beauty. Social planning of an advanced order. It is a manipulation of a physical element to induced and encourage a social and human goal. It is a kind of planning which recognize that the growing edge of civilization is in the human and not the mechanical direction, though the mechanical factors must be carefully align and allocated to support.***

Keywords: Town planning, Urban Planning, Urban Development, Expertise development, Promote security, Increase attractiveness, Smart development, Time Saving Construction, Economical, Advance Construction Technique.

I. INTRODUCTION

A. General

An art of shaping and guiding the physical growth of the town creating buildings and environments to meet the various needs such as social, cultural, economic and recreational etc. And to provide healthy conditions for both rich and poor people to live, to work, and to play or relax, thus bringing about the social and economic well-being for the majority of mankind. The town planning, however, is not an exact science and precise forecasts of future possibilities are not attainable. But the gap between guesswork and prediction can be brought down to a minimum by the co-operation of various agencies involved in the use and development of land.

B. What is Town Planning?

The art and science of ordering the use of land and siting of buildings and communication routes so as to secure the maximum practicable degree of economy, convenience, and beauty. An attempt to formulate the principles that should guide us in creating a civilized physical background for human life whose main impetus is thus, foreseeing and guiding change.

C. Benefits of Town Planning

Town planning is a practice that is concerned with the management of land in an urban setting. This includes transportation networks and ensuring the development of communities and settlements. Town planning involves analysis, research, strategic thinking, policy recommendations and implementation.

1) *Promote Security:* Town planners usually have to consider threats like storm surges and floods when planning resources within a town. Extreme weather or other kinds of emergencies like fire have to be considered to create evacuation routes within the town. These are usually unobtrusive and inexpensive and many people consider them as a rational safety measure for any town. By planning for safety features like retaining walls, shelters and levees, town planning helps to increase the security and safety of population.
2) *Increase Attractiveness:* Cities are also planned by considering the aesthetics. Planners enhance the attractiveness of a town through applying various tools like growth management and zoning to manage land use. Historically, most of the towns now seen as the most attractive are the outcome of long lasting land systems of guidance and prohibitions about uses, features and building sizes.
3) *Prevents Slum Development:* Rapid urbanization has resulted in the formation of slums in major cities all over the world, especially in developing nations. Town planning strategies are very important as they help to prevent the development of slums. In such scenarios, cheaper housing options may be given to prevent the need to create slums.
4) *Promotes Renewal:* Town planning also promotes renewal and reconstruction. This is clear in cities devastated by fire or war. Planners can aim to restore basic infrastructure such as water, 4 sewerage and power. Historic, social and religious centers can also be preserved in the new town plan.

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D. Expertise Development

Vadghar is also comes in New Mumbai so according to this vadghar is also developed. The first step was to identify all the land that needed to be acquired for New Mumbai. By February 1970, the government notified for acquisition of privately owned land covering 86 villages and measuring 159.54 km² within the present limits of New Mumbai under Maharashtra Regional and Town Planning Act (MR & TP Act), 1966. Land belonging to nine other villages, measuring 28.70 km², was additionally designated in August 1973 for inclusion in the project area. In spite of some challenges, CIDCO acquired all the land after settling disputes about compensation. In March 1971, CIDCO was named the New Town Development Authority for the project. In October, the same year, CIDCO undertook to prepare and publish a development plan as required by the MR & TP Act, 1966.

A documented plan is a useful instrument for inviting public participation in development effort, and for providing a commentary on policy guidelines which would be useful to those responsible for implementation. Section 22 of the Maharashtra Regional and Town Planning Act, (1966) envisages the clear designation of particular land areas for particular uses. An implicit assumption is that most of the land is privately owned, requiring the Planning Authority to indicate specifically which areas are to be acquired for public purpose. The fact that the Development plan proposals once approved shall be final and binding on the Planning Authority (Section 31 (6), unless modified by the Government, ensures that, once a land use has been specified, uncertainties as to whether a particular type of use will or will not be permitted on an individual's parcel of land are ended and he can proceed with development, provided it conforms to the specified land use. The finality of the approved Development Plan and the fact that it is binding on the Planning Authority, 5 except for modifications which are difficult and time consuming to secure, ensure that the pressures and frictions which would otherwise develop to obtain land use changes for particular land holdings are largely eliminated. Uncertainties concerning land use are ended, and both the private land owner and the public authority are free to concentrate on development.

This particular consideration has much less force in the case of the New Mumbai Project, where all the land is to be publicly owned by CIDCO. As each area is taken up for intensive development and released to occupants, the land use for that area will remain substantially frozen, open to modification only under the time-consuming and difficult procedure set out in the Act. However, in other areas where development is not immediately contemplated, the Development Authority should clearly enjoy a certain degree of freedom and flexibility in planning so as to modify its plans to suit changing circumstances. CIDCO, therefore, proposes to designate the land uses for the project areas in broad terms only, except for those areas which have been taken up for development where land uses are set out much more specifically and in detail. The Development Plan presented here will consequently be reviewed and revised periodically. Each time such revision takes place, the Plan will be presented a fresh to the public for discussion.

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E. Planning Principal

After appointment as the New Town Development Authority for New Mumbai, CIDCO prepared the Draft Development Plan for New Mumbai which was approved by the State Government in August 1979 and came into force with effect from March 1980. The sanctioned Development Plan envisaged broad land use Zones such as Residential, Commercial, Institutional, Industrial, Regional Park, No Development, etc. The development and the uses to be permitted within these zones is governed by the General Development Control Regulation (GDCRs), sanctioned by the State Government.

