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Criterion 3– Research, Innovations and Extension

3.2 Research Publication and Awards.

3.2.2

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Criterion 3 – Research, Innovations and Extension

Key Indicator – 3.2 Research Publication and Awards

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NCSAPT 2020 - National Conference on Sustainability in Architecture,Planning and Technology

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Sustainable Strategies for Living Architecture of West- Maharashtra Context : Climatic Responses & Sustainable Insertions[Full-Text]

Ar. Vijay B. Sambrekar, Dr.Suresh V.Ranade, Ar. Shantanu P. Jagtap

The environment like our bodies can metabolize nutrients and waste. Living Architecture focuses on these processes, integrating ecological functions into the buildings to catch, store, and filter water, purify air, and process other nutrients. Living Architecture also addresses biophilia, the documented health benefits associated with being in touch with living systems in the built environment .Living with sustainable a life is a need of a time now. In specific Architecture of West â€“Maharashtra w.r.t. Residential is a blend of Traditional aspects with modern thoughts.

LIVING FOOTPRINTS Sustainability and traditional wisdom[Full-Text]

Ar.Bindu Malhotra

The COVID-19 pandemic has shown us the reality. During this time of crisis, we are relying upon old tradition wisdoms of using Turmeric, tulsi, and hot water for sustainability. No wonder, even in the technologically modern 21st century, solutions can be found in olden times. Navaghrah, Navseeds, Ayurveda and yoga belong to ancient times and there is so much to learn from it. What is sustainability - is it livable conditions, is it safe comfortable conditions, is it old living methods, or is it modernization/urbanization.

Concrete and its study as an eco-friendly material of building construction[Full-Text]

Ms. Gautami Prabhakar Bura, Dr. Parag Govardhan Narkhede

Concrete has a leading role to play in meeting the big challenges we face today. When taking the performance of a building over its whole lifecycle into account, concrete offers significant benefits over other building materials, such as its durability, its thermal mass, load carrying capacity, its recyclability, and its carbon uptake. Concrete has one of the highest CO2 emissions of all building materials, during the manufacturing of cement these emissions are produced. A way to optimize its production and application in construction while decreasing its environmental impact is essential.

Effect of tall building cluster on Environmental Quality within and in adjacent areas[Full-Text]

Ar. Ankita Pathare

Today, tall building is a phenomenon that the world, particularly large cities are facing. Tall buildings are constructed in order to exploit the land, but have negative effects on the environment and create new problems including increase in congestion, environmental pollution and cut city-dweller' access to fresh air and sunlight. However, due to ever increasing population and land shortage, tall buildings cannot be avoided.

Green Roof Design for Urban Homes in Tropical Climate[Full-Text]

Ajinkya Niphadkar, Pooja Niphadkar

Global warming scenario is becoming crucial day by day. Designing green buildings & lowering carbon footprints at highest became an important part of construction industry. Under such crisis, proposing a green roof for city houses will help in lowering the use of non renewable energy. This study is directed towards comprehensive study of green roof. A case of bungalow having an area of 1250 sq.ft. is been chosen for installation of the green roof. The green roof uses an area of 388 sq.ft. & roof utilizes photovoltaic panels & grid linked photovoltaic system of 5400 watts. The roof comprises of 15 solar panels with aggregate generation capacity of 4650 watts.

Life cycle Assessment of different walling materials and their comparative analysis[Full-Text]

Ar. Rahul C. Shrikhande , Ar. Pranjali Desale

Energy use of a building can be derived from five sources: Embodied Energy from mining and manufacturing of materials, Energy from transportation of materials, Energy from construction of the building, Energy use during operation of the building, and Energy used in the disposal of the building at the end of its life. Buildings use many materials with a high Embodied Energy, and it is estimated that, 10% of its total energy use comes from Embodied Energy in materials.

Effect of tall building cluster on Environmental Quality within and in adjacent areas. (A case of Pune City.)

Ar. Ankita Pathare, Assistant Professor, MVP College of Architecture, Nashik

Abstract— Today, tall building is a phenomenon that the world, particularly large cities are facing. Tall buildings are constructed in order to exploit the land, but have negative effects on the environment and create new problems including increase in congestion, environmental pollution and cut city-dweller' access to fresh air and sunlight. However, due to ever increasing population and land shortage, tall buildings cannot be avoided. This paper investigates the relationship of tall buildings with environmental parameters, namely sunlight, air temperature and wind patterns. The study is done to understand the impact on air temperature and wind pattern due to a group of 12 floors (36m) tall buildings. The study also aims to verify that the impacts studied in other research paper, hold true for a buildings with 36m height. The study is carried out in Pune and two case studies are considered for the study. Readings are taken at identified points. It is found that there is no air temperature variation observed due to the shadows casted by the buildings. The wind speeds however vary within and in adjacent areas. The variations observed are not only because of the heights but also due to architectural form and layout of the project.

Index Terms— tall buildings, environmental parameters, wind speed, air temperature, impact of building height, architectural form, environmental quality.

1 Introduction

T all buildings may also be referred to as 'Multi Dwelling Unit' or 'Vertical cities'. Tall buildings have gained popularity throughout the world. They act as landmarks of the city; create a unique skyline and increase land use efficiency (K.Rangwala, Feb,2010). Tall buildings have the potential to decongest the urban sprawl on the ground and increase the urban density by housing higher number of people in lesser space (Ali, July 2012.). Tall buildings are constructed in order to exploit the land but have negative effects on the environment and create new problems including increase in congestion, environmental pollution, cut citizen access to fresh air and sunlight.

Although there is no precise definition that is universally accepted, various bodies have tried to define what 'high-rise 'means (Patil, February 2014):

- The New Shorter Oxford English Dictionary defines a high-rise as "a building having many stories".
- The International Conference on Fire Safety in high-rise Buildings defined a high-rise as "any structure where the height can have a serious impact on evacuation"
- The International Building Code (IBC 2000) and the Building Construction and Safety Code, NFPA 5000TM-2002,Paragraph 3.3.28.7 of the Life Safety Code®, 2006 edition, define high-rise buildings as buildings 75 feet or greater in height measured from the lowest level of fire department vehicle access to the floor of the highest occupiable story.
- The National Building Code of India (NBC), a tall building is one with four floors or more or a high-rise building is one 15 meters or more in height.
- The Pune Municipal Corporation (PMC) proposed that any building with a height of 36m (twelve floors) be categorized as a high rise.

