PROCEEDINGS OF THE
INTERNATIONAL CONFERENCE ON
ARCHITECTURE, BUILT ENVIRONMENT & URBAN PLANNING 2018

Govt of India Approved International Conference
(MHA Vide F.No 42180123/CC-243, MEA Video No. F.No AA/162/01/2018-911)

Sep 21-22, 2018


Editors

Dr. Ramesh S
Dr. Ratnakar D B
Prof. David Sweeney

Organized by

International Multidisciplinary Research Foundation, India
Dear Architects,

It gives me grand contentment to present you the Proceedings of the International Conference on Architecture, Built Environment & Urban Planning 2018 comprising new ideas, the state-of-the-art research results and fundamental advances in all aspects of Architectural Sciences.

The Proceedings of the International Conference from IMRF intends to be of interest and utility to researchers and practitioners in the academic, industrial and all the sectors to which this rich knowledge of contributions witnessed in the Proceedings of the International Conference are applicable. The Proceedings of the International Conference aims at providing a platform for researchers, architects, planners, engineers, scientists, educators, young academicians, teachers and syllabus designers in the field and so forth with a pre-requisite mandate like all theoretical work contributed to this Proceedings of the International Conference should be original in its motivation or modelling structure.

The well-known publications and releases from the threshold of IMRF is a scholarly Proceedings of the International Conference in print with a primary objective to provide the academic community and industry to add to the existing fund of techno vision with ever new original research and applications related to Engineering Sciences.

The book is believed to make sure of rendering new teaching methods, assessment, validation and the impact of new technologies be practical in their purpose and function on the part of professionals and researchers concerned across the globe. Further, the Proceedings of the International Conference is destined to spread the open canvas consisting of latest trends and developments in the ever expanding subject stream of engineering sciences.

IMRF considers it mandatory to make all the contributions fool-proof strictly adhering to the fundamentals of publication ethics and so the employs rapid blind peer review to justify the testified submissions for publication in this esteemed Proceedings of the International Conference known for its referential validity in the circles concerned accordingly. To say, articles submitted herein are sent for reviews will have names of the authors deleted with a view towards enhancing the objectivity and fairness of the review process. While it encourages a broad spectrum of contribution in the engineering sciences, its core interest lies in issues concerning material modelling and response. The primary goal of the editors on the board is known for their expertise in the field is to maintain high quality of publications.

I earnestly thank for IMRF its esteemed contributors, the distinguished Editorial Board, Specially Prof.Dr. Ramesh Srikonda and well-wishers on the ceremonial release of this Proceedings of the International Conference as ever duly placing on record virtuous regards to Ratna Prasad Multidisciplinary Research and Educational Society, Vijayawada, India for being borne as its entity. It is my privilege at this juncture to expand my thanks to all the Collaborating Centres of Higher Learning for their ever dynamic support and cooperation. Gratitude is attitude!

With greetings,

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PAPER
PRESENTATIONS
“PHYSICO-CHEMICAL ANALYSIS OF GROUNDWATER QUALITY IN
BESWAN AND IGLAS, ALIGARH DISTRICT, UTTAR RADESH, INDIA”

HARIT PRIYADARSHI, SARV PRIYA, ASHISH JAIN, RITURAJ SINGH

Abstract: Beswan and Iglas are the towns in Aligarh district of Uttar Pradesh, India. These are located along Aligarh-Mathura high way at a distance of 24 kms from Aligarh. Their Geographical coordinates are 27º43' N 77º56' E with the average elevation of 178 meters (584 feet). The town area extends from Karban River (towards Mathura) to old Canal (towards Aligarh). In the present study the fresh ground water samples were collected from Iglas and Beswan town. The samples were collected in clean bottles without any air bubbles. These bottles were rinsed before tightly sealed after collection and labelled in the field. The dissolved oxygen of the samples was measured in the field itself at the time of sample collection.

After the analysis work, we obtain these values of the study area pH 7.10 in Beswan and 7.79 in Iglas, Total Alkalinity 476 mg/l in Beswan and 350 mg/l in Iglas, Total hardness 570 mg/l in Beswan, and 210 mg/l in Iglas, Calcium 82.50 mg/l in Beswan, and 120 mg/l in Iglas, Magnesium 145.50 mg/l in Beswan and 90 mg/l in Iglas, Turbidity 0.31 mg/l in Beswan and 0.84 mg/l in Iglas, Chloride 52 mg/l in Beswan and 368 mg/l in Iglas are respectively. The analysis revealed that the drinking water quality is not good and require proper treatment before consumption and industrial use or any other purpose.

Keywords: Physico-Chemical Parameters, Water Quality, Human Consumption.

***

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IMPACT QUASI-EXPERIMENT: SELF-RELIANT HOUSING MT. ELGON

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Abstract: Rural inhabitants in Sub-Saharan Africa struggle to articulate desired housing without external support. This external support mostly offered by local stakeholders and NGOs insufficiently suits the existing capacities of its future inhabitants. As a result inhabitants are unable to maintain, extend or replicate their housing without external support, creating an external dependency. Therefore within the author’s PhD research a support was articulated to advice designers and engineers how to articulate solutions according to existing inhabitant capacities. Ultimately improving the inhabitant’s self-reliance concerning their housing. To test the support a quasi-experiment was executed on Mt. Elgon involving four external design-engineer teams advising four local families. To measure the impact of the support to the inhabitant’s self-reliance an evaluation framework was articulated. In this article firstly the framework design and methodology will be described. Secondly, the zero measurement interviews, evaluating the family’s ability to articulate desired housing in their current and desired habitation. Assessing their overall level of self-reliance concerning their current housing situation. Thirdly, describing the impact measurement interviews, evaluating the family’s level of self-reliance concerning their newly articulated housing, compared to their past housing situation. Assessing their overall level of self-reliance concerning their new housing situation. The conclusion section of the article describes the overall success of the support tool to articulate self-reliant housing solutions for the families involved in the quasi-experiment.

Keywords: Self-Reliance, Quasi-Experiment, Design Support, Support Tool, Rural Housing, Sub-Saharan Africa.

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CHOICE AND PREFERENCE OF CERAMIC TILE
FOR FLOOR FINISHES IN RESIDENTIAL HOUSES:
A CASE OF OGBOMOSO, NIGERIA

AJAYI OLUWASEUN OLUWOLE

Abstract: The quality of finishes of housing space is imperative for the achievement of a qualitative living environment. Preferences and choices of floor finishes for interior spaces in residential settings in Nigeria cannot be overemphasized, difference in taste of individuals in choosing floor finishes can be said to be the factor that predicts the quality of a building. Flooring is an important part of the building to ensure foot comfort and it is influenced by the choice made by the users. The study was carried out to determine people's perceptions on the preference use of ceramic tiles as floor finish in their various residential buildings. 100 respondents who were the owner's of their residents were randomly sampled to determine the perceptions on the use of floor finish (ceramic tiles). Flooring materials in vogue in the study area were Vitrified tiles, Ceramic Tiles and Terrazzo. The data obtained were subjected to multivariate statistical analysis of mean (X) and chi-square ($X^2$) based on two hypotheses to find correlation between the respondents perception, their status and visual quality. Results show that there is no significant relationship between the acceptance of ceramic tiles for floor finishes and status of the respondent. This study however provides a motivational reason while respondents preferred to finish their floors with materials that will be easy to maintain at minimal cost and effort.

Keywords: Ceramic tiles, Floor finish, Residential buildings, Visual Quality.

***

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AN INVESTIGATION INTO THE PERFORMANCE OF DUTSE (NIGERIA) AS A GROWTH CENTRE OF THE STATE

JOLA ADE

Abstract: This paper seeks to investigate some key elements of a growth centre; the principle upon which local government headquarters and state capitals creation incline. It attempts to consider in a spatial dimension, the different channels by which the establishment and development of Dutse (Nigeria) has affected its’ region (the rest major settlements in the state) after twenty-seven years of operation. The paper categorized the effects into three distinct classes: direct, indirect and induced effects. The study area is Dutse Capital, Jigawa state, Nigeria. Through four research questions, particular issues considered are related to population movement, (migration and commuting), industrial linkages/interference, labour recruitment and shopping patterns. The study reveals that the recruitment of labour has had some pronounced effects on the settlements in the region/state. That notwithstanding, industrial linkage and the generation of economic activities is limited to Dutse itself. In other words, these effects have not appreciably affected the towns and villages in the state. Hence, the trickle-down effects have not been attractive to any admirable extent in the state investigated.

Keywords: Growth Centre, Region, Population Movement, Industrial Linkage, Trickle-Down Effect.

***

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EVALUATING VENTILATION EFFICIENCY OF WINDOWS IN SENATE BUILDINGS: A CASE OF NIGERIA UNIVERSITIES.