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II. LITERATURE REVIEW

A. Land-use Change in rapidly Urbanizing China.

Historical patterns and driving forces of land-use change were investigated in Shanghai under the background of drastic socioeconomic transition in China. Differing from the previous researches, this paper highlights the investigation of not only the socioeconomic factors driving urban area growth, but also the physical elements affecting urban land's distribution through remote sensing and multivariable regression methods. The results indicate that land-use changes have been occurring at an accelerating pace in Shanghai over the past two decades, and are characterized by a massive increase of urban land and a loss of croplands. The conservation and exploitation of agricultural land, as well as the promotion of urban green spaces, are also crucial instruments for sustainable city development. Keywords: agricultural land, urban land, socioeconomic transition, land-use, urban area growth.

B. Simulating urban Growth in a Developing Nation's region using a Cellular Automata-based model.

Urbanization is one of the most evident global changes. Research in the field of urban growth modeling has generated models that explore for drivers and components of the urban growth dynamics. Cellular automata (CA) modeling is one of the recent advances, and a number of CA-based models of urban growth have produced satisfactory simulations of spatial urban expansion over time. Most application and test of CA-based models of urban growth which provide likely and reliable simulations has been developed in urban regions of developed nations; urban regions in the United States, in particular.

This is because most of the models were developed in universities and research centers of developed nations, and these regions have the required data, which is extensive. Most of the population growth in the world, however, occurs in the developing world. While some European countries show signs of stabilization of their population, in less developed countries, such as India, population still grows exponentially. And this growth is normally uncoordinated, which results in serious environmental and social problems in urban areas. Therefore, the use of existing dynamic–spatial models of urban growth in regions of developing nations could be a means to assist planners and decision makers of these regions to understand and simulate the process of urban growth and test the results of different development strategies.

The present paper aims to investigate to how extent existing CA-based urban growth models tested in developed nations can also be applied to a developing country urban area. The urban growth model was applied to Porto Alleger City, Brazil. An expected contiguous expansion from existing urban areas has been obtained as following the historical trends of growth of the region. Moreover, the model was sensitive and able to portray different pattern of growth in the study area by changing the value of its parameters.

Keywords: Urbanization, urban growth dynamics, urban expansion, stabilization, tested in developed nations, contiguous expansion.

C. Urban Design and Planning.

With federal policy beginning to shift from auto-centric planning, provision for pedestrian and bicycle access is now mandated in federally supported projects. However, the field of transportation planning has little in the way of theory and methods to guide design and planning for walk able cities. Walkability is increasingly valued for a variety of reasons. Not only does pedestrian transportation reduce congestion and have low environmental impact, it has social and recreational value. Recent research suggests that walking also promotes mental and physical health. The quality of the pedestrian environment is key to encouraging people to choose walking over driving.

To achieve walk able cities in the United States it will be necessary to assess current walkability conditions, revise standards and regulations, research walking behavior in varied settings, promote public education and participation in pedestrian planning, and encourage collaboration and interdisciplinary education between transportation engineers and the design professions.

Keywords: walkability conditions, pedestrian planning, auto-centric planning, pedestrian, Transportation planning, environmental impact, recreational value.

III. METHODOLOGY

A. Specification of Vadghar village and Why I Chose this Village.

The location of Village is best Because of Following Reason:

1) The village 'vadghar' connected to proposed project of international airport New Mumbai.
2) The Panvel Railway Station is only 2.5 km from vadghar village.
3) National highway 48 is Next to this Village.
4) Due to airport we have Height Restriction is around 20 meter. So we are provided only 4 Floor.

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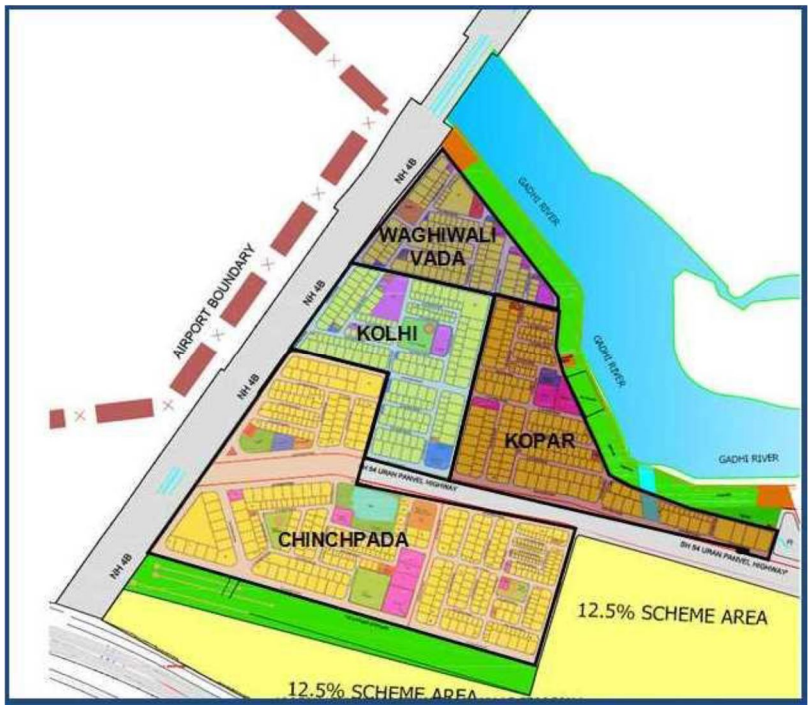

Figure 3.1 Map of Vadghar Village

B. Planning for Vadghar village

It is difficult to plan whole Vadghar therefore; we have divided whole vadghar in 5 parts. I.e. phase 1, phase 2, phase 3, phase 4, phase 5. We are planning for the phase 3.

