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Integrated High Rise Urban Hub (Mixed - Use Green Building) Using Photovoltaics & Perforated Sheets

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ABSTRACT: This report focuses on the concept of an integrated high-rise urban hub that incorporates green building techniques, specifically the use of perforated and photovoltaic sheets. The report explores the benefits of green building, including energy efficiency and sustainability, and how these techniques can be integrated into a high-rise urban hub to enhance its functionality and profitability. The report also discusses the challenges associated with implementing green building techniques in India, such as lack of awareness and high initial costs, and suggests strategies for overcoming these challenges. The report concludes by highlighting the potential of an integrated high-rise urban hub using green building techniques to transform the construction industry in India and contribute to sustainable development. Overall, this report serves as a valuable resource for industry professionals and researchers interested in green building and sustainable construction practices in India.

KEYWORDS: -Construction Industry, Project Management, Construction Industry, and Green Building etc....

1. INTRODUCTION

Vertical tower is a thing of beauty. They are striking monuments of ingenuity and complexity. For the past century, our world has been building the high-rise monuments to house our business, ourselves and even our cars, but compared to many other building types, vertical towers are relatively unexplored structures. We have been building up toward the sky as far back as recorded history, but only within the past 100 years have we been able to build so tall with such little mass to really make our endeavours and occupiable. This project report has been emphasized on integration of plants into skyscrapers and applying bioclimatic design principles which play a vital role for the energy conservation by the building as well as improving the living quality into these vertical cities. This was an amazing feat, and we took it in stride and have built many tall buildings all over the globe. But many of these tall buildings have all had problem, they became isolated storage bins high in the sky, with single uses and little diversity. Designers have caught on to this issue and exploration into how to create an amore interactive community type high-rise building has finally come into the spotlight. This thesis will try to explore an idea of a vertical community with a mixed – use program that is dense and diverse as any horizontal city we area so accustom to experiencing.

1.1 Objective

1. To study how architecture contribute to the mixed-use development
2. To design spaces which enhances the physical and visual interaction and reduce isolation.
3. To design spaces which bring closer to nature and harmony.
4. To bring transparency, openness and fluidity of space.
5. Priority to sustainable materials and functional requirements in design, while integrating services to it.