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Abstract: Natural ventilation occurs because of pressure difference acting on inlets and outlets of a space. This pressure difference can be created by wind or by a thermal chimney (Stack Ventilation). The study evaluated the ventilation efficiency of windows in senate buildings of selected Universities in South-West Nigeria. The study identified assessed ventilation efficiency of openings in the study area. Givoni Mathematical model was used to calculate the indoor air velocity and data obtained were analysed using descriptive statistics. Givoni empirical model indicated that none of the spaces investigated satisfied ventilation comfort standard of between 0.5-1.5 m/s for warm humid climate. The highest indoor air velocity occurred in University of Lagos where the casement window type was largely adopted with indoor air velocity of 0.41m/s and the lowest occurred in Ladoke Akintola University of Technology where the sliding windows were used with an indoor air velocity of 0.29m/s. The study concluded that with the use of casement window type, thermal comfort will be improved in office building.

Keywords: Air Velocity, Casement, Openings, Senate Buildings, South-West Nigeria, Thermal Comfort.

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Abstract: Settlements in the hilly regions by virtue of their setting represent a distinct form that is responsive to varied factors; geographic, climatic, topographic and other minutiae of conditions that guide the habitation. There is a specific growth pattern (almost as though emerging from the place itself) they undergo unlike the cities or towns in plains, which in present times have been growing indefinitely, making these as developments which are more non-generic, rooted and quintessentially models of urban processes in Indian scenario that need to be deliberated, in order to regulate and guide the development as they are under persistent pressures of urbanization also to observe the notion of urbanism in Indian context. The paper would look at the identification of key determinants that have shaped the urban form, nature of habitation, the cultural processes and intermittent tourist inflow in recent past which brings about the challenges of urbanization faced by the Himalayan town of Kullu and the way forward.

***
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STUDY OF SUNSHINE DURATION WITH CAMPBELL STOKES RECORDER

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Abstract: Sun plays a major role in the microclimate of a place and in the orientation of the building. Sunshine duration is a climatological indicator measuring the duration that the ground surface is irradiated by direct solar radiation. The aim of the study is to find the sunshine duration (SD), solar intensity, cloud cover & radiation in Chennai, TN at different time zones of the year. Campbell Stokes Sunshine Recorder is used in this study as it provides the SD, Sun path, Solar angle for different locations at different seasons. The data obtained can be utilized in many architectural ways which help us in designing shading devices, room orientation and hence build a climate responsive structure. The study was carried out at Rajalakshmi School of Architecture, Chennai, Tamil Nadu where the orientation of the building & performance was also assessed. With these parameters, we shall maximize the utilization of solar radiation by using solar collectors & vegetation. Hence the study helps us to design more energy efficient, eco-friendly and aesthetically pleasing buildings in the future.

Keywords: Microclimate, Campbell Stokes Sunshine Recorder, Time Lag, Decrement Factor.

***
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MATERIAL EXPLORATION CENTRE:
AN INVESTIGATION AND INITIATIVE TOWARDS
A NEW ARCHITECTURE

S.VISHNU PRIYA, DR.R.KALAISELVI

Abstract: Material use and understanding has become more directly linked to architectural practice and to architectural education. Most of the time, building materials serves more than one purpose. We have an increased responsibility to understand new and often complex methods of evaluating materials and possible ways to use them. This paper explores the possibility of “providing a centralized facility” which will aid and increase a healthy interaction between the students, researchers, suppliers and professionals to understand; the various building materials, their properties and availability, to have an open atmosphere for experimentation, research and testing facilities. Hence, the center consists of the following zones such as “the public zone” - Exhibition, Workshop, library and “Semi Public Zone”- testing facilities, administration and residential. A place that combines the past present and the future. A design to “Experience Spaces & Learn”. In order to achieve the objectives, several live case studies were carried out which covered available facilities, zoning concepts, landscape, orientation of the buildings, energy optimization/reduction concepts, water conservation systems etc. A resulting design generated based on the studies made Using light as a building material – tunnel lighting to emphasize on the sustainable and vernacular materials, Screen walls-to create an energy efficient design, feasibility . Cutting down electricity and water consumption, a “recyclable energy sources”, vocational training workshops, touch and feel experience, material testing facilities. The avalanche of this facility available to architects, designers & engineers necessitates rethinking of traditional classification, usage possibility or characterization of materials.

Keywords: Energy Efficient Architecture, Recyclable Energy Source.

***
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CHANGING DYNAMICS OF INDIAN CITIES:
A CASE STUDY OF KATRA NEEL, SHAHJAHANABAD

AR SHAMA PARWEEN

Abstract: Post independence, adoption of mixed use economy in India resulted in springing up public and private sector undertakings. These economic developments acted as catalyst for urbanization and growth of Indian Cities. Even though the level of urbanization is low i.e. 32% of the total population compared to other developing countries but the magnitude is high i.e. 423 million. It is to be noted that, presently, growth in most of the Indian cities is significantly due to enlargement of existing towns and inconsequentially due to growth and development of new cities. India has 5 cities with population above 10 million, 4 cities with population in the range 5-10 million and 52 cities with the population in the range 1-5 million. Cities are no longer spatially extended material artifacts but more of complex systems which can be considered analogous to living organisms. Urbanization has not only changed the economic and demographic structure of cities but brought significant changes in spatial planning, morphology and social structure of Indian cities. This paper focuses on the changes in spatial structure and morphology of old settlements in cities. As a case study, Katra Neel in Shahjahanabad, Old Delhi has been studied. This paper analyses the changes that have taken place in the settlement throughout its existence, starting from the Mughal period to present times. The settlement has been studied and analyzed on various parameters like demographics, social structure, spatial planning, and morphology and architecture styles.

Keywords: Urbanization, Old Settlements, Spatial Planning, Morphology.

***

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ROLE OF BIM IN PLUMBING SYSTEM

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Abstract: As we look at the industry of Plumbing, especially in the building sector from design stage to operation & maintenance huge amount of man power is required at different stages like System Design, quantity estimation, coordination, costing, scheduling and operation & maintenance of facilities & services. At these different stages have different expertise involved in carrying out these activities. In addition to this lot of problems arises due to lack of coordination.

Using information model (BIM) from the beginning of a project helps engineers and designers make better decisions earlier in the process. Thus BIM provides a complete solution from designing to operation & maintenance. BIM is not just a software but it is a collaboration of different software’s, its consist of 3D, 4D, 5D, 6D and 7D in a single module with which all the activities with respect to the project completion can be made easy. BIM provides a complete solution for plumbing which can design the system, easily costing & quantity estimation, time estimation, visualization & clash detection, operation and maintenance of plant.

Keywords: Design, Coordination, Estimation, Costing, Scheduling, Operation and Maintenance.

***

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INTEGRATION OF BUILDING INFORMATION MODELING FOR HVAC DESIGN AND OPERATION

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Abstract: As we look at the industry of Air Conditioning, especially in the building sector from design stage to operation & maintenance a huge amount of man power is required at various stages like System Design, load estimation, coordination, costing, scheduling, energy simulation and operation & maintenance of facilities & services. These different stages have different expertise involved in carrying out these activities. In addition to this lot of problems arises due to lack of coordination.

Using information model (BIM) from the beginning of a project helps engineers and designers make better decisions earlier in the process. Thus BIM provides a complete solution from designing to operation & maintenance. BIM is not just a software but it is a collaboration of different software’s, its consist of 2D, 3D, 4D, 5D, 6D and 7D in a single module with which all the activities with respect to the project completion can be made easy. These simulation results could help the project team to know the energy consumption details by which one can alter the project to achieve energy conservation and maintenance and operation of Air condition system as well.

Keywords: Air conditioning, BIM, DesignBuilder, Archibus, Coordination.

***

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URBAN AGRICULTURE AS AN ESSENTIAL ELEMENT OF SUSTAINABLE INFRASTRUCTURE IN KOCHI CITY

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Abstract: This study explores the possibilities to implement the concept of urban agriculture in buildings of Kochi city. It aims to achieve a sustainable infrastructure that can result in ecological intensification. Predominant studies on urban agriculture focuses on providing design solutions. This paper examines how the practice of urban agriculture can be incorporated into existing buildings to achieve ecological intensification. It describes how cities can be transformed from being only consumers of food into producers of food. In this research, we study and analyze 5 successfully functioning urban farms, some are by individuals, some are by corporates and some are supported by institutions. This research explores innovative models of urban farms which could be used in buildings of Kochi to achieve ecological intensification. The future research potential of the study could provide a design criteria for residential buildings that incorporates urban farming.

Keywords: Ecological footprint, Ecological Intensification, Food Insecurity, Food Miles, Urban Regeneration.

***

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IMPLEMENTATION OF BSUP SCHEME – CASE OF KARMANGHAT, HYDERABAD

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Abstract: In India migration has played a vital role in accelerating urban growth, which resulted in transfer of rural poverty to urban areas for economic reasons regardless of fact that physical infrastructure in terms of housing, drinking water supply, drainage etc., is not so adequate in the Indian cities. Hence the pace of urbanization in India has been quite fast. This has been found to be accompanied by urban poverty. The urban poor live in slums, which has been an integral part of human settlements in developing countries. According to Census 2011, the slum population in Indian cities is roughly 30% of the total urban population. The significant proportion of slum population is without access to even the most basic services. Even Hyderabad is no exemption to this phenomenon.