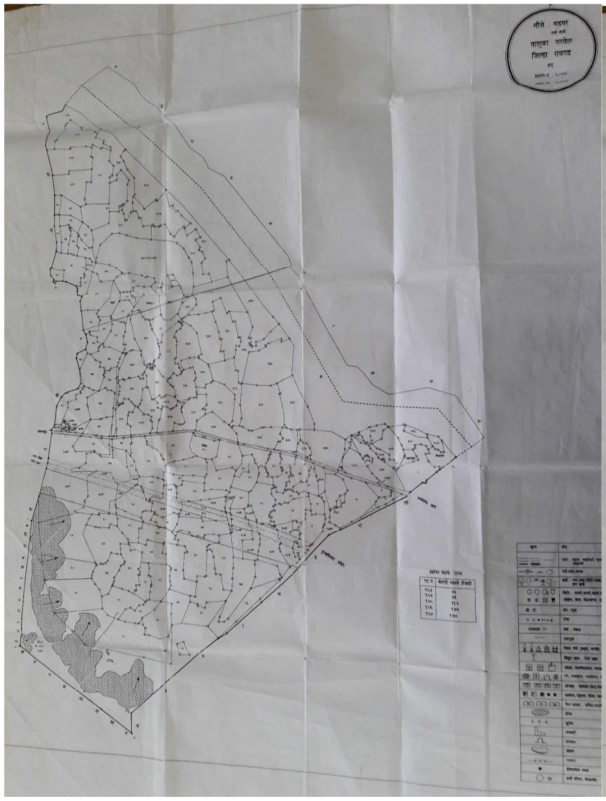

Figure 3.2 Vadghar village

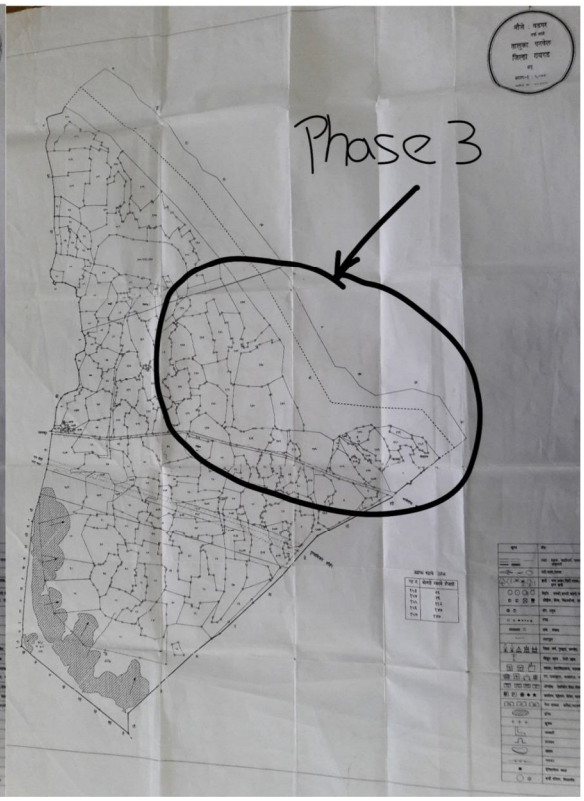

Figure 3.3 Phase 3 in map of Vadghar village

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We have traced the area of phase 3 from the map and calculated the area with the help of **Planimeter** and divided the area in various zones (as per by laws provided by City and Industrial Development Corporation of Maharashtra (CIDCO)) as given below:

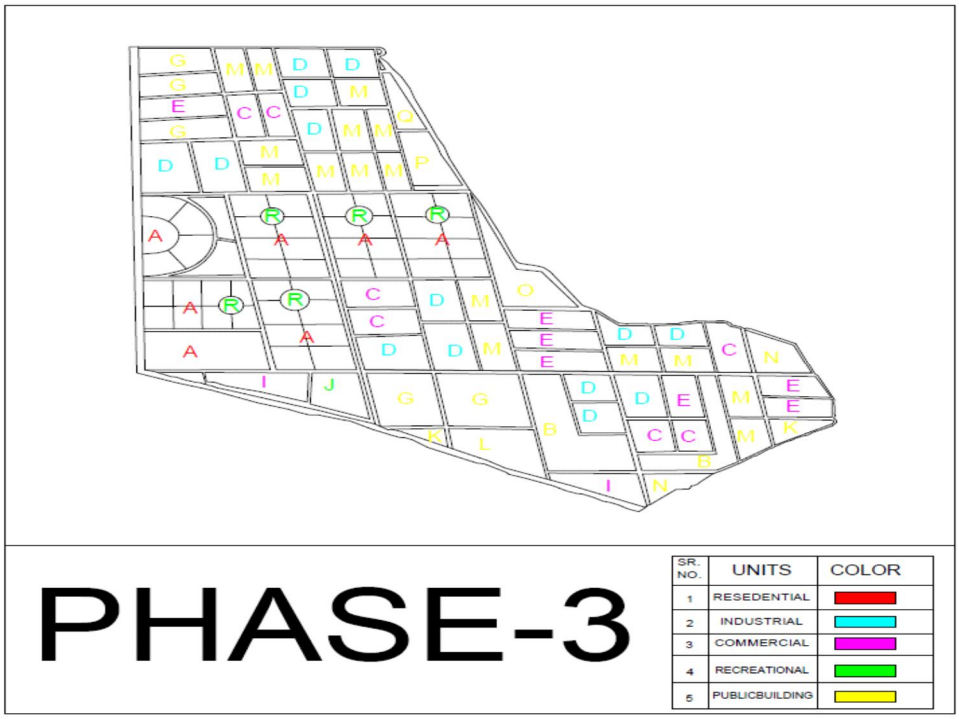

Figure 3.4 Placing of Buildings

C. Reconnaissance Survey

A recon-naissance survey provides data that enables design engineers to study the advantages and disadvantages of a variety of routes and then to determine which routes are feasible. You begin by finding all existing maps that show the area to be reconnoitered. In reconnaissance, studying existing maps is as important as the actual field work. Studying these maps and aerial photographs, if any exist, will often eliminate an unfavorable route from further consideration, thus saving your reconnaissance field party much time and effort. Contour maps give essential information about there life of an area. Aerial photographs provide a quick means for preparing valuable sketches and overlays for your field party. Direct aerial observation gives you an overview of an area that speeds up later ground reconnaissance if the region has already been mapped. Have the reconnaissance field party follow the route or routes marked earlier during the map study. Field reconnaissance provides you with an opportunity for checking the actual conditions on the ground and for noting any discrepancies in the maps or aerial photographs. Make notes of soil conditions, availability of construction materials, such as sand or gravel, unusual grade or alignment problems and

Requirements for clearing and grubbing. Take photographs or make sketches of reference points, control points, structure sites, terrain obstacles landslides, washouts, or any other unusual circumstances.