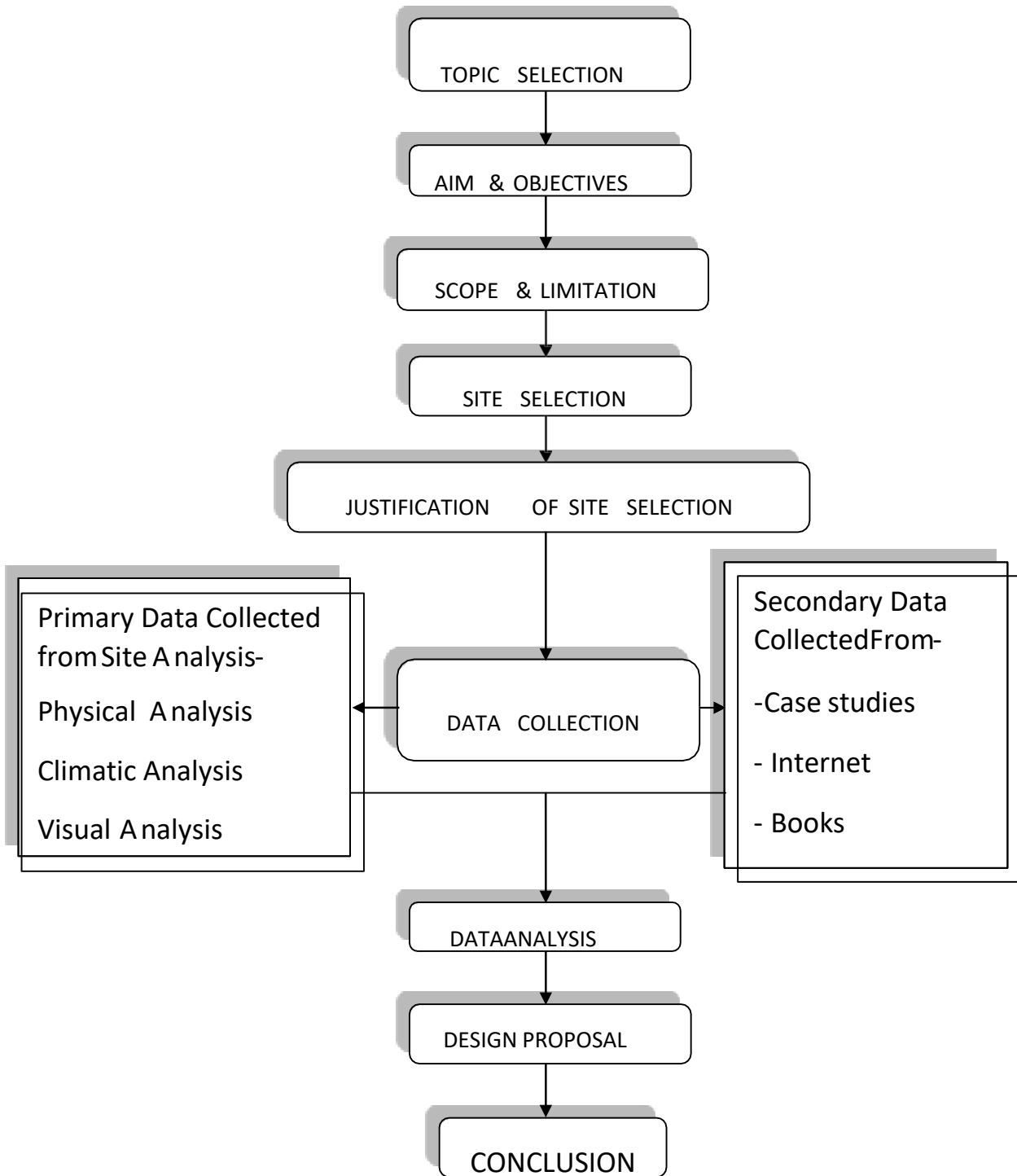


1.2 Scope of the Project Work-

- Analysis design principles for high-rise mixed-use development.
- Analysing and using new design techniques

II. METHODOLOGY

The literature review will focus on the benefits and challenges of green building techniques in high-rise construction, with a particular emphasis on the use of perforated and photovoltaic sheets. The review will draw on academic journals, industry reports, and government publications to provide a comprehensive overview of the topic. In addition to the literature review, the report will also include case studies of high-rise urban hubs that have successfully incorporated green building techniques. These case studies will be selected based on their relevance to the Indian context and will provide practical examples of how green building techniques can be implemented in real-world projects.





III.DATA COLLECTION

BHIKAJI KAMA PLACE:

Bhikajikama place has a vertical and horizontal zoning. But the vertical zoning is not that much high because the bhikajikamaplace is divided in various parts on site, hotel market, restaurant, offices is compiled in one site.

NEHRU PLACE:

Nehru place has horizontal zoning, because nehru place has large site area and the place has built in 1980. So technology is not that much introduced in india.

KOHINOOR SQUARE:

Kohinoor square help to study the strong vertical zoning and also compile or mix the various activities in one single building. Also kohinoor square help to study the vertical services running through building. Like mep

LINK HYBRID:

Link hybrid help to study the connectivity of buildings, also the link of different building tower to each other. Also link hybrid are help to study the landscape use in large scale project and its use in building design also. The link hybrid has vertical and horizontal zoning also that's why it help to study the vertical services.

SELECT CITY WALK:

Select city walk is a city centre type building, it helps to study the services uses in hotels restaurant.

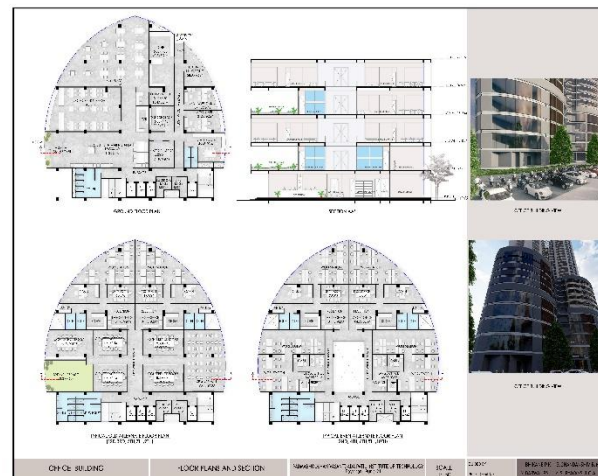
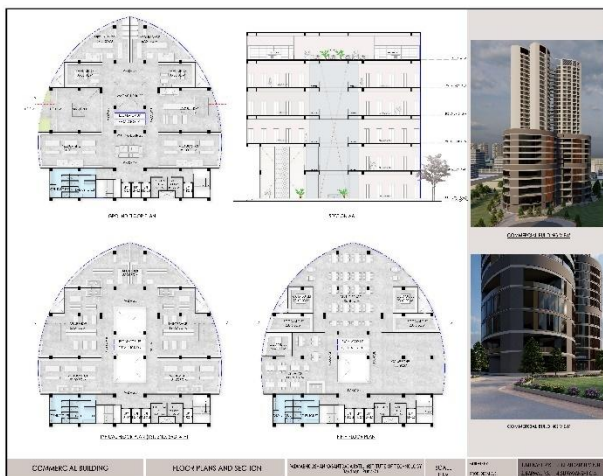
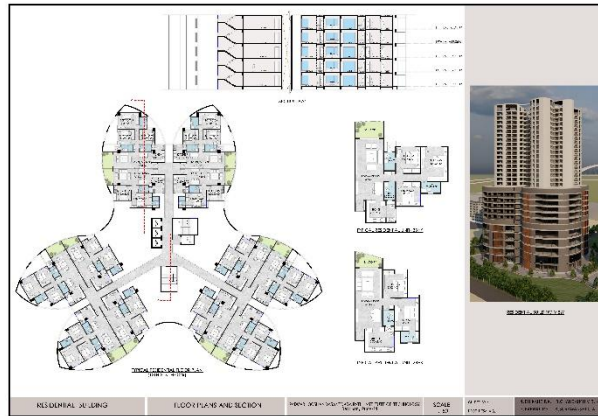
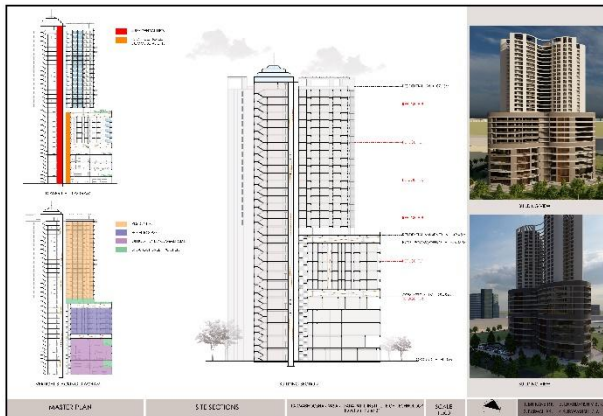
Also select city walk help to study the zoning of commercial paces and areas of shops, offices, cinema halls, food courts etc.