The urbanization has led to excessive demand for basic amenities resulting in deterioration in the physical environment. Therefore, the quality of life has thus suffered due to migration and consequent widening of the gap between demand and supply of essential services and infrastructure in Indian cities. The sub-mission –II under JnNURM, i.e., Basic Services for Urban Poor (BSUP), is addressed exclusively to urban poor living in slums/ squatter settlements in cities and towns. This scheme focuses on improving of living conditions of the urban poor by way of providing housing & infrastructure, with a view of improving slums and also providing security of tenure to the urban poor.

Therefore, the need for the research and study in implementation of BSUP Scheme is necessary to assess the impact of its implementation in terms of shelter and basic services leading to improvement in quality of life of urban poor, i.e., by improving health, hygiene, security of tenure and economic productivity.

Keywords: Urban Poor, Basic Services, Quality of Life, BSUP, Etc.

***

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CREATIVE URBAN INTERFACE AS A FUTURE GROWTH DIRECTION FOR FINANCIAL DISTRICTS

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Abstract: The turn of the millennium, came forth along with drastic changes in the way we work, live and socialize. These changes have redefined our concept of city and urban center. The central business district, which often is the economic core of the city, has shifted from the central activities zone to the financial district, that hosts the service sector and soft industries, often located in the city’s periphery. This definition is further changing at a considerable pace. The future of the cities would require the existing financial districts to restructure to accommodate this change. This paper tries to envision the future growth direction of financial districts and investigates into the possibility of transforming them into a creative corridor, where innovation becomes the crux of the economy. The design attempts a physical manifestation of the concepts of “Creative Urban space”.

Keywords: Financial Districts, Creative City, Creative Urban Space, Campus Organism.

***

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ECOLOGICAL RESTORATION AT KUDREMKH

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Abstract: Kudremukh National Park is located in the Dakshina Kannada and Chikmagalur districts of state Karnataka, India. It is the second largest protected area in the tropical wet evergreen-type of forest of the Western Ghats. Kudremukh is also known to be one of the largest repositories of iron ore mine in the world. Kudremukh Iron Ore Company Ltd (KIOCL) was given a mining lease of 25 years from 1976 and had extended its closure till 2005. The issues are well related to these 30 years of mining which has led to biodiversity threat, polluted rivers in case of Bhadra river, agricultural fields are affected with iron tailings, landslides due to extensive excavations. With extensive human intervention in the core area the wildlife corridor has been affected leading to the extinction of wildlife. The proposal aims at ecologically restoring the Kudremukh mined site. Various restoration methods dividing the mining area into phases for their restoration and suggesting appropriate policies and design guidelines.

Keywords: Biodiversity, Ecological restoration, Environment Impact Analysis.

***

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STUDY OF PLANNING PRINCIPLES IN TEMPLE TOWNS:
A CASE STUDY OF MADURAI, TIRUPATI,
OMKARESHWAR AND VARANASI

ARUNIMA SINGH, AKSHAY KALWAR

Abstract: India is a country largely governed by its spiritual culture and traditions. It draws sustenance and strength from its religious buildings. Over the centuries, religious structures and the events associated with them have led to the emergence of many towns. Hindu temples have been a focal point in the planning of such towns since the medieval era. There were several nucleated settlements that arose in many parts of India, focused on temples, and around which expansion took place. The temples played a major role in the community, serving not only as places of worship but as centres for social mobility, cultural centres and important elements in the urban economy. The development of these ‘temple-towns’ was driven by some factors which can be observed to be common to most sacred places. This paper, through case studies of holy towns in India and their comparison, attempts to understand how these cities evolved from small nucleated settlements to creating an urban genotype of their own i.e. temple towns. This research aims to present examples of a few such cities that developed in sacred sites and where the religious nucleus became the major reason for development of the city. The purpose is to highlight the characteristics which are reflected in all such towns, and have hence become important features that one can associate and identify temple towns with.

Keywords: Temple, Temple Towns, Planning, Settlements, Temple Architecture.

***
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SOLITUDE SEEKING SPACES: NEED OF THE HOUR

ANKIT GOGLANI, SHRUTEE DHANORKAR

Abstract: This research paper is an act to study spaces which has a strong conviction for solitude and its benefits. It is a journey to understand people and their relation with space and contentment they seek which recharges them and makes them happy. The problem lies with the current urban scenario where a group of people and their needs are neglected regarding spaces. This group is forced to accept a certain type of spaces and therefore this group was studied in detail on literature level as well as on local level. The literature study was done in the background of psychology, philosophy, and architecture. To verify the literature study, counselors, psychologists, and architects were consulted on the local level and with their guidance, a survey was carried out to deeply understand the intricacies of the problem. Results were analyzed and this led to an understanding of the relevance of solitude in one's life and how to apply it. With similar results at literature and local level, few design strategies were suggested.

Keywords: Architecture, Balancing Spaces, Quiet Spaces, Solitary Spaces, Solitude-Seeking Spaces.

***

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THE AESTHETICAL FACADES OF COLONIAL ERA:  
AN EVOLUTIONARY STUDY THROUGH HISTORY OF INDIA  

KRITIKA KHRABANDA

Abstract: The architecture of India has no language of its own. As one travels within the country, a plethora of architectural styles meet the eye. However, the evolution could be traced back to the time period when European countries were driven to India, in search of power and dominance, known as the Colonial era. Colonial architectural style was a reflection of how European architectural features were inculcated in the Indian architecture. It involved the influence of British rulers, along with Dutch, French and Portuguese. Bringing such structures of immense importance into limelight, for the marvelous architectural features used to aggravate their magnificence is the major motive of this research paper. Emphasis on amalgamation of Mughal and British architectural features has also been included. The paper further explores the nature of the relationship between the Indian society and the Colonial architecture. Indian dwellings were found to be greatly influenced by the Colonial architecture, even those belonging to people of lower caste. An analysis of the extent of influence, with respect to the context of the city, has also been done which helps in understanding the impression that these structures have on the locals.

Keywords: Utilitarian, Palladian, Baroque, Gothic, Indo-Saracenic, Rajbaris, Regionalization.

***

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EVALUATION OF PUBLIC PARKS AND THEIR QUALITIES BASED ON USER SATISFACTION

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Abstract: Public spaces are defined as an area or place that is open to or shared by all people, regardless of gender, race, age or socio-economic level. They are meant to act as a physical manifestation of a city. A public space is successful when it can accommodate diverse activities, diverse users and are flexible in the way they may be used. It has been observed that what majority of cities lack is 'a successful public space'. This research paper focuses on public parks; a study about the basic principles and design criteria that create living public parks and their effects on user satisfaction. The aim of this study is to analyze the existing design criteria of two public parks and evaluate their success rate. Cubbon Park at Bangalore and Kanakakunnu Park at Trivandrum are selected as the case study areas. The quality of the case study areas are calculated through a performance measuring method, Good Public Space Index (GPSI) which are then studied along with the four major quality indicators of a public space. The research finally assess the 'publicness' and success rate of the study areas.

Keywords: Good Public Space Index, Publicness, Success Rate, User Satisfaction.

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“CLIMATE RESPONSIVE ARCHITECTURE WITHOUT ARCHITECTS”
- AN URBAN VERNACULAR STUDY

PROF. SHRUTEE S. Dhanorkar, PROF. APARNA TARAR

Abstract: Spontaneous settlements are referred to as an outward spread of built-up areas caused by expansion, with inadequate provision of facilities. The formation of spontaneous settlements is as a result of urbanization, hence are referred here as “urban vernacular architecture”. This study examines the ways in which Spontaneous settlements respond to the extremities of climate. This paper explores some of the connections between sudden extremities of climate and the urban vernacular approach to respond to the problems emerged. The study specifically focuses on settlements near Old Pardi Naka in Nagpur City, Maharashtra State. Data was collected through physical observations and questionnaires. Data was also obtained from published articles and from the Nagpur Municipal Corporation publication. Examination of an interpretation key, plotting of the study area, geo-referencing and editing of maps with ground data were done to have a precise view of the study area. Analysis depicts that, there has been an indigenous and daring use of materials in new ways, textures and colors which are often used to indicate ethnic, religious, regional and other forms of identity, efficient use of resources shows that, the study area is a typical depiction of urban vernacular architecture. In concluding the paper, the solutions found by the dwellers of the spontaneous settlement are nothing but the urban vernacular approach of climate responsive architecture. The paper also makes room for assisted spontaneous settlements to be considered as urban vernacular architecture style which should be looked as having high design potential.