D. Demographic Survey

Vadghar is a town located in Panvel Block of Raigad district in Maharashtra. Located in urban area of Raigad district of Maharashtra, it is one among the 7 towns of Panvel Block of Raigad district. According to the administration records, the town number of Vadghar is 553516. The town has 1700 houses.

1) *Population of Vadghar Village:* According to Census 2011, Vadghar's population is 7341. Out of this, 3873 are males while the females count 3468 here. This town has 1216 kids in the age group of 0-6 years. Among them 645 are boys and 571 are girls.
2) *Literacy of Vadghar Village:* Literacy rate in Vadghar town is 67%. 4968 out of total 7341 population is literate here. Among males the literacy rate is 73% as 2828 males out of total 3873 are educated whereas female literacy rate is 61% as 2140 out of total 3468 females are educated in this Town. The Negative portion is that illiteracy rate of Vadghar town is 32%. Here 2373 out of total 7341 people are illiterate. Male illiteracy rate here is 26% as 1045 males out of total 3873 are uneducated. In females, the illiteracy rate is 38% and 1328 out of total 3468 females are illiterate in this town.

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E. Residential Building Plan

Residential construction practices, technologies, and resources must conform to local building authority regulations and code of practice. Materials readily available in the area generally dictate the construction materials used (e.g. brick versus stone versus timber). Costs of construction on a per square meter (or per square foot) basis for houses can vary dramatically based on site conditions, access routes, local regulations, economies of scale (custom-designed homes are often more expensive to build) and the availability of skilled trades people.

We are use a modern formwork technique called **Mivan** Shuttering And due to this technique the construction Faster than Conventional Formwork.

1) *Cul-De-Sac Pattern:* A comparatively narrow street or approach road with a dead end is known as the cul-de-sac street. At one end, it is connected with the main road and at the other end, it is provided with a bulbous end or some such arrangement so that vehicle may take a turn to return to the main road.

Following are the advantages of the cul-de-sac streets:

a) It affords reasonable privacy to the homes.
b) It facilities in the preparation of layout consisting of suitable blocks of an irregularly shaped plot of land.
c) It is economical in the pavement construction.
d) It provides quiet and healthy sites for the homes.
e) It reduces the dust nuisance and road accidents to a minimum.
f) It reduces to a considerable extent the noise and danger from traffic to a minimum .

2) *Shoe String Pattern:* An improved variety of the cul-de-sac street may take the form of a shoe-string development. The houses are arranged around a local road encircling a park with important features as follows:

a) The houses are arranged in groups in the shape of shoe around a local road.
b) The local road forms the string.
c) Each group is placed on the left and right side of the local road facing the park forming the shape of letter S.
d) Every house has approach from the local road only encircling the park or open space. There is no direct approach for any house from the main road.
e) The open space can be utilized for park, playground, Etc.

The shoe-string development grants the following advantages:

- It avoids the traffic accidents.
- It provides better social living.
- It provides calm, quiet and peaceful atmosphere

Figure 3.5 Cul- De-Sac pattern

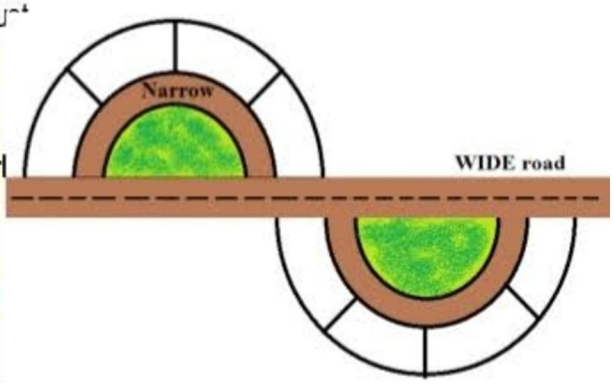

Figure 3.6 Shoe String pattern

3) *Placing Of Building:* We are providing this two pattern in our city and the placing of building are given below in flow chart 3.1 and 3.2 for both the pattern. To understand flow chart *3.1 and 3.2* take reference of figure 3.7.