2 Data of Pune

2.1 Climatic Data of Pune

Pune is located 18°31′13°N and 73°51′24°E. The study for the project is carried out in October. The climatic data considered for the base case, therefore for the month of October. The daytime and nighttime temperature of Pune in October is 31.8°C and 18.8°C respectively. The relative humidity is 63.8%. The prominent wind direction, in October, in morning and evening is west. Wind speed in the morning is 7km/h and in the evening it is 19km/h. (IMD)

2.2 High rise structures in Pune

Pune is the seventh largest city in India and second largest city in Maharashtra after Mumbai (L. KantaKumar, 2011). The distance from Mumbai is 148 kms. Pune Municipal Corporation (PMC) jurisdiction extends up to an area of 243.84 sq. km. housing 2.54 million populace within 144 wards. (Pune Municipal Corporation. Pune and Growth direction. Comprehensive mobility plan for Pune city.) The population of Pune accounts for 35 percent of the total Urban population in Pune District and 60 percent of total PMR population. The PMC's population has grown from 1.57 million in 1991 to 2.54 million in 2001, and in the last decade experienced a compounded annual growth rate of 4.94 percent. (L. KantaKumar, 2011) In Pune a high-rise building is defined as classified in the National Building Code (NBC). Any built structure, which is 36m and above is classified as a high-rise. The development pattern of Pune indicates that though suburb areas like Hinjewadi developed as IT hub, have witnessed high rise structures, most of the city and its peripheral suburbs have developed tall structures for residential use (Sundrani).

2.3 Role of building on Climate

Tall buildings have an effect on the urban wind pattern. Urban wind is wind flowing over an open area, above and around

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A REVIEW OF CONVENTIONAL RIGID & FLEXIBLE PAVING MATERIALS FOR SUSTAINABLE URBAN ROAD CONSTRUCTION AT NASHIK, MAHARASHTRA, INDIA

Ar. Radhika Ronak Bhattad
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ABSTRACT:
The development and maintenance of urban road infrastructure systems is an integral part of modern city expansion processes. With the rise in awareness of environmental issues and diminishing natural resources, the focus of infrastructure construction industry is shifting towards eco-friendly materials and technologies. Rehabilitation of urban roads involves construction of rigid or flexible pavements depending upon its existing typology of pavement. This research paper shall be a review of conventional sustainable rigid and flexible pavement materials. A comparative analysis of materials such as, Plain Bitumen, Plastic in Hot Bituminous Mix, Reclaimed Asphalt Pavement (RAP), Pavement Quality Concrete (PQC) and Ground Granulated Blast Furnace Slag (GGBFS) in Ordinary Portland Cement shall be done with respect to the construction management principles. The comparison matrix shall be derived from the existing literature review and suitable case studies. The research would culminate to encourage the use of Waste Plastic in Hot Bitumen Mix and Ground Granulated Blast Furnace Slag (GGBFS) in Ordinary Portland Cement as sustainable flexible and rigid pavement materials respectively.

KEY WORDS: *Sustainability, rigid, flexible, pavements, bitumen, concrete*

INTRODUCTION:

Urban roads are a part of urban infrastructure. These roads are required for both intra-city and intercity movement and render much higher level of service compared to Rural Roads, State Highways and National Highways. The planning, development and maintenance of urban roads are often a challenge to the engineers.[1] Nashik is one of the emerging cities in Maharashtra. The road network of the city have been developed rapidly due to its social, cultural, industrial and mythological importance. From the current road conditions, it can be seen that these urban roads will require maintenance from time to time.

The road pavements are broadly classified in two types: rigid and flexible pavements. Generally, for the maintenance of rigid pavements Pavement Quality Concrete (PQC) is used and for flexible pavements, plain bituminous mix is overlaid. These materials consume a remarkable amount of energy during the production, construction, operational and the end of life phase. If the maintenance of roads is done using appropriate sustainable materials it shall: reduce the costs, reduce the emissions and reduce the consumption of raw materials thus preserving the resources for the future generations.

The aim of this study would be to review the sustainable rigid and flexible pavement materials which can be opted with regards to maintenance of major urban roads (12 m wide) in Nashik. The research is carried out with the objective to lay down a comparative matrix of materials (plain bitumen, waste plastic in hot bituminous mix, reclaimed asphalt pavement, PQC, GGBFS) with respect to the construction management principles and ultimately recommend the most sustainable material.

ROAD PAVEMENT MATERIALS:

Road Pavement:

A road pavement is a structure consisting of superimposed layers of processed material above the natural soil sub-grade, whose primary function is to distribute the applied vehicles load to the sub-grade.[2] Considering the vehicle distribution, for 12 m wide four lane single carriageway roads, the design of the pavement should be based on 40 % of the total number of commercial vehicles in both directions.[3] The road pavements are broadly classified in two types namely, flexible and rigid pavements.

Types of Road Pavements:

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Dance and Music in Indian Temple Architecture

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Abstract -Fine arts in the form of dance, music, painting, sculpture or architecture have a great power of attracting the attention of human beings of diversified interests and tastes. Indian art in the form of dance, music, theatre, poetry, painting, sculpture, architecture have evolved through the centuries in complementing each other. They coexist as an intertwined system of Hindu philosophy. The art forms of music, dance and architecture define the three-dimensional space by sharing a special relationship. Human existence and his activities, structure the architectural space. The ancient Hindu temples are well known for their magnificent architecture and construction. Almost all the temples across the country have majestic and beautiful sculptures carved on their interior and exterior façade. These sculptures include various Gods and Goddesses, mythological creatures like Yakshas and Yalis, Flying Gandharvas, Dancing figures, Musicians playing various instruments, animals like horses, elephants, bulls are most prominent. It is also mysterious to see that the pillars which in absence of heavy carvings are made to produce melodic sounds. This paper attempts to illustrate upon the connection and relation between the art forms of music and dance through the folklore of temple architecture.

Key Words:Temple architecture, Natyashastra, Sculptures, Mantapas

1.INTRODUCTION

The architecture of India is rooted in its history, culture and religion. Indian architecture progressed with time and assimilated the many influences that came as a result of India's global relation with other regions of the world through its past. The establishment of traditions and cultural interactions led to the examination and implementation of the various architectural methods practiced in India. Music and Dance have been the integral part of the Indian performing arts and showcases the diversity with the region. The temples play an important role in the social, economic and spiritual life of the people.

ChoodamaniNandagopal in her article – 'Indian dance and other arts' say 'What the thousand words cannot communicate, dance hand gestures or few lines and colors create a great sense of visual impact of everlasting nature. Many philosophical or religious paradoxes that are found extremely difficult to touch the minds of people are conveyed with ease through the medium of art. Every culture in its formative stages have applied the visual and performing art forms to communicate the complex ways of religion and thereby brought the followers into the fold of collective consciousness. The art would take the people to a state of wellbeing which could motivate them furthering the cause of human progress.'

The temple in Indian art is symbol of the universe inhabited by Gods, demi-gods, human beings and animals which are represented on the walls, pillars, ceilings and door jambs. Both good and evil which exist in total reality are taken into account. This is an important theme in Indian art. The temple is also the spiritual center regulating not only the religious life but also the social activities of man. Here, one gets to learn all fine arts and the very art of living. Hence all aspects of life are depicted on the temple walls. (Banerjea 2004:23).