Keywords: Architecture without Architects, Climate Responsive Architecture, Extremities of Climate, Urban Vernacular Architecture

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SUSTAINABLE CITIES AND GREEN URBANISM

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Abstract: Indian cities being the engines of economic growth have undergone a fast pace of urbanization. The consequence of this transformation into a 'concrete jungle' has led to stress on land, water, induced air pollution, urban heat island effects, decreased green cover, degraded the quality of life of the people thereby reducing the livability of the cities. Sustainable and inclusive cities are the need of the hour for the conundrum of Indian cities. “Smart city mission” proposed by the Govt. of India as well as the Sustainable Development Goal targets the need for inclusive, safe, resilient and sustainable cities. The Union Ministry of Housing and Urban affairs (MoHUA) launched the Livability index to rate 116 Indian cities in 2018, to measure quality of life in 99 smart cities, capital cities and those with a population of over one million. These measurement parameters includes local governance, education, employment, social infrastructure, health, safety, availability of physical infrastructure such as housing, open spaces, security, land use, energy, water resource, solid waste management, and pollution. These have been grouped into 15 categories, in turn a part of the four pillars of Comprehensive development of cities. The physical pillar of these, gains 45% weightage with reduction of pollution and open spaces as the significant features. The current trends of urbanization have compromised green cover mainly in order to make land available for development. This paper is an attempt to bring out the significance of green cover in urbanism and aims to propagate management and increase of green cover as an important strategy thereby increasing the livability index of any city.

Keywords: Urban Green, Quality of Life, Livability Index, Green Cover Management, Retrofitting And Redevelopment With Urban Green.

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ARCHITECTS AND STRUCTURAL ENGINEERS COLLABORATION IN CONCEPTUAL DESIGN STAGE

SARANYA R PRASAD

Abstract: The key to successful collaboration is in understanding that it is not a technology but rather a psychology. Collaboration is not a process that can be codified into a system, it is more of an attitude that needs to be implemented in the culture of professions. It is important to acknowledge that each and every one brings something valuable to the project and their combined intelligence is more likely to deliver positive results than working isolated. The widening gap between architects and structural engineers who pursue different thoughts and ideas during the design process prompted this research. The findings from the primary and secondary survey conducted among a group of practising architects and structural engineers in Kerala shows that each profession has generally positive respect for the other even though some mutual criticism exists. It is clear that the required group-work skills and understanding of each profession should be acquired by architects and engineers during their professional education. The findings from the online survey conducted among a group of student architects revealed that they are facing difficulties in integrating structural knowledge into their design studio project. As a result, this research also explores the ways in which the structural education of student architects can be redesigned to make their future professional collaboration more harmonious.

Keywords: Architect, Collaboration, Integrated Design, Structural Engineer.

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FINANCING MODELS FOR THE STREET VENDORS’ ACT, 2014 – CASE OF NON-PROCESSED FOOD MARKET, VADODARA

PROF. SWARA SHAH

Abstract: A major segment of self-employed workers of urban population and an integral component of the Indian urban economy are Street Vendors. The Street Vendors’ Act 2014 is an attempt to legitimate this activity as trading for livelihood is the fundamental right in the Indian constitution. Financial plan is necessary to know the required fund and the available resources for the effective implementation of the Act. The study attempts to obtain viable options to finance the development of markets for the various type of vending activities. Case of non-processed food Market, Gorva, Vadodara city has been potentially identified for the development according to the Act. Hence a cost estimate has been prepared for development of a market at two levels, first the initial construction level and second, yearly maintenance level. Further five types of financing models have been prepared with the income-expenditure analysis. The fund for financing such project can be availed firstly through, BOT (Built-Operate-Transfer) model. Secondly, vendor’s co-operative association can build market themselves. Thirdly, combined financing can be done by CSR (Corporate Social Responsibility) and Municipal Corporation self funding. Fourthly, combined financing by BOT and Municipal Corporation can be done. Fifth model is financing only by the Municipal Corporation from its own surplus and grants under various government schemes. Research would give direction for the ground level implementation of the Act. The evolved methodology and outcomes could be used to benefit the society by replicating it elsewhere contextually.

Keywords: Participatory Approach, Self-Sustenance, Stakeholders.

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**REVIEW OF PROJECT PLANNING PROCESS OF URBAN LOCAL BODY - CASE STUDY: CONSTRUCTION OF BRIDGE ACROSS RIVER TAPI, SURAT**

**PROF. SWARA SHAH**

**Abstract:** In this paper, the Project Planning Process adopted by the local government is studied with the case study of – Construction of Bridge across river Tapi joining Rander area and Katargam area, by Surat Municipal Corporation (SMC), Surat, Gujarat (India). The study is based on information given by SMC officials viz. City engineers, Project Architect and Chief Accountant. The experience of Surat shows that urban local governments in the developing countries have the capacity to face the challenges of rapid urbanization and improved quality of life. The DPR is followed absolute contents given in guiding Toolkit by JnNURM. Planning process of the project is studied from the DPR only.

**Keywords:** Detailed Project Report, Privet Sector Participation, Urban Local Body.

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IMPLEMENTATION OF BSUP CASE OF VADODARA

PROF. SWARA SHAH, VIDISHA GAJJAR

Abstract: In this paper, the approach taken to analyze Vadodara city under the Basic Services for the Urban Poor (BSUP) program, a sub-mission of the Jawaharlal Nehru National Urban Renewal Mission (JNNURM). Vadodara Mahanagar Sewa Sadan (VMSS) has approached BSUP mainly through in-situ redevelopment of slums. Under this approach, VMSS is converting a large number of kutcha houses on municipal and State Government lands. VMSS has taken care of many pavement dwellers also for accommodation under BSUP. Basic services and infrastructure are also supposed to be upgraded in these settlements. VMSS has also attempted to accommodate many of the people's concerns, demands and desires which emerged during the implementation process. In this paper, slum scenario of the Vadodara city, need for BSUP and implementation attempt of VMSS is analyzed.

Keywords: Implementation, Participatory Approach, Urban Poor.

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PROJECT FINANCING PROCESS OF URBAN LOCAL BODY - CASE OF SURAT

PROF. SWARA SHAH

Abstract: Project Financing of Urban Local Body in India is studied with an important economic centre in the South Gujarat Region - Surat. The Surat Municipal Corporation is well-known for its work efficiency and won many awards for utilizing the allocated funds from the central and the state government as well as for generation of self-capital for investment in the various service projects. Various Projects (completed, under construction and proposed) from last ten years by SMC are listed. Among which the potential projects are identified. Detailed mapping of financing of identified projects is done. The paper ends with the experience of Surat, which shows that urban local governments in the developing countries have the capacity to increase the self-capital to face the challenges of rapid urbanization and improved quality of life. Study has considered projects before Smart city mission.

Keywords: Project Financing, Public-Private-Participation, Resources, Urban Local Body.

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INHABITED WALL: A STUDY OF A STREET OF INHABITED WALLS

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Abstract: Indian cities are kinetic, everchanging and adapting to new needs. Streets and thresholds significantly participate in this constant dialogue of change. Urban fabric of a neighborhood can be identified in its manner of manifesting change, where street morphology, relationship of open to built define and describe territory. This paper is an exploratory study of one area showing the manner in which spaces collectively through changing functions and threshold relationships give life to the city and help define it. The paper further attempts to draw parallels between Simon Unwin’s “inhabited walls” and street buildings where the street conceptually acts as a wall. Further the interconnected and placement of these inhabited walls are describe within the framework of Kevin Lynch points on imagability. Documentation in sketches and mapping of a specific street and a range of inhabited walls will be used to construct this explanation. Analysis will show that inhabited walls and these liminal spaces between buildings and streets permit negotiations of boundaries by the people who, through active participation and choice make the city safer and more alive and are fundamental to enriching street life and city life.

Keywords: Walls, City, Territory, Space.

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ZERO CARBON FOOTPRINTS:
A SUSTAINABLE SOLUTION FOR MODERN BUILDINGS

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Abstract: Zero carbon buildings are the ones which have zero carbon emissions annually. They set the classic examples of sustainability to be achieved in the modern era. Sustainability is becoming the need of construction industries due to the impacts of environmental deterioration that has happened by humans. Smart city is an emerging trend in India introduced in the year 2015. This paper is an attempt to understand the initiatives taken worldwide to have zero carbon footprints, case studies are carried out for four zero carbon buildings in the world, which includes, The Indira Paryavaran Bhawan- New Delhi, The Bullitt Centre-Seattle, The Edge- Amsterdam, The Legion House-Sydney. The Probable solutions to achieve zero carbon buildings are discussed by analysing materials, construction techniques, advantages, disadvantages. Considering the present scenario of smart city, this concept has the tremendous potential which can be implemented worldwide.

Keywords: Case Studies, Smart Cities, Sustainability, Zero Carbon.

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EFFECTIVE PARTICIPATION IN PREPARATION OF DEVELOPMENT PLANS IN GUJARAT: VADODARA AS A CASE

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Abstract: Participatory planning is a process wherein the local community is involved with urban planners to decide about the developmental needs. They work together to produce plans and these plans have greater chances of effective implementation as stakes are evolved and conflict find resolution during the interactive planning process itself. Involvement of the people in planning process is advocated for successful implementation of the determined plans. This paper is an attempt to review the current process of preparation of Development Plan and involvement of citizens in the whole process.