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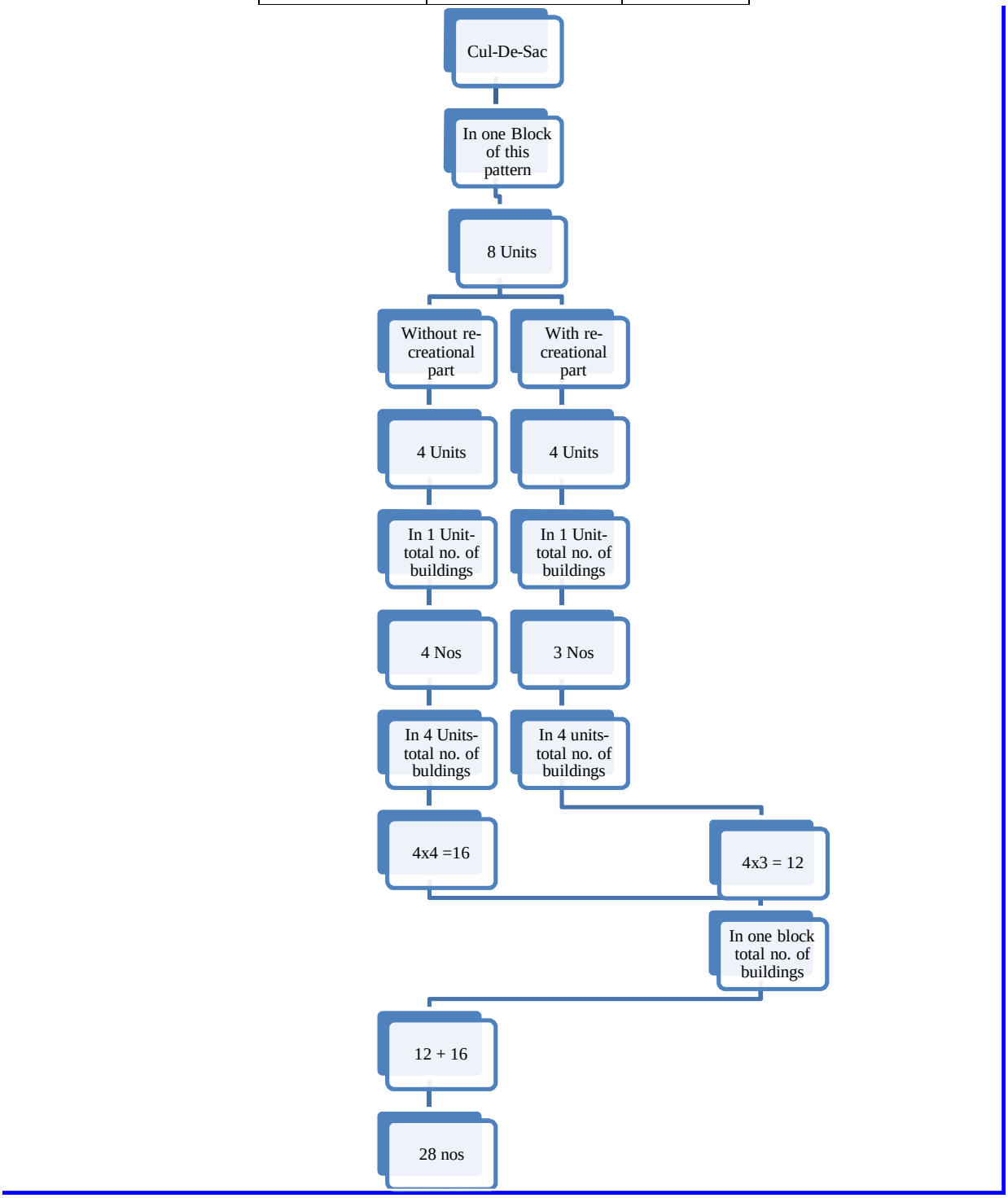
4) Area calculation for different Zone

Phase 3 area = 627667 m^2

Zone	Percentage (%)	Area(m^2)
Residential	50	313833.5
Commercial	10	62766.7
Industrial	15	94150.05
Recreational	25	156916.8



Flow chart 3.1

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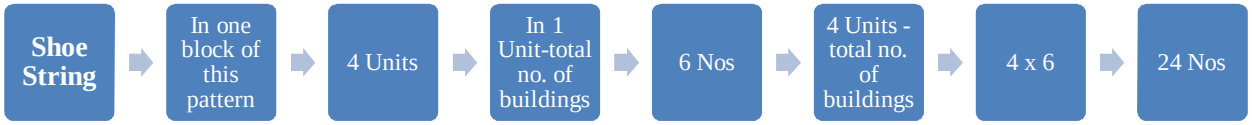