Someof the temples built between 8th and 16th century have the interesting architectural elements like musical pillars and musical steps. They are made of solid granite stones. The musical pillars and steps are often carved from a monolithic solid granite stone with calculated geometry like length, diameter and carvings and are tuned to produce the proper pitch and scale and tones. The produced sound thus fills the atmosphere with melody. They were played to accompany the devotional hymns and often as the percussionists to the vocal singers and dance performers.

In the ThillaiNatraja temple at Chidambaram, the Raj Gopuram has carvings of 108 postures of dancing (Bharatnatyam). Similarly, the ancient sculptors infused music in the stones used in the temple construction. They not only produced musicians playing various instruments but also chiseled various sound producing elements. One can come across musical pillars, musical stairs, bronze and stone musical icons, musical bells and musical pipes made out of stone.

2.NATYASHASTRA – EVOLUTION OF INDIAN PERFORMING ARTS

Natyashastra is a written Sanskrit text on the performing arts, drama, theatre, dance, music and other various topics. The word Natyashastra also refers to a global category of literature encompassing the ancient Indian tradition of dramatic performance. The work dates back to as far as at least 1st millennium BCE. The text consists of 36 chapters with total 6000 poetic verses covering the subjects that include dramatic composition, structure of a play and the design of the set, genres of acting, body movements, costumes and make up, musical scales and instruments and overall synchronization of the art. The Natyashastra is notable as an ancient encyclopedic treatise on the arts, one which has influenced dance, music and literary traditions in India.

India being the land of rich culture and heritage had music, dance and drama as the integral part of the cultural society since beginning. The art forms so developed were

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ADAPTIVE LAND USE, AN APPROACH TO CONSERVE BIODIVERSITY, CASE OF NASHIK

Baste Prajakta*
Manolkar Ketaki **

ABSTRACT

Urbanization, has posed a threat to biodiversity. The livability and sustainability of a city is to a notable extent contingent upon the survival of urban nature (Lo, Jim, 2012). Nashik, is a rapidly developing tier II city. A water supply canal of 26 kms, running through the city became redundant after implementation of piped water supply scheme in 1984. A proposal of converting this space into open public facility for physical fitness was executed for a stretch of 1.5 kms along with tree plantation. Three stretches became significant green pockets over a period of 20 years in an urban setting and hence extremely successful as public outdoor spaces. The research is done to map and analyze the three pockets in which plantation of trees has developed in the past 20 years. Mapping is done w.r.t number of trees, the indigenous and non-indigenous species in these stretches. Diversity within the trees in these three stretches and comparative percentage of indigenous versus non-indigenous trees is analyzed. A comparative analysis indicates variation in the diversity which gives the clues for the conclusions and the proposal to be developed.

The research endorses adaptive reuse of land to increase tree cover in an urban setting, as an innovative application for developing and conserving biodiversity in an urban setting. In reference to the current pandemic situation and based on the findings of the study, it is proposed to develop the remaining stretches of this land as urban green area, with appropriate proposals for tree plantation for biodiversity conservation.

Keywords : *Adaptive Land use, Trees, Biodiversity conservation, Indigenous*

1. Introduction

In India, percentage of million plus cities w.r.t total urban population of the country has increased drastically from 6% in 1901 to 19% in 1951 and further to 33% in 1991 (Maiti, Agrawal, Hum, 2005). Increase in population has adversely affected the green cover in urban India. The challengep ofp makingp thep citiesp “sustainable”p isp especially relevant for a highly populated and rapidly growing economy, such as India's, which is undergoing rapid urbanization.

Sustainable development calls for a convergence of economic development, social equity and environmental protection (Drexhage and Murphy, 2013). One aspect in environmental protection is the conservation of biodiversity in the urban areas. These urban plant communities provide the resource base and the above- and below-ground habitat structure for the remaining biological community (Faeth, Bang, Saari, 2011).

The objective of the research is to reinforce the adaptive reuse of derelict canal space for developing and maintaining biodiversity within the Nashik city by analysing trees as one vegetation type and to propose guidelines for the development of vegetation in the entire length of canal.

2. Literature review

According to Aabshar U. K. Imam, Uttam Kumar Banerjee government bodies in urban India have focussed more on preservation of existing greenery than on afforestation in urban areas. Keeping with the national forest policy, it is discussed, trees should be planted and maintained along railway lines, canals and streams. They also

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Envisioning India 2050
Concerns Of Urban Environment (Ncei): Social Issues

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ABSTRACT
AIM: To study and understand the issues or problems India is facing in first two decades of 21st Century and their impact on urban environment and development.
METHODOLOGY: We are dreaming to be the World's largest economic power and Envisioning India in 2050. But at the same time there are so many social, political issues which are to be address in time with proper intension and sensitivity. To study the impact of social issues on development and urban environment, we have to study and understand the Social Issues, Causes and reasons of the issues impacting the urban environment. Understanding, comparing and analysing the impact of these issues, Finding out the solutions and precautionary measures to minimise the impact. Formulation of implementation strategies and Govt. Role in policy making.
FINDINGS: It has been seen even in the past that social issues like Uncontrolled rate of population, Poverty, Communal disharmony, Need of basic Infrastructure, lack of education, Unemployment, Corruption, Crime, Globalization, Regionalism, Political intervention, lack of vision always impacts badly on all facades of development. It is also related to Political impact, willpower and stability of Govt. for implementation of strategies.
IMPLICATIONS: For strategic planning and visioning for 2050, we have to plan strategy at all levels. Govt. will be responsible for developing the vision for development, but at the same time we as citizens should also be very sensitive toward the implementation of all the strategies and we should be sensitive enough towards discipline and development, to create a better urban environment for living and working in 2050.
KEYWORDS: Urban, Environment, Issues, Vision, Development.

1.0 INTRODUCTION:

Bharatratna Dr A.P.J. Abdul Kalam, our most distinguished scientist, Ex. President, examined India's strengths and weaknesses to offer a vision of how India can be among the world's first five economic powers in the year 2020 and he developed a Vision for the New Millennium. They cite growth rates and development trends to show that the goal is not an unrealistic one. Past successes, too, bear them out. As per Dr. Kalam, we were able to launch the green revolution at a time when experts had all but given up on India ever becoming self-sufficient in food. Similarly, in the field of space technology we started from scratch to have today a system of satellite-based communication linking remote regions of the country. The same sense of purpose can lead us to success in many other areas crucial to achieving the goal of a prosperous, strong nation.

Dr. Kalam In his book India 2020, strongly advocates an action plan to develop India into a strong nation by the year 2020. He regarded India as a knowledge superpower and developed nation. The book describes the present and future scenario in India and developed countries.

His vision was to convert India into a 'developed nation' by 2020, this being defined as an India that will be one of the five biggest economic powers, self–reliant in energy and food security. This reads too much like a bureaucratic / corporate vision document.