Keywords: Development Plan, Planning Process, Public Participation.

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A PENDING VISION URGING ACTION:
KOLKATA-HOWRAH URBAN INTEGRATION

PARTHIBA CHAKRABORTY

Abstract: In eastern India, a grand urban opportunity is stifled under inaction, holding a great potential. The metropolis of Kolkata is bulging fast into a megalopolis, spreading its tentacles around itself, creaking at its seams, reeling under stress of multifarious kind, all the while when a vast stretch of underutilized land waits to be annexed and intertwined towards an effective urban solution. If we look at the map, Kolkata is in fact the “island”, cut out from the “mainland” of India by the river Hooghly. The project intends to stitch the urban fabric of the twin cities of Howrah and Kolkata and bring forward a seamless integration scope which will be beneficial on an urban and regional scale. For this a sample study area has been considered in the riverfront of both the cities and an urban transformation project has been proposed.

Keywords: Land Use Pattern, Riverfront Development, Regeneration, Urban Interface.

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SOCIAL PERCEPTION ON DESIGNED AND UN-DESIGNED PUBLIC SPACES IN KOCHI

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Abstract: The intention of an architect while designing a space and the perception of the same space by diverse user groups would be different. Urban planning and city planning has made most of its suppositions and proposals based on the user groups- their time, identity and needs. The formulation of ‘designed un-designed spaces’ is necessary for the successful working of a space, with ‘chaos in order’ and ‘life in activities’. The un-deigned spaces fill the gaps in designed spaces, giving life and energy to it.

Keywords: Adaptation, Chaos, Customization, Designed and Un-Designed Spaces.

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PEDAGOGY FOR INTRODUCTORY DESIGN STUDIO:  
A QUALITATIVE EXPLORATION OF ARCHITECTURE DESIGN  
STUDENT LEARNING EXPERIENCES  

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Abstract: Design is the most vital skill for an architect. A studio is a workspace where students explore a set of skills with or without the presence of an instructor. The design studio project relies not only on the final product of a student’s work, but also in the visible design process that student takes to get the final product. Most of the creative design processes are explored in the introductory design studio. It is a foundation for all the upper classes. This qualitative study addresses the design studio teaching-learning experiences of faculty and students. It identifies teaching philosophy, pedagogy, strategies used for introductory design studio by faculty. It also discusses the descriptions that architecture students give to the learning experiences, describes the perception that design students have of their learning experiences, and illuminates the outcome of these learning experiences. 

Keywords: design Studio, learning experiences, pedagogy, philosophy, 

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“ARCHITECTURAL CONSERVATION THROUGH EXPERIENTIAL LEARNING” – AN APPROACH FOR UNDERGRADUATE ARCHITECTURE EDUCATION

APARNA TARAR, SHRUTEE DHANORKAR

Abstract: In the modern world, the value of the rich cultural heritage is continuously decreasing. The objective of architecture conservation is to maintain the significance of the architectural heritage or site. Though we have many governing bodies for heritage conservation, it is important to train the young minds to protect and preserve our culture. But how can we achieve this objective more effectively? Can we put this thought in architectural education? In India we have post graduate programs in conservation at many institutions. But we can also promote the importance of learning of conservation principles, processes, history, its culture and values through the undergraduate architectural education. Experiential learning and hands on education have a key role to play in the architecture education. Objective of this paper is to present an understanding of experiential learning as a discipline in which the learner prefers to learn actively through hands on experience. This paper intent to exhibit the methodology adopted for teaching conservation to undergraduate students and study visit experienced by the students of “Priyadarshini Institute of Architecture and Design Studies, Nagpur” for learning the conservation methods and documenting it, at ASI conservation site of “Markanda Devasthan, Gadchiroli, Maharashtra”.

Keywords: Architectural Conservation, Architecture Education, Case Study, Experiential Learning.

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“EXPERIENCING ARCHITECTURE”
– ARCHITECTURE THAT TALKS TO YOUR EMOTIONS

APARNA TARAR

Abstract: In this fast going world, where people are living, the ways has changed in which architects design and build. The development of construction techniques and innovation of new building materials has left architecture without materiality. The senses other than site have been neglected results in a lack of sensory experiences. Now a day’s architecture built is more concerned about the looks of a building, its shape and form more than the experience within it. But it is not inviting. The power of the senses in engaging person in the experience of space is put aside, and without it, architecture becomes dull and meaningless. This paper tries to understand, how buildings transmit emotion, or evokes emotion through a study of ‘Model of Emotion’. Also how one can achieve a sense of belongingness, a sense of place, by proper application or use of architectural means in architectural designing. Also how one can experience the space through the senses.

Keywords: Architectural Means, Engaging the Senses, Experiencing Architecture, Model of Emotion.
“URBAN OPEN SPACE”
– STIMULANT FOR ECONOMIC DEVELOPMENT

PROF. MRUNAL GAIKWAD, PROF. SHRUTEE S. DHANORKAR

Abstract: Cities are constantly looking to attract economic development to create jobs and increase revenue within their jurisdictions. In turn, cities can use this increased tax base to improve the amenities and quality of life within the municipality. To attract this economic development, cities often offer commercial zones large tax breaks and incentive packages to assist in the location decision. Research shows that these methods have recently backfired with the communities, due to the primary focus on business rather than on improving the quality of life for residents. Research also reveals the growing impact of a community’s quality of life factors on a commercial zone's location decision-making process. Focusing on urban open space is one method of increasing the quality of life within a community and making it a more desirable among current and future residents. Taking into account the multitude of human and ecological benefits of urban open space, this study provides additional economic justification of the importance and value of open space. By running correlation and regression models analyzing the number of commercial zones located in a city and the percent of the population with at least a small degree in relation to footfall data and other economic location variables, this study indicates urban open space is a viable economic recruitment strategy for municipalities. The results indicate a causal relationship between city land occupied by open spaces and the percent of population with at least a small degree—one of the main factors correlated with the location of commercial zones.

Keywords: Urban Open Space, Quality of Life, Economic Development, Relationship between Open Space and Population.

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Abstract: Urbanization foster the economic and social advancement that improved overall quality. There is less information of runoff available for urban areas in India which results to urban flood. The soil conservation service curve number (SCS-CN) and the hydrological parameters are studied for small watershed at local level. The basic hydrological parameters are infiltration and runoff which is influenced by urbanization. CN (Curve Number) is used to estimate the surface runoff of Gurugram district, Haryana. Weighted curve number, runoff depth and runoff volume are estimated by using SCS-CN method. The parameters used for this method are Land cover Map, Hydrological soil group (HSG), remote sensing data and GIS. Runoff potential areas is also identify by using SCS-CN method. Then the total runoff volume for Gurugram (2016) is calculated. Critical areas carrying high runoff are also identified and compared with Flooding in Gurgaon (July 27-28, 2016). Sustainable urban drainage system and ground water recharge techniques can be taken into account for solving the water related problem at urban level.

Keywords: GIS, Rainfall, Runoff Depth, Runoff Volume and SCS-CN Method.
CLIMATE SENSITIVE BUILDING FORMS

AR. RUTIKA TENDULKAR

Abstract: We shape our buildings; thereafter they shape us - (Winston Churchill). Infinite varieties of forms can mould a building. Suitability of specific forms with respect to their respective climates, and their response to environment shall be analyzed. The building itself is the third basic factor that influences the heating and cooling requirements. These depend on its shape, form and construction as it is directly exposed to outdoor environment & hence responsible for solar heat gain or loss through the building envelope. Dealing with various building forms with respect to climate (Thermal Environment) will help in analyzing the advantages and disadvantages of various forms in that specific climate.

Keywords: Building Orientation, Building Shapes and Forms, Thermal Environment, Solar Access, Surface Area to Volume Ratio.

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“HUMAN RESEARCH MANAGEMENT IN CONSTRUCTION INDUSTRY WITH SPECIAL REFERENCE TO TRAINING AND MOTIVATION”.

AR. BELA SHYAM JOSHI

Abstract: The construction industry is one of the very big global employment sectors. It provides work for a large proportion of the labor market. The market of construction business is both domestic as well as global. Construction is the most complex project-based industry in which there is a need to apply good human resource management practices. Labour is an important factor in the construction industry. It operates equipment in which huge investments are made. Hence, effective training for them is very much essential. This will enable them to perform well and increase the speed and productivity of construction work. The success of the construction organization also depends upon the morale of its people. Companies need to ensure all the learning achievements by their staff are recognized by appropriate promotion and reward. So it is necessary for successful construction organizations to make use of the principles of training and motivation in HRM practices.