Flowchart 3.2

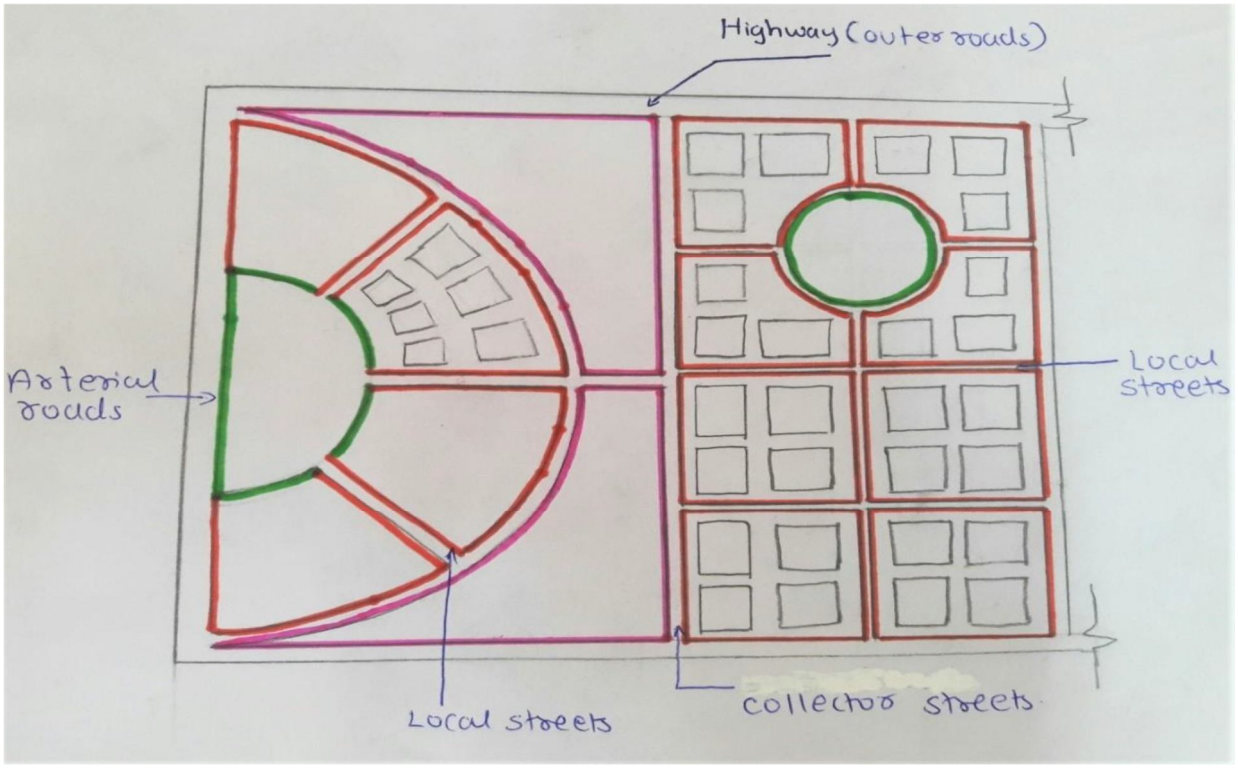

Figure 3.7 Shoe String and Cul-De-Sac

5) *Duration of Residential Building Construction:* For first 10 buildings, it will take around 5 months then every 3 months we will provide 10 buildings. According to this calculation 193 building are constructed in 5 year 2 month According to this, overall construction is to be done in 5 years and 4 months.
6) *Number of Flat:* There are 193 Residential Building and due to height restriction We provide only 4 floor and each floor contain 4 flat so we have 3088 flat in Vadghar phase 3.

F. Planning Of Other Facilities Such as WTP, STP, Parks

1) *Water treatment Plant (WTP):* Water treatment is any process that makes water more acceptable for a specific end use. the end use may be drinking, industrial water supply, irrigation, river flow maintenance, water recreation or many other uses, including being safely returned to the environment.

a) Residents of CIDCO administered areas, especially those living in Kalamboli, Karanjade, New Panvel and Old Panvel, have been getting erratic water supply.
b) The irregular supply is due to the ruptured old panvel main supply line of Maharashtra Jeevan Pradhikaran (MJP) from Bhokarpada water treatment plant to the city.
c) MJP has been supplying around 115 MLD to Panvel municipal council areas beside CIDCO administered nodes.
d) The pipeline of Bhokar pada is 40 years old pipeline, this pipeline has developed multiple leakages.
e) In the developing Karanjade area, developers are fetching potable water by installing pumps.
f) The main pipeline with a diameter of 1,320 mm.
g) The old pipeline of diameter 1473mm is replaced with new pipeline from Patalganga to Bhokarpada.
h) The cost is around Rupees 200Crore.

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2) Sewage Treatment plant (STP): Sewage treatment is the process of removing contaminants from wastewater, primarily from household sewage. It includes physical, chemical, and biological processes to remove these contaminants and produce environmentally safe treated wastewater (or treated effluent). A by-product of sewage treatment is usually a semi-solid waste or slurry, called sewage sludge, that has to undergo further treatment before being suitable for disposal or land application. Sewage treatment may also be referred to as wastewater treatment, although the latter is a broader term which can also be applied to purely industrial wastewater. For most cities, the sewer system will also carry a proportion of industrial effluent to the sewage treatment plant which has usually received pretreatment at the factories themselves to reduce the pollutant load. If the sewer system is a combined sewer then it will also carry urban runoff (storm water) to the sewage treatment plant.

G. Road Network

1) Width Of road According to Indian Road Congress.

a) Outer Road: 30m
b) Internal Road: 20m
c) Alternate Road: 15m
d) Local Road: 9m

2) Material for road Construction

a) First Layer

- G.S.B (granular sub base)
- W.M.M (wet mix macadam)
- SEAL COAT

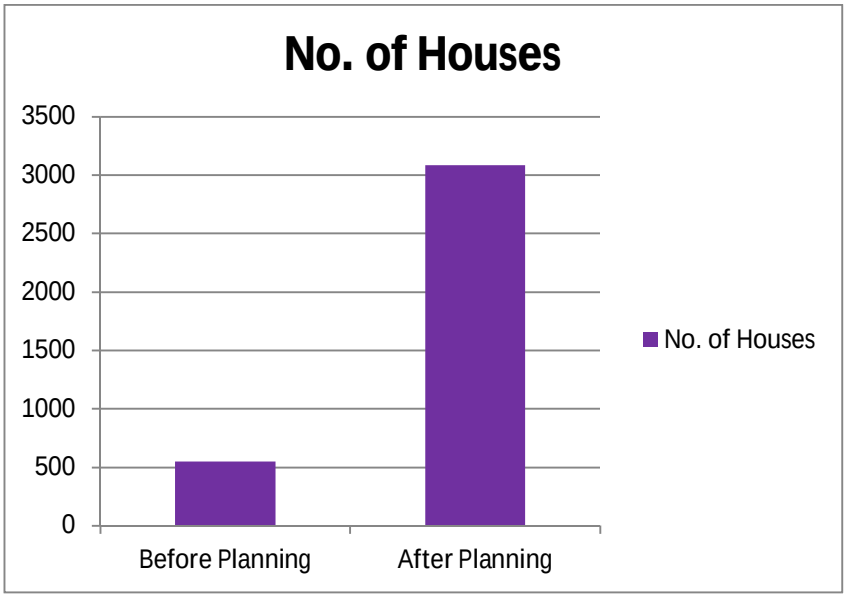
b) Second Layer

- B.B.M (bitumen bound macadam)
- D.B.M (dense bitumen road)
- A.C (asphalt concrete)