Unfortunately, Year 2020 came with lot of threats, uncertainties and issues which clearly highlighted that, Dr. Kalam's dreams shattered due to so many social and political reasons and

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Changing Housing Trends & Political Influences

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ABSTRACT

It's all about political decisions, agendas, policies which impacted the housing and its overall fabric during last 70 years, which divided country into Bharat and India. It's a clear vertical split in society, their housing and economic zones, like Rural, Rurban, Urban and Metro. Everything changed worldwide during the last 50 years. Housing, which is also not untouched? So many trends originated from social, cultural, economical impacts and majorly influenced by Political policies, vote bank politics or due to election agenda. Decisions taken under political influences ruined rural India, changing its fabric and distributing it in many ways.

It also impacted the character of vernacular architecture in different regions, and changed housing trends bringing in cheap quality, mediocre planning & questionable Material quality and type. Our policies are creating smart cities and also poor villages, slums within city. Gandhiji said," Go to villages."

But unfortunately, the political agenda of past governments unknowingly promoted rural to urban migration this study focused on,

Changing housing trends in Gaon, Shahar and Mahanagar due to political influences.

It is also resulting into ruined Bharat & uncontrollable Urbanization in India with poor infrastructural support.

Key words: Change, Housing, Impact, Polities, Trends.

1. INTRODUCTION:

Political willpower or decisions always influences various sectors and the overall growth of region. Housing is one of the sectors which always influenced in good and bad ways due to political influences. There are so many examples in history like Nalanda, Fatehpur Skirl, Jaipur, Aurangabad, Chandigarh, Amravati (New).The decisions taken by rulers developed or destroyed the cities and housing. Most of the time the decisions were politically motivated or sometime reasons beyond their control forced them to take such decisions. Due to such political decisions only there is a clear split in Rural and Urban India. All facilities like good roads, hospitals, schools, markets, Industries, employment were focused/concentrated in urban areas, so Population migration was always from Rural to Urban. That migration also impacted these housing trends in all the eras. There are so many factors, which influenced these housing trends but I am focusing only on Housing trends influenced by politically motivated decisions.

2. HOUSING & HOUSING TRENDS

As per Oxford Dictionary, Houses and flats considered collectively. As a housing development'

As per Business dairy - Buildings or structures that individuals and their family may live in that meet certain federal regulations. Different housing situations vary for individuals and may depend on age, family, and geographic location.

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REGIONALISM IN ARCHITECTURE & GLOBALIZATION

VIJAYKUMAR B. PAWAR
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ABSTRACT

When we talk about architecture it is not only about buildings. But it's about the culture, economy, natural & man-made resources, people and it's about the geographical location- Region.
So when we study architecture of various regions at least 100 years before, we can easily understand and observe the impact of regional characters and specialties on architecture like Greek, Roman, Egyptian landmark buildings.
During 1980- 90's 23 developed countries like America, Britain, and Australia took lead for GATT agreement / WTO and almost forced developing countries to accept the same.
They got a huge business market and we got a choice for variety of brands.
That's why in 1980's cars and bikes like Ambassador, Fiat, Rajdoot and Jawa
were traditional brands on Indian roads but today we have brands like BMW, Mercedes and other upscale cars, bikes sharing our roads.
Is it the only side of globalization? Answer is No.
It impacted each & every corner of our life and fields including Architecture.
The focus of this study is to explore the impact of such globalization on Indian architecture, killed the regional touch/ character of architecture in our country and also worldwide.

Keywords: Architecture, Characters, Globalization, Impact, Regionalism.

1. INTRODUCTION: REGIONALISM & GLOBALISATION

An approach to architecture that strives to counter the specific location or region and which has no fascination for International styles called as regionalism in Architecture. This type of architecture also rejects individualism and ornamentation of Post modern Architecture. It is a progressive approach to design that seeks to mediate between the global and the local languages of architecture.

Fig 1: Coliseum at Roma Italy

Fig 2: &FS BKC Mumbai

Vernacular Architecture, which is also called as Architecture without Architects.
It refers to the buildings made by local tradesmen; regional architecture closely follows the developments of vernacular Architecture, but incorporates modern building materials and technologies. The Climate is very important element, which plays a very important role in regionalism.
Regionalism when leads to Critical regionalism, it hold that, both modern and post-modern architecture are "deeply problematic".

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Culturally Responsive Urban Development

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Abstract

The settlement pattern in Chanderi is a response to centuries of traditional wisdom. The settlement has emerged from its work-live-play lifestyle woven around its handloom craft. These traditional settlements are rapidly being modified or abandoned under the pressure of modernisation and development. This has affected the live-work balance and socio-cultural behavioural pattern of the town. Lately, development and urbanisation has spread its influence on tier 3 towns, Chanderi being one of them. Though this growth is necessary, it has to consider the local culture and tradition which gives these towns its identity. This paper seeks to highlight the link between urban development and the cultural ethos in small heritage and craft based towns which when maintained will ensure that development and culture go hand in hand.

Keywords: *handloom town, urban development, cultural ethos*

Introduction

India is one of the oldest civilizations in the world with kaleidoscopic variety and rich cultural heritage. Architecture is not created in a vacuum. It is a compulsive expression of beliefs (explicit or implicit) central to our lives. When we look in to the architectural heritage of India, we find an incredibly rich reservoir of mythic images and beliefs which all coexist in an easy and natural pluralism. It is rich in the architectural content of its settlements replete with vernacular architecture and its immense treasure of architectural wisdom. Centuries of contemplation and synthesis have gone into traditional architecture to maintain its environmental coherence. The surrounding and the built form are both attuned to each other. The diversity seen in India is regional, climatic, and cultural. It is seen more in the rural areas than in the urban context. Urban cities show standardization in many aspects whereas the rural areas carry forth with age old traditions in place.

Background Study

Traditional settlements are a way of organising space from the scale of the house to the scale of the village and the town, using models and practices which are a legacy of the past. This means transmitting the same meanings or knowledge from one generation to the next through building or planning practices. According to Leach's (2005) theory, in a traditional settlement, traditions help to create, define, and defend territorial boundaries and this limit is applied to geographical areas to include both land and seascapes on which the people rely for their livelihood and ways of living (Lim, 2008, p. 58). A literature on the relationship between culture and development demonstrates a view that efforts to integrate cultural dimensions and development produce more sustainable ways of living for communities (Oliver 1997, 1989, 2006; Eder 1987; Lim 1999, 2008).