URBAN DISASTER MANAGEMENT:
CASE OF SHIMLA, HIMACHAL PRADESH

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Abstract: India is the greatest nation in the South Asian region and is the 2nd most populous nation in the world with a population of over 1.25 billion. Indian economy is considered as one of the quickest developing significant economies in the world. In any case, the nation is harassed by the climatic catastrophes that keep on wreaking devastation on its economy. The distinctive geo-climatic conditions make India more vulnerable to natural disasters like floods, earthquake, landslides, cyclone and occasional drought. Shimla City in the state of Himachal Pradesh is prone to multiple disasters like Landslides, Earthquakes, Land Sinking, and Hail Storms etc. This paper is an endeavor to alleviate the steps initiated to mitigate various Natural Disasters in Shimla.

Keywords: Urban Disaster, Disaster Management, Landslides, Earthquakes, Land Sinking, Hail Storms.

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TRANSIT ORIENTED DEVELOPMENT IN INDIA: 
A CRITICAL REVIEW OF POLICY MEASURES

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Abstract: Transit oriented development (TOD) is an effective urban planning technique that addresses the present-day concerns of sustainability. It relies on integrating land use and transport network systems. It is the concept with utmost effective solution for accommodating a better and controlled urban growth. Although, National TOD policy is already been published by the Indian Government and it has envisaged a substantial optimistic influence in eradicating problems. India is one of the fastest growing economies of the world and is also the second most populous nation, furthermore it has a rapidly growing urban population owing to which the cities are facing severe problems and challenges related to mobility, congestion and subsequently pollution. Even though, a diversity of criteria and indicators are listed by various authors that impacts the use of TOD techniques. Nonetheless, every country has its own challenges and problems for applicability and effective implementation of TOD. This paper attempts to identify those challenges pertaining to adoption and implementation at the urban body level. The study mainly adopts primary means of data collection. It reviews policies and case studies and captures the stakeholder’s perception on the identified concerns from the secondary study.

Keywords: Transit Oriented Development, Policy, Sustainable Development, Public Transport, Measuring Criteria, Indian Cities.

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INTEGRATION OF STREET VENDOR
IN PUBLIC SPACE WITH CONTEXT TO SMART CITY NAGPUR

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Abstract: The development of a city in terms of Physical & Social Infrastructure is very fast and they are essential elements of Smart City Concept. The Development of City may include Infrastructure, Social Spaces, Residential Buildings, Malls and Commercial buildings. The street shopping culture act as Get-together spaces, Activity generators, fulfilment of daily needs, we can even negotiate, to save time and money, Visual attraction and solution to Parking space. The share of informal sector in Urbanization is very high which is directly related to Economic growth. Informal sector or economy, sometimes also titled shadow, hidden, black, parallel, second or underground economy. Street markets were particularly important social hubs.
Informal vendors may include variety of Food stalls, Repairing of Goods, Service Providers, Products, and Artefacts and so on. Some Activities may run Seasonal, Weekly, and Daily throughout the day or may be for few hours. Few Vendors are only seasonal specific like Ganesh Pooja, Dassera and Diwali. The importance of Informal sector in Urban Life plays a vital role. Smart Urbanism development policy needs to incorporate Informal Sector in Design proposal. As users are directly or indirectly depend on same.
The Paper will give focus on Urban Life, its need, demand and supply with Integration of Informal sector in Public space to enhance life style of Smart City users. To identify socio-economic and environmental impact of street vendors. Challenges faced by Street vendors at different levels. The changing skyline and cross section of streetscape plays a vital role in Urban Design. The different sizes, shapes, colors of different street vendors act as vibrancy in Urban Life.

Keywords: Economy, Informal Sector, Public Spaces, Smart Urbanism.
INCLUSIVE STIMULATING SPACE PLANNING FOR SUSTAINABLE URBAN AGGLOMERATION

RUTUJA DESHMUKH JAGTAP, DR.D.P.SINGH

Abstract: Open Spaces provides space for the expression of diversity, both personal and cultural. The social and cultural values of open space include attitudes towards nature and the desire for contact with it. Open space is now Inclusive part of statutory and community planning processes. Urban Spaces must be stimulating for all age groups encouraging their activities, events and gatherings via sustainable planning and design. This paper focuses on need, unconventional, visions and principles for urban open space in this modern era of planning. The social, cultural and physiological values of open space include attitudes towards nature and the desire for contact with it.

Keywords: Open Spaces, Sustainability, Stimulating Spaces, Community Planning.

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OVERVIEW OF IMPLEMENTATION OF DEVELOPMENT PLANS IN INDIA

RUTUJA DESHMUKH JAGTAP, DR. D.P. SINGH

Abstract: For planning and development of a city considering its infrastructure master plans or development plans are traditional instruments used. Over a period of it is realized that percentage of implementation has received less attention than formulation. Increase in ratio of effective execution is missing in development plan. Review of development plans and analysis of its application in Indian context is discussed. Thus status of the execution of development plan with identification of barriers in its implementation is focused.

Keywords: Implementation, Status, Strategy, Execution, Urban, Development/Master Plans.

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RESILIENT CITY PLANS AS IMPORTANT ASPECT
OF FUTURE DEVELOPMENT PLANS OF INDIAN CITIES

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Abstract: While in developed countries urbanisation has mainly taken place in the second half of the 19th century, developing countries are in the middle of their urban growth now. The other major issue of Climate change is now a current reality. Three major movements are coming together: urbanization, decentralization, and the rise of domestic capital markets. The rapid process of urbanisation and the growing number of the megacities, cause a lot of different ecological, economical and social problems and risks. This impacts cause challenges for urban policies and urban planning strategies to manage the development in a sustainable way, when the population in some cities doubles every 10 to 15 years. As the numerous national and international conferences on urbanisation and megacities show, there is an obvious need for more and better urban development strategies, long term land policy and forceful urban management.

Keywords: Urbanization, Climate Change, Sustainable, Resilience.

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TRANSFORMING PUBLIC SPACES OF BENGALURU  
A CASE OF BENGALURU KADALEKAI PARISHE

VIDYA

Abstract: Each city in India has its own Culture, Social life, political background, Economy, History etc. When a City formed these are the layers slowly added to it for its development. Some of the cities are formed based on these layers. Bengaluru has so many public spaces which will transform according to the occasion. Kadalekai Parishe is one among them which is a harvesting festival. Main focus of the Paper is to show how these layers still exist in the present metropolitan city and transforms its public space for its existence. However the city grows, we should not forget its origin.

Keywords: Transforming Spaces, Public Spaces, Metropolitan Cities, Kadalekai Parishe, Layers of the City.

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EFFICIENCY IN PLANNING FOR SURFACE PUBLIC TRANSPORTATION

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Abstract: Rapid urbanization is making urban traffic congestion increasingly rigorous, and its contradiction among resource, population and environment is becoming increasingly prominent. The hierarchy of green transportation puts cyclists and pedestrians first because of its low cost, space efficiency, and zero environmental impact; followed by public transit because of its shared passenger-transport service, thereby helping in reduction of an individual’s carbon footprint. The government has therefore, aimed at constant development of the public transport system in the country for better connectivity and to promote a healthier lifestyle. The expansion of this sector will lead to construction of new transportation hubs to support it. Research on efficient planning for these public transit hubs is relatively underdeveloped. Buses act as the highest acceptable mode of public transportation in India, this paper aims at Efficient planning techniques for the construction of infrastructure supporting public transportation and to promote non-motorized transit modes. The outcome of this study would be utilized by the researchers to have an idea as to how the aspect like planning of green design will cause a difference in the society not only economically and socially but also environmentally and also moving towards a green development path.

Keywords: India, Planning, Public Transportation, Transit Hubs.

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TRADITIONAL TO MODERN BREATHING FUNNELS IN CONSTRUCTED FORMS – REVIEW AND COMPARISON OF COURTYARDS IN TAMILNADU, RAJASTHAN, KERALA AND IN CONTEMPORARY CONTEXT.

JYOTIKA GIRDHAR, VASUDEVAN K.R.

Abstract: Among many styles of architecture in India, there is one, that is being deliberately followed - Courtyards. This component of the building can be seen as an emphasized one in both traditional and modern buildings of India. A solid block with punctured holes in curvilinear, spherical or cubic forms at the center which functions as a core breathing space, is how the term courtyard generally is defined to be. The courtyard’s configuration solely depends on the typology of spaces abutting it. A courtyard usually reflects different characteristic features coupled with diverse cultural, economic, social, psychological aspects of the society, location and climate. This research goads to understand the role of a courtyard in providing comfort levels in the terms of ventilation, lighting, thermal comfort and regulating indoor air temperature. The objective of this study is to understand the sustainable aspect of courtyards, by analyzing the historic evolution of the its form, element, grid systems, through site specific studies. A 75-year-old Chettinad house, Styles in Rajasthan, and Kerala, compared with a contemporary courtyard house at Chennai is chosen as a typical example to explain the case.

Keywords: Lighting, Openings and Courtyards comfort level, Thermal comfort, Ventilation.