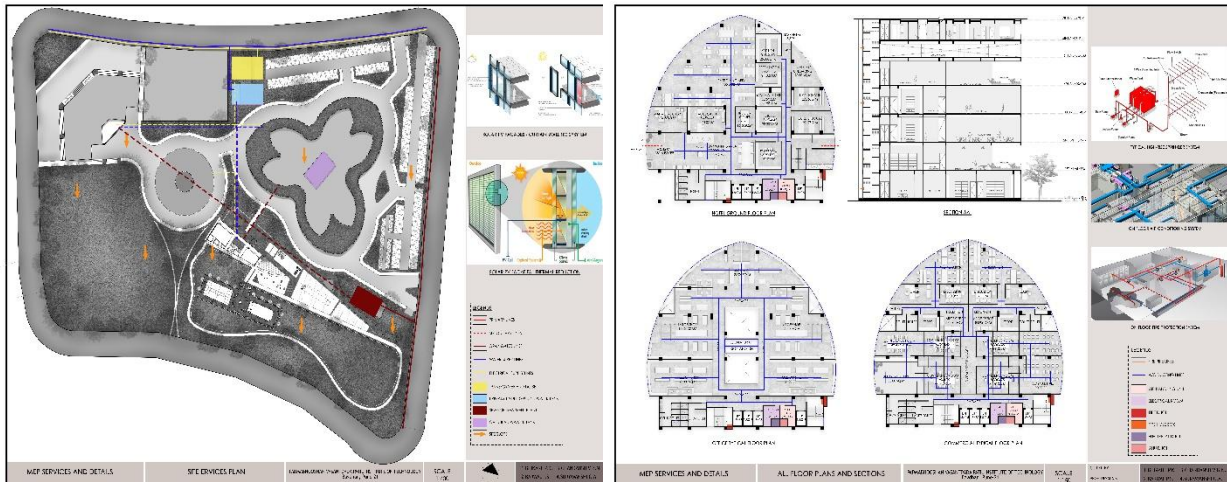
IV.DATA ANALYSIS

- From kohinoorsquare, linked hybrid importance of vertical zoning can be understood.
- Proper zoning of different activities/ spaces in a single building such as residential, office, retail, hotel can be seen in kohinoor.
- Service core including lifts and fire staircase can be seen.
- Vertical circulation of lifts in kohinoor can be learnt.
- Skybridges used in linked hybrid which includes formal, informal spaces can be taken into consideration.
- Facade treatment in kohinoor unitized curtain wall

V.DESIGN PROPOSAL

PROPOSED AREA STATEMENT		
SR.NO.	TITLE	AREA(SQ.M)
1	Area of plot	31,394.00
2	Gross net plot area	31,394.00
3	Area of amenity (5% OF 2)	1,569.70
4	Net Plot Area	29,824.30
5	Open space (10% OF 4)	2,982.43
6	Basic FSI (1.20)	35,789.16
7	TDR FSI (0.65 OF 4)(12m road)	19,385.80
8	Premium FSI (0.50 OF 4)	14,912.15
9	Permissible FSI (6+7+8)	70,087.11
10	Ancillary (0.60 OF 9)	42,052.26
11	PERMISSIBLE FSI(SQ.M)	112,139.37