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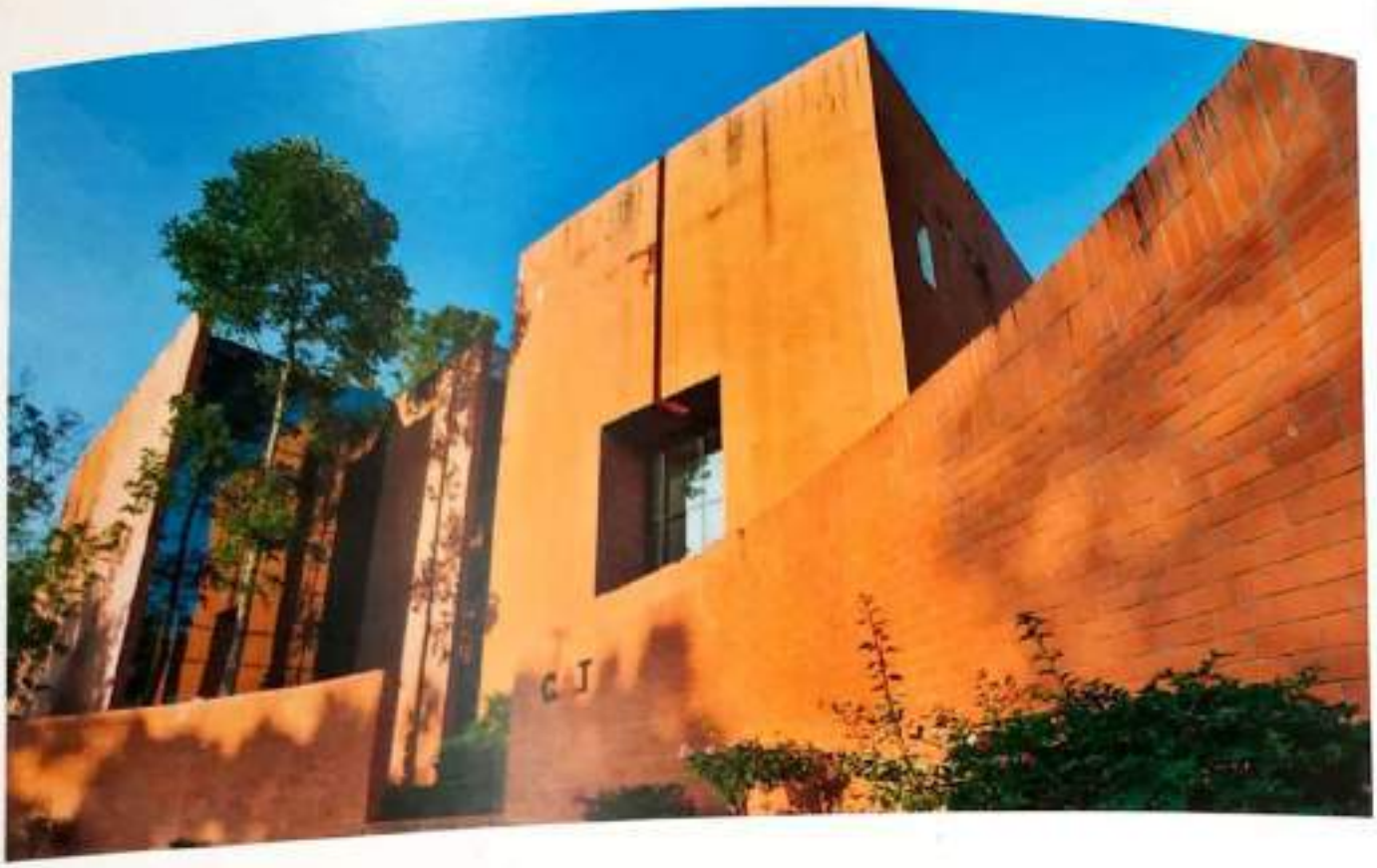

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Community Participation in Heritage Management at Chandori

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ABSTRACT: Chandori is a small village along the banks of the river Godavari, about 25 km away from Nashik in Maharashtra. Due to severe drought in Maharashtra several Hindu temples and the built ghats (i.e. the steps leading down to the river) had resurfaced from the river bed in April 2016. The temples and ghats submerged when the course of the river was changed due to the construction of a dam during the British era. The last time these Hindu temples were seen was in 1982 when Nashik had witnessed a drought of similar proportions. The symbiotic relation between the ghats and temples found elsewhere in India is found reflected here on a small scale. The ghats and temples which resurfaced are of the Hemadpanthi style and date back to the Peshwa era. The villagers have taken the initiative to get these temples documented. The community is actively forming a management plan which will benefit the economy of the village and increase the livelihood of the villagers. The paper aims to examine the management plan of the villagers which intends to keep the lost heritage of the submerged temples alive, the focus being the temples. Parallel case studies will be investigated to check the validity of the management plan. This research will help the heritage plan to adhere to the principles of sustainability and embrace the principles of ecotourism by limiting the visitor movement and safeguarding the ecology of the area and the river ecosystem.

KEYWORDS: Community participation, lost heritage, sustainability, management plan.

1. INTRODUCTION

Defined in the UNESCO 2001 Convention on the Protection of the Underwater Cultural Heritage, 'underwater cultural heritage' encompasses all traces of human existence that lie or once lay under water for at least 100 years and have a cultural or historical character. This includes ancient shipwrecks, submerged temples and cities, sunken heritage in Cenotes, wells and lakes as well as fish traps and others sites.

Underwater cultural heritage holds vast potential for scientific research and education. Submerged prehistoric sites are of crucial importance for understanding the development of human civilisation. In addition to its scientific significance, underwater cultural heritage also opens up numerous opportunities for recreation, cultural enrichment and sustainable development. It is an interesting and attractive form of heritage, highly appreciated by the public due to the stories it symbolises and due to the air of mystery which surrounds its underwater location.

2. METHODOLOGY

This paper seeks to understand the importance of underwater heritage and ensure ways of keeping it alive in the minds of people in a sustainable manner. This objective is met by understanding the area through primary field studies and observation. Ethnographic approach reveals the links between the lost heritage and the community. It discusses in detail the management plan drawn up by the residents of Chandori. The management plan proposes to develop infrastructure and create economic opportunities for the residents while focussing on the green initiatives. Secondary data collection is done through research papers and comparison of management plan with Haithabu case study which helps to analyse the strengths and weaknesses of the Chandori heritage management plan. SWOT analysis will help make amendments to the plan if any and draw appropriate conclusions.