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LAND-COVER CLASSIFICATION AND CHANGE DETECTION OF RAIPUR URBAN AGGLOMERATION USING RS & GIS TECHNIQUES

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Abstract: Urbanisation and expansion of cities are among the most important global trends observed in this century. Urbanisation is considered to be both, opportunity in terms of growth prospects and challenges in terms of unsustainable expansion of cities. Tier-I cities in India have exceeded their carrying capacities over the years and there is a need to decongest them by diverting the growth prospects towards Tier-II cities. Moreover, Indian capital cities of respective states have always remained on focus for developmental activities due to which this study focuses on Tier-II capital cities. Therefore, in this study, an approach has been proposed that can be used to accurately summarize the dynamic urban expansion process across Tier-II capital cities in India with the help of Census data. Detail analysis of urban area expansion was carried out by calculating population growth to urban agglomeration expansion ratio to know the pattern of urban growth occurring within the urban agglomeration boundary of ten Tier-II capital cities. Results indicated immediate attention is required to cities like Trivandrum and Raipur due to poor land utilization happening in these cities over the years. Further study has been conducted on Raipur urban agglomeration with the help of remote sensing and ArcGIS. Landsat 5 TM & Landsat 8 OLI_TIRS satellite imagery for the year 2005 and 2015 respectively were extracted to map the land cover changes through change detection technique. The growth direction of the city & urban growth pattern towards peripheral areas has been analyzed. The results of this study show that there has been the tremendous increase in built-up areas over the study period. The higher built-up growth rate was observed in East-Southeast, Southeast-South & West-Northwest directions during the study period. The study observed a sharp increase and then a gradual decline in built-up growth rate from the core to peripheral areas. Initially in 2005 higher built-up density was observed in core areas and its surroundings but in 2015 it shifted in the central and peripheral areas. Probable drivers of growth in the context of the study time frame were also discussed to explain the observed pattern. This research compiles a database for future references towards policy formulation and plans for sustainable urbanization of Raipur urban agglomeration.

Keywords: Urban Expansion, Tier-II Capital Cities, Land-Cover, Change Detection, Raipur.

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STUDY ON PERFORMANCE AND COST EFFECTIVENESS OF PREFORMED FOAM CELLULAR CONCRETE BLOCKS IN CONSTRUCTION INDUSTRY

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Abstract: The current scenario indicates the rapid growth of construction industry along with the developments and progress leads to increase in construction cost. Construction time and cost have been considered as important criteria for determining project performance in many regions of the world. The present study was focused on reducing the construction cost and time along with sustainability approach. In order to improve the quality of construction without compromising on its environmental friendly properties, usage of Preformed Foam Cellular Concrete (PFCC) blocks has been studied. PFCC blocks are well suited for urban areas with high rise buildings and those with high temperature variations. PFCC Blocks used for this study were manufactured personally at a mixing plant at Chandaka village, near Anandapuram in Visakhapatnam. The study was carried over to determine the performance of PFCC blocks through laboratory tests such as compressive strength, water absorption and density according to IS 2185(part 4):2008. Physical properties of these PFCC blocks were compared with conventional bricks like burnt clay bricks and fly ash bricks based on standard tests. Additionally, few more attempts were also made to reduce the construction cost, materials and labour required for brickwork. PFCC blocks were replaced with conventional bricks in construction of a RCC Framed structure. Required quantities of materials like cement and sand were estimated by standard methods and reinforcement details were evolved using StaadPro design software. Model constructions were also built using PFCC blocks to study the performance and cost effectiveness in construction of load bearing and non-load bearing walls. The significant findings from this study concludes that the usage of PFCC blocks can reduce the quantity of cement and sand up to 50% and amount of reinforcement can be decreased up to 10%. Finally, total construction cost of a RCC framed structure can be reduced to 10% when compared to conventional usage of clay bricks. Moreover PFCC blocks have several advantages like low water absorption, high thermal insulation, high fire protection, high sound insulation and eco-friendly.

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UNDERSTANDING THE SPATIAL PATTERNS OF GREEN SPACES FOR 2000-2016 IN THE CITY OF AHMEDABAD

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Abstract: Urban Green Spaces (UGS) has numerous amenity values for recreation, socialization, environment, leisure, aesthetic, etc. well documented in many research studies to enhance and maintain the urban quality of life. Most studies focus on evaluating the functional benefits of green spaces or on other aspects of it like conservation and preservation. However, little is been known about the dynamics of spatial change of green spaces in terms of their geometry, landscape and arrangements. This paper studies the temporal as well as spatial change of green spaces in comparison to other classes like agriculture, vacant land, built up, water body and roads. Ahmedabad city has been chosen for this empirical study over the period of 2000 to 2016 due to high level of infiltration of people over the last decade along with maintaining its high urban green spaces compared to other growing cities of India. The study takes help of remote sensing Landsat USGS image data and GIS derived landscape metrics for its spatial analysis. Percentage changes in different classes of urban land cover especially vegetation were calculated for Ahmedabad city and each of the thirty seven common wards eliminating the six wards of old city for the year 2000 and 2016. The changes in landscape metrics, viz, class area, no. of patches, patch density, mean patch size, patch size standard deviation, edge density, mean shape index, area weighted mean shape index and largest patch index for Ahmedabad city as well common wards were calculated. These landscape metrics are only limited to shape and size measures of geometry for class of vegetation in this study. It revealed vegetation area is increased by 3% towards the periphery and decreased by 4% in the core of the city whereas total built up increased by 18.4%. Further, increase in vegetation shows increase in number of green patches, edge density, shape regularity, largest patch index and mean patch size except the few wards. It reveals contrasting pattern of sparse and conglomerated distribution of vegetation and its form of conversion. These patterns evolved over a period of 16 years helps to understand the spatial and physical behaviour of green spaces and other classes. Understanding such patterns deeply can assist for better urban planning monitoring, strategies and decisions. It should provide insights and aid in government policies for urban planning and conservation. The simulation of GIS applications in the study helps for analytical thinking and spatial tool-based planning.

Keywords: Green Spaces, Landscape Metrics, GIS, Ahmedabad, Spatial Pattern.

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“MONITORING OF BUILT OPERATE TRANSFER (B.O.T.) CONTRACTING”

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Abstract: Infrastructure development is the key driver for the economy of any country. But as the infrastructure development has limitations due to scarcity of funds and scarce budgetary resources Indian government has allowed participation of private firms in public beneficial programmes with the help of non-conventional contracting. In BOT, the private sector designs, finances, constructs and operates the facility and transfers the ownership of the facility to the government after a specified concession period. Hence BOT can be seen as a technique for infrastructure development and service provision by merging the private and public resources. However the success of BOT can be judged only after the completion of concession period. Anticipation, timely measures and avoidance of problem leading to time and cost overruns becomes critical to the success of the project. Hence monitoring system is mandatory to keep a check on all the various construction activities as well as financial outlay of a project.

Keywords: Infrastructure development, BOT contracts, Monitoring of construction, Private Sector Participation

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KINESTHETICS OF THE MORPHOLOGICAL EVOLUTION OF TEMPLE FORM A CASE OF PANCHALINGA NAGESHVARA TEMPLE, BEGUR

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Abstract: Continuity and linkages with its Kinesthetic is an important characteristic of traditional historic Hindu temples in India. The changing socio-political scenarios have played a major role in the development of various temple forms. This can be specially notable in the historic Hindu temples of South India. This intangible cultural heritage has majorly impacted the spatial configuration and massing of the temples.

This paper showcases the 8th century 'Panchalinga Nageshvara Temple' located in Begur, a small town within the Bangalore Urban district. The temple is unique as it comprises five separate shrines of five lingas. The temple is historically layered and multifaceted. The temple acquired significance with the discovery of a hero stone dated c.890 that describes a “Bengaluru” war. This is the earliest evidence of the existence of a place called “Bengaluru”. This contradicts the more popular legend that the city of Bengaluru was founded in 1537 by Kempe Gowda I and indicates the existence of the city from several centuries before the date. The temple is one of the few surviving architectural expressions of the later phase of Western Ganga dynasty, which ruled the region initially as a sovereign power (350–550), and later as feudatories of the Chalukyas of Badami, followed by the Rashtrakutas till the tenth century. The temple became a part of the Chola Empire in the 10th century and has been extended with over layering of the Chola architecture during this period. Further addition and alterations have been implemented on the temple form during the Vijayanagara period.

The Panchalinga Nageshvara Temple is a classic example of the interweaving of several historical layers, which is very evident in the architectural features and elements of the temple. This paper intends to give an understanding of the morphology of the temple in terms of its configuration, the socio-political and cultural influences and its impacts on the built form over a period of time. The paper covers the influence of the several architectural styles manifests on the Panchalinga Nageshvara temple. The melange of various architectural influences has contributed to the distinct form of the temple.

Keywords: Amalgamation, Historical overlaying, Multifaceted, Spatial configuration.