IV. RESULT

A. Number of Houses.

Before Planning	550 Houses
After Planning	3088 Houses



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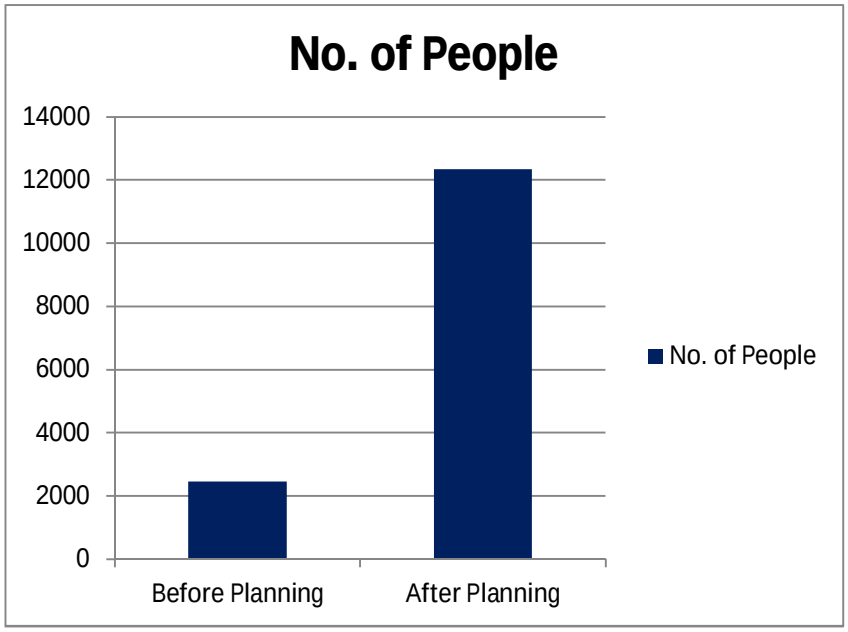
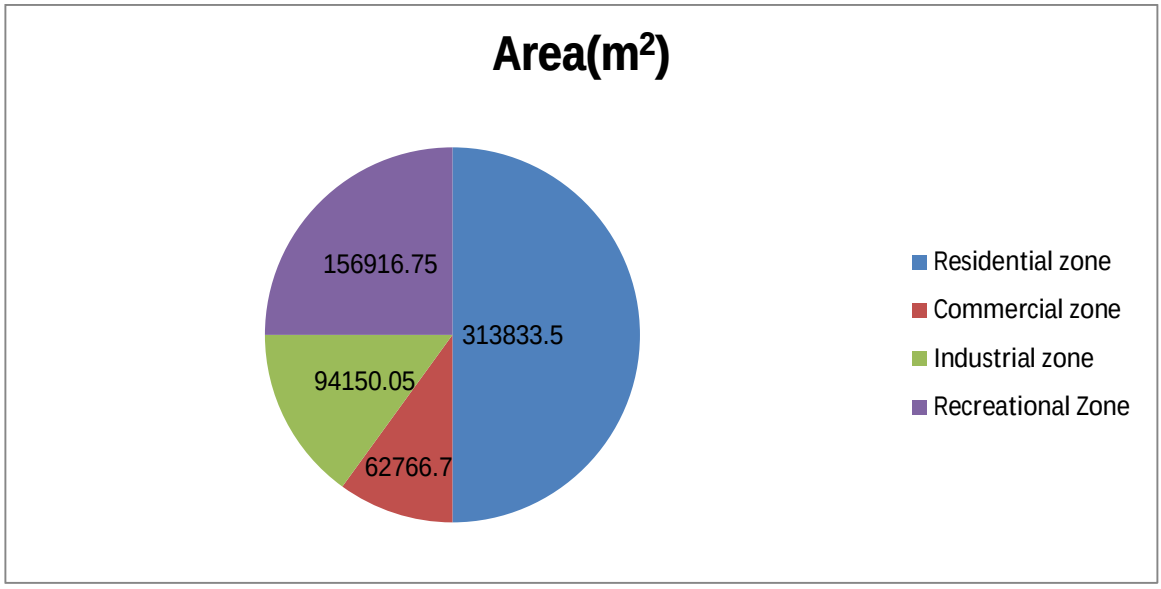
B. Population

Before Planning	2447 Person
After Planning	12352 Person



C. Distribution of Area

	Area(m^2)
Residential zone	313833.5
Commercial zone	62766.7
Industrial zone	94150.05
Recreational Zone	156916.8



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V. DISCUSSION

This study aim to improve how to approaches to a Town Planning Project. Town planning is the process of managing land resources. It involves the control of existing and new developments, as well as strategy preparation to ensure manage future requirements. It is a dynamic process that changes in response to policy, development proposals and local needs.

Town planners must try and balance the demands of landowners and developers, with the needs and concerns of the community and the policy framework. If planning is successful, it can provide protection for the environment, can promote and facilitate regeneration, can help create and sustain communities, and can create new and exciting places.

Town planning maintains the best of the past while encouraging creativity and innovation in the development of a sustainable future.

Planning theory is the body of scientific concepts, definitions, behavioral relationships, and assumptions that define the body of knowledge of urban planning. There are eight procedural theories of planning that remain the principal theories of planning procedure today: the rational-comprehensive approach, the incremental approach, the trans active approach, the communicative approach, the advocacy approach, the equity approach, the radical approach, and the humanist or phenomenological approach.

Technical aspects of urban planning involve the applying scientific, technical processes, considerations and features that are involved in planning for land use, urban design, natural resources, transportation, and infrastructure. Urban planning includes techniques such as: predicting population growth, zoning, geographic mapping and analysis, analyzing park space, surveying the water supply, identifying transportation patterns, recognizing food supply demands, allocating healthcare and social services, and analyzing the impact of land use.

In order to predict how cities will develop and estimate the effects of their interventions, planners use various models. These models can be used to indicate relationships and patterns in demographic, geographic, and economic data. They might deal with short-term issues such as how people move through cities, or long-term issues such as land use and growth.[16]

Building codes and other regulations dovetail with urban planning by governing how cities are constructed and used from the individual level.

An urban planner is a professional who works in the field of urban planning for the purpose of optimizing the effectiveness of a community's land use and infrastructure. They formulate plans for the development and management of urban and suburban areas, typically analyzing land use compatibility as well as economic, environmental and social trends. In developing any plan for a community (whether commercial, residential, agricultural, natural or recreational), urban planners must consider a wide array of issues including sustainability, existing and potential pollution, transport including potential congestion, crime, land values, economic development, social equity, zoning codes, and other legislation.