3. CASE UNDER STUDY

The temples of Chandori are a very good example of underwater cultural heritage. Chandori is a small village along the banks of the river Godavari, about 25 km away from Nashik in Maharashtra. The river Godavari makes a moon crescent like shape as it winds its way towards Nandurmadhmeshwar, hence the village is named Chandori. (see Figureure. 1) Due to severe drought in Maharashtra several Hindu temples and the built ghats (i.e. the steps leading down to the river) had resurfaced from the river bed in Chandori on April 2016. The temples and ghats got submerged (see Figure. 3) when the course of the river was changed due to the construction of a dam during the British era (1906). These shrines used to be

Ranadive, S., & Shah, P. (2020). Community Participation in Heritage Management at Chandori. In *Conference Proceedings - Metagreen Dimensions 2020* (pp221-228). Thiruvananthapuram: College of Architecture Trivandrum.
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6.3 IMPACT FACTOR

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Life Cycle Analysis of a curtain wall glass assembly using high performance glazing and aluminium support system

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ABSTRACT

Curtain walls with glass infill are being extensively preferred for their aesthetic properties by the designers for contemporary building envelops in India. However it becomes necessary to consider the environmental impacts of curtain wall envelops throughout their life cycle when it comes to the selection of various types of glazing panel infils and framing materials since green buildings have become a prime necessity of time to combat global environmental challenges like climate change. The study consists of life cycle analysis of curtain wall assembly with glass panels and aluminum support system. Different glazing assemblies for high performance have been compared and analyzed for their performance based on the parameters like Solar Heat Gain Co-efficient.(SHGC), Shading Co-efficient (SC), Energy Absorption (EA), Energy Reflectance (ER), Direct Energy Transmission.(DET), U – value, Relative heat gain, Visible Light Transmittance (VLT) and thermal performance. The paper also discusses life cycle analysis of parts of curtain wall assembly viz. glass infill, aluminium frame and sealant, the discussion parameters being environmental impacts during raw material extraction and manufacturing, embodied energy, performance and maintenance, possibility of recycling and reuse, energy conservation, waste generation and other human, environmental impacts.

Keywords : curtain wall, environmental impacts, high performance glazing, , life cycle analysis , thermal performance.

1.INTRODUCTION

There is a rapid transformation in the envelop materials used for the buildings in India from conventional bricks, stones and concrete to contemporary glazing. Curtain wall assemblies with glazing panels are extensively preferred by architects due to their aesthetic properties and the visual connection it offers between the interiors and the exteriors. However every material used for the building construction has certain environmental impacts throughout its life cycle, from raw material extraction, processing, performance up to their disposal. Buildings account for 40% of material extraction. [1]. Hence it becomes necessary to consider these environmental impacts so as to reduce them by consciously choosing the materials in the designing of building envelops. There has been an intense research and advancement in the glazing technologies that offers an array of high performance glass infill in curtain walls. In this paper life cycle analysis of curtain wall assembly with glass panels and aluminum support system has been studied.

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Review on "Evaluation of Strength of Fibre Reinforced Concrete Using Plastic Fibres"

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***Abstract*-- Now-a-days, environmental problem is faced all over the world. The things which are invented and used for our luxurious life are responsible for environmental pollution. Due to improper waste management, we are facing land pollution. Land pollution is mainly due to waste plastic. This plastic can be reused or recycled to maintain the beauty of nature. To address this issue, in this paper, the waste plastic is used to make fibres. This paper describes the review of literature. The study is conducted to determine the effect of use of waste plastic as a construction material. The conclusion is based on the literature in terms of relationships between the standard concrete and Fibre reinforced concrete and future scope is discussed from the conclusion made on the literature.**

***Keywords* - Plastic fibres, Fibre reinforced concrete, Literature, Compressive strength**

I. INTRODUCTION

The most widely used construction material is concrete. The performance of concrete after construction depends on its ingredients. It is well known that plain concrete is brittle but strong in compression. But at the same time, it is weak in tension. The fiber reinforcement concrete transform a brittle concrete into a pseudo ductile material and very advantageous to concrete. Fibres addition in concrete can arrest micro cracks causing gradual failure. The fibers made of waste materials like plastic, glass etc., is used for manufacture a wide range of structural units with cement mortar composites and has a great potential for developing countries like India. Mechanical properties of concrete has been studied by many researchers to enhance the properties of concrete using different fibers like glass, steel, carbon, synthetic organic and natural fibers. The present paper studies the effect of addition of various percentage of plastic fibers on mechanical property by studying various literature based on previous researches.

Combinely, the fibre-reinforced polymer (FRP) composite is a

- A polymer (plastic) matrix (either a thermoplastic or thermoset resin such as polyester,vinyl ester, epoxy).
- A reinforcing agent such as glass, carbon, aramid or other reinforcing material

The resin is used to coheres and gives shape to the element while fibres reinforce it. Tis combination results in light weight and strong composite material. The FRP composites have high strength to weight ratio which provides discernible reinforcing function.

Problem Statement

Plastic has a variety of applications in almost all fields. But the drawback of plastic is its waste management. The main reason of land pollution is waste plastic. Hence, it is necessary to do waste plastic management. Construction industry is a vast stream, where management of waste plastic can be done easily by using it as a construction material in concrete. Also it will reduce the burden on environment and construction cost. Hence, in this project the efforts are made to replace the aggregates by plastic fibres as a reinforcing material to enhance the characteristics of concrete.

II. REVIEW OF LITERATURE

S. Mindess; 2007, [1] In this paper, a study has been carried out for 30 years on Fibre reinforced concrete (FRC) at the University of British Columbia. In this paper, three of the major areas of research i.e., characterizing effect of fibres on toughness of concrete in a better way, FRC properties under impact loading; and making use hybrid fibre systems. This paper concludes with possible future developments of FRC technology. It is concluded that it is impossible to carry out experimental study, finding out optimum content of fibre and using FRC consistently. It is necessary to know all the characteristics of material in FRC for better use of fibres. Overall behavior of concrete depends upon fibre as well as on the materials used in it.

Zainab Z. Ismail et al; 2008 [2] In this study writer has conducted 86 experiments and 254 tests to determine the efficiency of reusing waste plastic in concrete.

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Evaluation of Strength of Fibre Reinforced Concrete Using Plastic Fibres

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Abstract— Now-a-days, environmental problem is faced all over the world. The things which are invented and used for our luxurious life are responsible for environmental pollution. Due to improper waste management, we facing land pollution. Land pollution is mainly due to waste plastic. This plastic can be reused or recycled to maintain the beauty of nature. To address this issue, in this paper, the waste plastic is used to make fibres. These plastic fibres were added in various percentages in the M25 grade concrete. This paper describes the performance of plastic fiber reinforced concrete (M25). The experiments were carried out on the specimens like cubes and cylinders which were casted in the laboratory and their behavior under the test was observed. The plastic fibers were added from 0.0 % to 0.8 %. The compressive strengths of concrete were determined after 7, 14 28 and 56 days of curing period. The test results were compared and the relationships between the standard concrete and Fibre reinforced concrete are presented.

Keywords ---Cement Concrete Composites, Plastic Fibers, Fibre Reinforced Concrete, And Compressive Strength.