VI. CONCEPT

FORM EXPLORATION

MAIN PLATE FORM FOR MAXIMUM BIRD VIEW

VERTICAL STACKING

SEPARATION OF ZONE IS SEPARATED, WELL DEFINED VERTICAL CONNECTION WITH ASSOCIATED COMMON SPATIAL EXPERIENCE STAGED. STAIRS IN ACCORDANCE WITH THE DESIGN CONCEPTS. SINGLE SPAN CIRCULAR CORRIDOR, TYPICAL MASSING PROGRAM. INTERSECTION OF MASSING & IN SEPARATION OF ARCHES SO LINES & LANDSCAPE TO COVER THE PENETRATION OF GREEN AREA THROUGHOUT. DYNAMIC FORM DIFFERENTIATE FORMS AND STANDING.

FORM

THE FORM CAN BE OBSERVED TO BE CIRCULAR UPWARDS. THE DESIGN OF CIRCULAR PLANS TO AVOID TO MINIMIZE THE WIND IMPACT.

EARLY IDEAS FOR FACADE DESIGNING

ZONING

- RETAIL SHOP & RESTAURANT
- OFFICE BUILDING
- ITC BUILDING
- COMMERCIAL BUILDING
- RESIDENTIAL BUILDING
- OPEN SPACE

USING SLOT LOCATION TO CREATE NATURAL SEPARATION BETWEEN BUILDING VOLUMES.

VERTICAL ZONING FOR HIGH-RISE

Inside a photovoltaic cell

SOLAR PHOTOVOLTICS

ONE OF THE BEST WAYS TO IMPROVE THE BUILDING ENERGY EFFICIENCY AND REDUCE CARBON FOOTPRINT IS TO TAKE ADVANTAGE OF SOLAR ENERGY. PHOTOVOLTAIC PANELS CAN BE INTEGRATED INTO BUILDING FACADES TO GENERATE CLEAN ENERGY WHILE PROVIDING SHADING AND ENERGY EFFICIENCY. PHOTOVOLTAIC PANELS CAN BE INTEGRATED INTO BUILDING FACADES TO GENERATE CLEAN ENERGY WHILE PROVIDING SHADING AND ENERGY EFFICIENCY.

PERFORATED SHEET LOUVERS

PERFORATED SHEET LOUVERS ARE AN IDEAL SOLUTION FOR PROVIDING SHADING AND ENERGY EFFICIENCY TO BUILDINGS. THEY ALLOW NATURAL LIGHT AND VENTILATION WHILE PREVENTING EXCESSIVE HEAT AND GLARE. PERFORATED SHEET LOUVERS CAN BE INTEGRATED INTO BUILDING FACADES TO PROVIDE SHADING AND ENERGY EFFICIENCY.

CONCEPT

MIXED USE HIGH-RISE

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GUIDED BY:
PROF. DESAI A.S.

1. BHIKANE P.K. 3. CHANDANSHY B.N.
2. BARWAL P.S. 4. SURYAWANSHI C.A.

VII. CONCLUSIONS

The most settlements whether planned or unplanned will end up becoming some sort of mixed-use development because residence will gravitate towards activity and likewise, activity toward residence. The renaissance of the mixed-use building continues to revitalize our downtowns, sustains our small neighbourhood commercial areas and has become a viable component of the urban and suburban pedestrian urban village concept. Even with the challenges inherent in mixing residential and commercial, the density impacts on our established neighbourhoods, and the continued scepticisms of lenders, this is a wonderful building type that enhances the human experience because: It will promote convenient urban opportunities for residents to work shop and play within a small community. This life style takes advantage of public amenities such as parks, green and public transport Most essentially, a good mixed-use design fosters a more vibrant and liveable urban environment and nothing has greater impact on improving life in the city.

VIII. ACKNOWLEDGEMENT

I wish to express my deep sense of gratitude towards my guide Prof. A. S. Desai (Civil Engineering Department) for giving me an opportunity to work on this topic. They have always encouraged me with new ideas & helped me to develop interest in this field. Their valuable inputs, precise guidance, unremitting encouragement & vigilant supervision were instrumental in carrying out this topic.

I would also like to thank Dr. C. M. Sedani (Principal, PVPIT), Dr. R. R. Sorate (H.O.D. Civil Engineering Department, PVPIT) & all Civil Engineering faculties for their kind advice & support. I am also thankful to my parents for their moral support, motivation & encouragement. Thank you.

Pratik krishnathBhikane
Bhagwan NavnathChandanshiv
Pratik SachinBarwal
Chetan Anil Suryawanshi

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