The importance of the urban planner is increasing in the 21st century, as modern society begins to face issues of increased population growth, climate change and unsustainable development. An urban planner could be considered a green collar professional

Some researchers suggest that urban planners around the world work in different "planning cultures, adapted to their local cities and cultures. However, professionals have identified skills, abilities and basic knowledge sets that are common to urban planners across national and regional boundaries.

VI. CONCLUSION

A. With the overall development of the economy increase in land price is inevitable.

B. The main factors influencing increase in the land price in urban areas are overall increase in the level of inflation, rise in the income level of the household or what we can say the rise in the paying capacity, scarcity of developed land.

C. Development of service sector especially Information technology / information technology enabled services, etc.

D. We are provided 3088 flats in our phase and houses in our phase before planning 550 only. so, we have 2583 flats are remaining to sell its our profit.

E. Planning & utilization of available lands for any given size, thus economically development of the best town plan, leading the highest aggregate land values

F. Urban design is where a city's form and function converge. By implementing well-conceived design principles, communities are not only beautifying their streets, they are encouraging their neighborhoods to operate better, safer and more efficiently.

G. To achieve steady and effective urban development through optimal allocation and distribution of resources, political interference in urban planning most stop so that urban planners will have the full capacity of exercising their duty.

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VII. ACKNOWLEDGEMENT

This paper is prepared out of the academic exercise carried out by Mohammed Shahid Wasiullah Shaikh on town planning of the Vadghar area. I am Mohammed Shahid Wasiullah Shaikh I complete my graduate degree in civil engineering from Rizvi College of engineering, Mumbai. I am thankful to my Diploma in Civil Engineering Prof. Nurool Quresh Qureshi (Professor of Civil Engineering Department Anjuman-I-Islam's Abdul Razzaq Kalsekar Polytechnic, New Mumbai) to guide me for this research and the authority of CIDCO to give me information about proposed airport and vadghar village and my friend Rizwan Salim Parmar to solve my problem during research.

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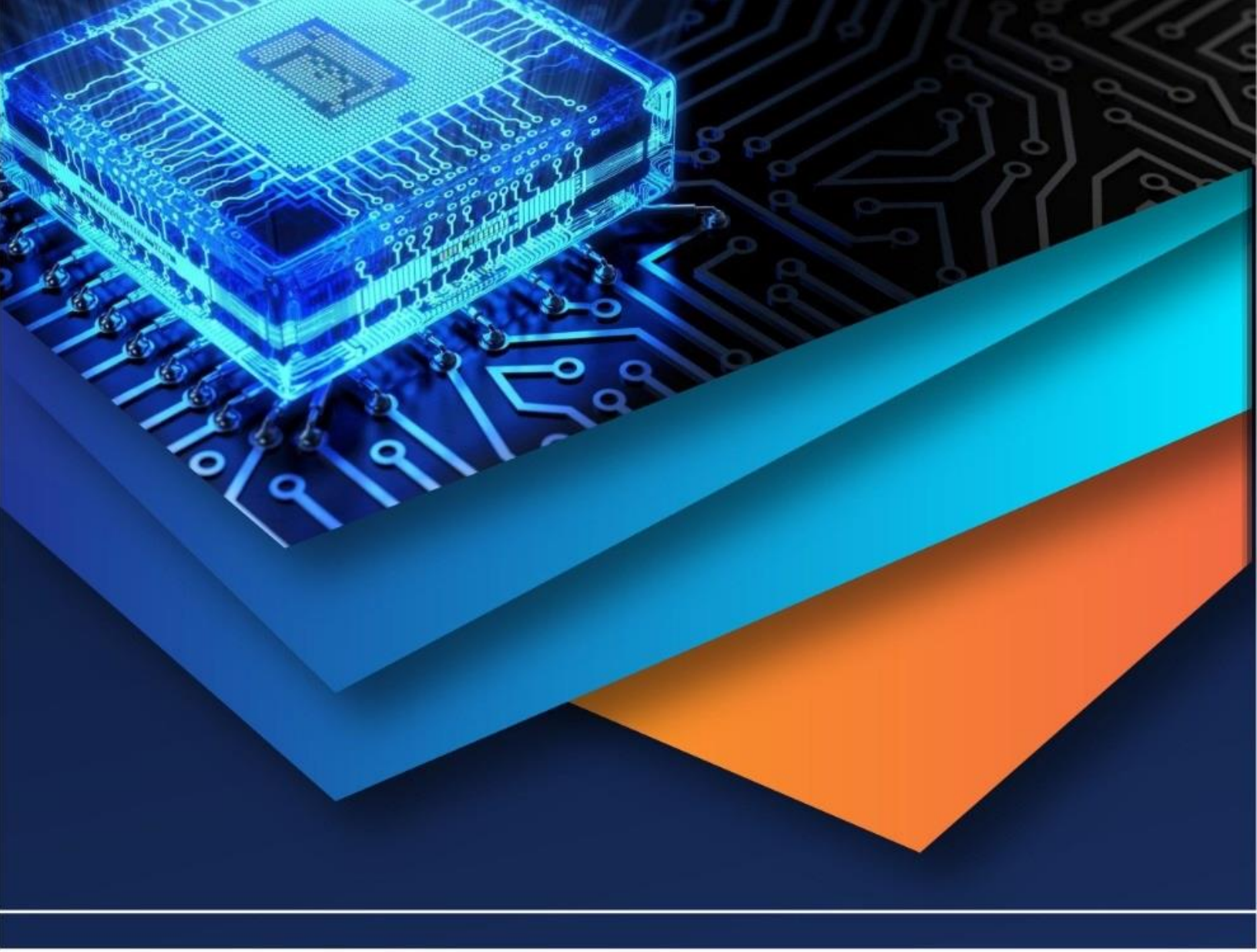

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