I. INTRODUCTION

The most widely used construction material is concrete. The performance of concrete after construction depends on its ingredients. It is well known that plain concrete is brittle but strong in compression. But at the same time, it is weak in tension. The fiber reinforcement concrete transform a brittle concrete into a pseudo ductile material and very advantageous to concrete. Fibres addition in concrete can arrest micro cracks causing gradual failure. The fibers made from cheap or waste materials like plastic, glass etc., may be used for manufacture a wide range of structural units with cement mortar composites and has a great potential for developing countries like India. Mechanical properties of concrete has been studied by many researchers to enhance the properties of concrete using different fibers like glass, steel, carbon, synthetic organic and natural fibers. The present paper studies the effect of addition of various percentage of plastic fibers on mechanical property and behavior of concrete. Effect of plastic fibers in concrete under compression strength are discussed.

The fibre-reinforced polymer (FRP) composite is a combination of :

- A polymer (plastic) matrix (either a thermoplastic or thermoset resin such as polyester,vinyl ester, epoxy).
- A reinforcing agent such as glass, carbon, aramid or other reinforcing material.

The resin is used to coheres and gives shape to the element while fibres reinforce it. Tis combination results in light weight and strong composite material. The FRP composites have high strength to weight ratio which provides discernible reinforcing function.

II. MATERIALS

Two types of materials are used in FRP:

- A polymer (plastic) matrix and
- Fibre.

A. Resins Used In Frp

Some of the most important material characteristics to consider in selecting a matrix for structural FRP are: stiffness, strength, thermal and electrical conductivity, ability to impregnate and bond to fibres.

7th International Ground Water Conference (IGWC-2017)

GROUND WATER VISION 2030

Water Security, Challenges & Climate Change Adaptation

December 11-13, 2017, New Delhi, India

Under the aegis of

NATIONAL HYDROLOGY PROJECT

Ministry of Water Resources, River Development & Ganga Rejuvenation
Government of India

Editors
Narayan C. Ghosh
Anupma Sharma
Surjeet Singh

Organized by:
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in association with
Association of Global Groundwater Scientists, India
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Groundwater Governance for cities in Maharashtra

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Abstract

Urbanisation is rapidly taking place in India. According to the World Bank Report 60% of Population of India will living in the Urban Areas i.e cities or towns by 2030. According to the 2011 Census, the urban population grew to 377 million showing a growth rate of 2.76% per annum during 2001-2011. The level of urbanisation in the country as a whole increased from 27.7% in 2001 to 31.1% in 2011. The urban transition is considered one of the major challenges, requiring a massive expansion in urban infrastructure and services and creating a pressure on the Natural Resources.

According to the research and the surveys conducted by various sources it is observed that today the urban settlements are dependent on Groundwater for 30% - 35% of its total usage. The reasons for the same are many. And this usage is projected to increase to 50 % in the coming years.

Groundwater in Urban Areas is a matter of concern today and will be a serious one in the future. In Maharashtra there are 44 first tier cities and 33 second tier cities according to the 2011 Census. These towns and cities are expanding and developing exerting pressure on the groundwater. The groundwater development is largely happening in the private individual arena without effective control of any authorities. Thus Governing the Groundwater has become a growing challenge in large part of the urban areas where the water table is sinking steadily and silently. Added to this pressure is the climatic variability which influences the Groundwater in the cities. The relationship between the changing climate variables, increasing urbanisation and groundwater is different from the rural context and is a complex one. Understanding the Groundwater performance has just been probed in a handful of metropolitan cities, but not in institutionalised manner.

The research presents the objective by doing case studies of selected 2nd and 3rd tier cities in Maharashtra w.r.t the Groundwater performance. A detail research w.r.t the population growth, usage in the last five years, the governing authorities for Groundwater and the laws/rules for the usage is conducted in selected cities at varied locations spread over the state. The Groundwater Act was published on 3rd December 2009 and Maharashtra Water Resources Regulatory Authority is constituted for the development and management of groundwater. The role and function of this authority along with the other impotant authority i.e the GSDA are understood. Following are the observations and conclusions drawn. There is lack of knowledge amongst the users of this invisible and invaluable source of water. Basic awareness to manage this source of water is poor. There is absence of scientific approach, technical support and financial assistance, lack of administrative backup for the Development and Management. Limited Human resource to work for the same is also a major hurdle at all levels i.e from the urban local body level, at the city level to the District level or the state level and with the Groundwater survey and development office. Considering the importance and negligence towards this source of water it is necessary to reform Groundwater regulation for the Urban Areas. This reformation, must be coupled and tied with improved Institutional arrangements at the State level, District level and the Local Authority level and should be strengthened with capacity for implementation and enforcement.

Keywords: *Cities, Groundwater Act , Reformation, Urbanisation.*

1. Urbanisation in India

The challenge of sustainable cities w.r.t groundwater is especially relevant for a highly populated and rapidly growing economy, such as India's, which is undergoing rapid urbanization. Number of towns has increased from 1916 in 1901 to 2422 in 1951 and then to 4689 in 1991. Percentage of million plus cities w.r.t total urban population of India has also increased drastically from 6% in 1901 to 19% in 1951 and further to 33% in 1991 (Maiti, Agrawal, Hum, 2005). According to the findings of Mckinsey Global Institute in India, by

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Sustainable Development Imperatives for new Towns in Hilly Areas: A Case of India

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1.0 ABSTRACT

Hilly areas are very sensitive to human induced landscape change. For that reason, the development in such areas has to be viewed as an interaction of the anthropogenic activities with natural environment. The development therefore, should take a sustainable approach, considering the protection of natural environment and resources as the important priorities. The detrimental effects of development may lead to degradation of the environment and thereby may impact biodiversity many a times leading to loss in sustaining the tourism and employability in such areas. Hence, it is important to consider physical environmental factors while planning and design development in such areas. The present study highlights the critical issues related to site development in hilly areas with respect to topography and natural drainagein the study area. It also delineates the important areas for the natural drainage and riparian buffer that need to be preserved and conserved for the healthy environment. The study also derives possibility of alternative plot shapes and their orientation with respect to the land modulation it may cause for any building activity. Lastly, the study also stresses on the use of native vegetation forbetter ecological functionality relevant to the area.

2.0 INTRODUCTION

Hilly areas are houses of biological diversity, habitat to endangered species and an essential part of the ecosystem. The hilly areas can also, when exposed to unplanned and uncontrolled development will directly/ indirectly have an effect on the environmental resources of the region. Besides, tourism today, is one of the world's important sectors for economic exchanges and employment in many hill areas.However, with the rising tourism industry it is important to give due consideration to the interrelationship of the environmental resources and anthropogenic interventions to accommodate tourism activity(UNWTO, 2017).The serene and scenic quality of the natural environment and the abundance of natural resources are of great value to any hill town; as all of them sustain the tourism activity of that place. The excessive pressure of tourism development can lead to degradation of environmental quality and resources of the hilly areas, which in turn may have an impact on the tourism activity, economy and employment of that place(Kumar & Pushplata, 2012).Thus, the unchecked development in these sensitive places may causean irreversible damage to the resources on which the tourism is based. Indian hill towns are the peculiar examples of massive urban development in environmentally or ecological sensitive, which are growing exponentially over and above of their natural carrying capacities(Kumar & Pushplata, 2012).Thereby, it becomes increasingly important to have a sustainable spatial planning and designapproach in hilly areas(Programme Evaluation Organisation, Planning Commission, 2010)(Tyrväinen et al., 2014). An integrated approach in development can lead to better environmental conditions and improved anthropogenic intervention. Thismay facilitate to apportion resources for further betterment of the living conditions in sync with the natural environment(Latkar). Since the 1970's there has been a growing awareness of the need to deliberate the environmental values to the development of a hilly area. Ian McHarg (1995)(Steiner F. , 2000)and othershave brought into focus the growing philosophy of ecological processes; which offer the vital basis for planning and design(Steiner F. , 2000)(Belsky, A. J.; Brown, R. .T. et al., 1995). Though, this vision has been accepted by many, its potential and applicability still remains unexplored at local levels.

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To Find out the Feasibility of Ethylene-Tetra-Fluoro-Ethylene (ETFE) in Inflatable Pillow System (IPS) to be Used for Building Facades

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(Corresponding author: Ar. Umesh R. Hirawe)
(Received 06 January, 2017 Accepted 29 January, 2017)
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ABSTRACT: The increasing energy demand, there have been many research done related with the conservation of energy used in buildings. The systems and materials used in buildings have an important role in consumption of energy. It is been always expected from the building envelope much more than just a skin, building envelope can help to get more efficient environments in terms of quality and energy. Building envelope, which separates indoor and outdoor, altered in the parallel of development on new material and technology. In recent years the technology of producing flexible ETFE films has progressed significantly allowing the production of thin membranes that are stable, durable and can be easily joined. This has given designers a serious alternative to glass for many applications.
This study aims to study construction system; ETFE foil pillow system, which is also known as, Inflatable Pillow System made of ETFE Foil. In the scope of the study, pneumatic pillow system investigated in detail and its performance evaluated on Environmental aspect, Technical aspects, Thermal Behavior (Ecotect analysis), Acoustic performance, Safety, Cleaning, Maintenance etc., which can be compared with other conventional Doubly Glazing Unit (DGU). The results are evaluated with the information gained. The advantages and disadvantages of the system as a glazing are discussed.

Keywords: Inflatable Pillow System, Conservation of energy, Pneumatic membrane, Glazing, ETFE foil, Glass, Doubly Glazed Unit (DGU), Building envelope.

I. INTRODUCTION

New discoveries in polymers ,changing trends and rising demand in aesthetics of the building has forced designers to explore new materials. Building envelope, which separates indoor and outdoor, altered in the parallel of development on new material and technology. It is been always expected from the building envelope much more than just a skin, building envelope can help to get more efficient environments in terms of quality and energy. The present study aims to determine Inflatable Pillow System (IPS), which is a new generation construction technique as a building envelope for Pune, Maharashtra, India.

1. WHY ETFE?

Thermoplastic polymers other than ETFE, such as polycarbonates including poly ethyl methacrylate (Plexiglas) and polystyrene or fluorocarbons including polytetrafluoroethylene (PTFE) and polyethylene (PE) have been examined and found unsuitable as a replacement to glazing. (Callister *et al.*, 2011) ;(Minamisawa *et al.*, 2007) Such alternatives have been rejected as they fail to offer a combination of good visual performance, energy transmittance and as an adequate engineering material performance (Baille *et al.*, 2006; Callister *et al.*, 2011). ETFE (Ethylene Tetrafluoroethylene) and PTFE (Poly Tetrafluoroethylene) are most common textile materials are used in building construction industry. While ETFE is predominantly applied as Inflated Pillow System (IPS), PTFE is normally used as building shading structure. (Stokes-1998, Robinson et.al-2001, G James - 2009, Macleod-2010)

Understanding ETFE : ETFE is a thermoplastic copolymer derived from the polymerization of the Ethylene and Tetrafluoroethylene monomers.ETFE can be extruded into large thin sheets, referred to as foils or films. Films are produced in thickness from 0.05mm to 0.3mm.Naturally ETFE films produced clear but can be modified to opaque.

Understanding IPS (Inflatable Pillow System): Inflatable Pillow System is (IPS) is designed for efficient use of ETFE as covering material. The system also can be used for other polymer materials similar to ETFE.

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MAINTAINING UNIQUENESS IN GLOBALISATION: EXPLORING PROGRESSIVE APPROACH TOWARDS URBAN CONSERVATION OPPORTUNITIES IN SMART CITIES MOVEMENT: CASES OF CITIES IN INDIA

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ABSTRACT
The quest for smart cities and global environments is at enormous scale, especially in developing countries. Such opportunities are perceived as economic growth catalysts. The inevitable change that globalisation brings, is transforming cities across the world affecting its local identity. India is among the leading countries to have huge number of such rapidly urbanising cities undergoing transformation leading to monotonous modernisation.
The concern for the potential loss of unique local environments while emerging into smart global cities provided an impetus for this research. However, one has to accept this change and intermixing as it brings economic growth and depicts modernity. Therefore, emerges a need to realise ways in which the unique character of the city could be maintained and enhanced while we embrace modern values and the global – local conflict.
Historic core areas of Indian cities are integral part Indian urban landscape. They own a diverse built and cultural heritage that give them a strong sense of identity. The smart city missions raised a need to revisit old cities from a developmental perspective. The research intends to figure out ways to reinforce the original image of the city with smart city aspirations that is coherent to its historic core. The study assesses urban components that can continue to maintain the unique image of the city giving it a sense of belonging in this changing context. The research explores alternative ways in which the local identities can be strengthened that do not restrict growth and is devoid of conventional conservation practices.
For the purpose, three cases of cities in India namely Nasik, Pune and Srinagar have been investigated. Research methodology involved comparison of on-site data collection and archival records along with public interviews and mental mapping to derive components of uniqueness. Parallel case studies across the world have been analysed to re-affirm the results of the research. The study found out that natural morphological components prove significant and critical care is required while planning to avoid fragmented development. This is where natural features can be fused to link into a coherent development. In addition, historic urban structure – a result of natural morphology is a factor responsible for identity needs attention, while it can allow the desired flexibility.
Keywords: Local Identity, Urban Conservation, Sense of Place, Smart city, Globalisation, historic core areas

Introduction

Urban Design and Uniqueness of a Place

The various and most influential literature on urban design and its qualities have exemplified the importance of uniqueness or distinctiveness of an urban environment. The variety of urban design principles advocated by most of the authors in the field support the concept of uniqueness.

Kevin Lynch 1981	sense
Bentley et al 1984	Visual appropriateness
Holyoak 1985	Retain the Best
Buchanan 1988	Dialogue with context and history
Tibbalds 1998	Respect history
HRH the prince of Wales 1989	Harmony and context
Aldous 1992	Sense of place and historical continuity/harmony/distinctive character and identity