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IMPORTANCE AND NEED OF WALKABLE COMMUNITIES NAGPUR AS CASE STUDY

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Abstract: Walking was the main way to travel before cars and bicycles were available due to mass production. It was the only way to get from place to place for much of human history. In the early 1900, economic growth and industrial revolution led to increased automobile manufacturing. Cars and two wheelers were also becoming more affordable, leading to the rise of the automobile industry. The detrimental effects of automobile emissions soon led to public concern over pollution. Alternatives, including improved public transportation and walking infrastructure, have attracted more attention from planners and policymakers. Walkability is a measure of how friendly an area is to walking. Walkability has health, environmental, and economic benefits. It is an important concept in sustainable urban design. Walkability include the presence or absence and quality of footpaths, sidewalks or other pedestrian rights-of-way, traffic and road conditions, land use patterns, building accessibility, and safety, among others. India has become one of the most crowded countries in world and thus concept of walkability has become importance issue to think and act upon.

Walkability is the cornerstone and key to an urban area’s efficient ground transportation. Every trip begins and ends with walking. Walking remains the cheapest form of transport for all people, and the construction of a walkable community in India will provide the most affordable transportation system any community can plan, design, construct and maintain. Nagpur city is developing in TOD (Transit Oriented Development) i.e Metro Project where maximum uses of Public transportation and minimize the use of private vehicles. To promote this type of development need to provide walkability & feeder system as a solution. The paper talks about concept of walkability, its need and benefits in India.

Keywords: Walkability, Community, Urban Design.

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IMPORTANT AND NEED OF ADJUSTABLE ROAD SIDE SHADE ON TRAFFIC SIGNALS

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Abstract: India is a country with diverse climate. Few regions in India faces harsh Sun during summer with temperature rise up to 48 degrees. Standing and waiting for traffic signals becomes uncomfortable and sometimes deadly. Standing in traffic signals in crippling heat is an ordeal for Motorists. This forces many motorists to jump traffic signals to avoid harsh sunlight. The solution to this is providing green net or Tarpaulin covers near the signals. This not only helps the motorists to get shaded place but also helps in escaping for Rains. This further helps the people to adhere to traffic rules. The temporary Tarpaulin cover does not last for longer time as it is not useful in Rains. There is a major need of a solution which can help the people to stop crossing Traffic signals and adhere to traffic rules in summers. The problem becomes harsh when standing is harsh Sun of summer leads to Fainting and sometimes heat strokes as well. The paper talks about need and importance of road side shades in traffic signals and providing solution for the same. This will reduce breaking of traffic signals and prevents health issues while standing in traffic signals. This will help authorities to think further for the issues related with Heat in summers especially on traffic signals. The paper gives a design solution to the problem associated with harsh summer heat and rains. The design solution will include consideration of the other aspects of Shade design as well.

Keyword: Traffic Signal, Summer Heat, Road Side Shade

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ADAPTING SUSTAINABLE TECHNIQUES FROM TRADITIONAL BUILT HERITAGE OF RAJASTHAN

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Abstract: Dating back to the early 18th century, in addition to the famous forts and palaces, Rajasthan has a unique heritage in the form of its walled cities. The walled city essentially includes various residences for royal families and common people. The walled city is an area bound by high and thick walls with gates for controlled access, marketplaces, streets, chowks, and religious places, etc.

To sustain in a desert-like climate in parts of Rajasthan, the walled city has unique characteristics in built environment which make them climate responsive. To overcome the climatic harshness, the city planning and building designs exhibit sustainable and energy efficient techniques throughout these walled cities. In the climate-conscious approach to city planning and architectural design of buildings, the climate responsive techniques used traditionally, have made their way into the modern building. This paper focuses on the techniques used in the planning and design of heritage buildings and their use as sustainable techniques in modern architecture and planning taking examples from walled cities of Jaipur, Jodhpur, Jaisalmer, Udaipur, etc.

Keywords: Built Heritage, Courtyard Planning, Sustainability, Solar Passive Techniques.

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Abstract: This paper focuses on the interrelationship of the urban fabric in relation with the dichotomy of urban life, to analyze how the fabric or texture of cities can be conserved or created to encourage a good urban environment. Cities, as we see today have undergone a considerable amount of change both in the quality of urban environment and from a traditional cohesive urban form to a contemporary urban structure. The root cause of this transformation is said to be traced in the movements that had encouraged social inequity and resulted in the physical decay of industrial towns. This perhaps also has an influence on today’s city form. Thus, this paper argues that there is a need to understand and rebuild the elements which affect the quality of a livable urban environment. In order to understand this interrelationship, the case of Bhopal has been studied to access the already established literature concerned with urban morphology and quality of life to understand the prerequisites of a livable urban environment. Finally, this paper concludes with proposing recommendations for a good urban environment to prevail amidst growth and development in urban centers.

Keywords: Morphology, Public Space, Quality Of Life, Urban Fabric.
MASLOW’S HIERARCHY OF NEEDS AND ARCHITECTURE

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Abstract: Abraham Harold Maslow was an American psychologist who was best known for creating Maslow’s hierarchy of needs, a theory of psychological health predicated on fulfilling innate human needs in priority, culminating in self-actualization.

Now in this paper each aspect will be discussed and how that can be related to Architecture is explained.

As in how needs of people vary at various strata of society and how they can be fulfilled. Basically taking a judgment on Identifying requirements of client and then trying to sort then architecturally. As an Architect, it is an effort to understand how to provide on variety and delight in housing environment.

Keywords: Architectural Elements, Human Needs & Psychology

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ROLE OF SOCIAL ART IN URBAN REFORM DUE TO SMART CITIES

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Abstract: A civilization is known for its ART. Such a stupendous role arts plays in our life. It has power to shape civilizations. Likewise Architecture have power to shape our Society. This paper will further discuss Smart cities and issues related to it, like impact of smart cities on social Architecture. Also this paper will talk about walls of a city and how they can be used to spread awareness among confused urban population. The example of, Nagpur is studied. A city to be developed as Smart city could identify lot of avenues which could be beneficial in the process of urban reformation of the city. The Nagpur Municipal Corporation has organized a competition on wall painting. Details of this competition, how it was held and its impact on citizens of city and cityscape is studied. And the platform such competitions, provide to display citizens concerns and improve citizen partnership in the process of digitizing and networking

Keywords: Art, Social Art & Architecture, Smart Cities.

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TRADITIONAL ARCHITECTURE AND AN INNOVATIVE DESIGN APPROACH TO CREATE NEW URBAN STRUCTURES

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Abstract: The world we live in is a heterogeneous web of cultures, religions and schools of thought. The need of the hour in this rapidly developing era is to come up with fast and effective developmental schemes and new ideas. There is a requisite to break away from the old silhouettes and create new skylines. It is always interesting to return to the root and learn lessons which have validity for our times. The typology of the fort based on courtyards and roof terraces is typical of many similar buildings of Rajasthan. It shows how traditional buildings solved concerns of climate and modulated light. The study on previous architecture as a reliable reference in contemporary designing is always considered the guidelines toward further Architecture.

We still have to learn lot from traditional Architecture. Built environment of our past were seldom planned and developed with the benefit of designers and master plans. Instead they were a result of spontaneous development by the passage of time, lay of land and daily life of the people. Still they did reflect a sense of being rooted and a sense of belonging to the place they did respond to the sun, the wind and the rain. In this paper the Author made an attempt of identifying several Design Elements & Principles applied in the early buildings of Rajasthan,Gujarat and tries to put forward innovation in contemporary building design styles by using the similar elements in an innovative ways and also tries to address the question, the relevance in contemporary world through certain examples.

Keywords: Contemporary World, Heterogeneous Culture, Innovation, Traditional Approaches.
SMART WATER MANAGEMENT FOR TRADITIONAL INDIAN CITIES

AR. SUREKHA YADAV, AR. ASHISH SHARMA

Abstract: Indian cities are organically formed and being traditionally developed, they lack the capacity to intake the rapidly growing population. According to India’s Ministry of Urban Development, 60% of India’s population will live in cities by 2050. This calls for intelligent & smart infrastructure systems which can take care of the growing population influx while judiciously & effectively optimising the resources.

With the growing population, water demand has increased multifold while supply is decreasing. These traditional cities now need uninterrupted supply to cater such huge population and at the same time saving water. This paper proposes solutions for traditional cities to smartly cater the demand while being sustainable.

In such urban areas, it is challenging to provide 24*7 water supply system because 38% of the water that is pumped through the distribution grid, accounts for transmission loss, so it is very important to take measures to secure water through efficient water management systems.

The study reveals that using intelligent and smart systems of water management for a small city having 1.5L population can save huge costs as well as water.

Keywords: GIS (Geographical Information System), SCADA (Supervisory Control and Data Acquisition), Smart Water Management, Traditional Cities
GREEN INFRASTRUCTURE STRATEGIES FOR URBAN CONSERVATION OF HISTORICAL AND NATURAL HERITAGE CASE OF BANGALORE CITY

DR. MAMATHA P RAJ, NEETHA S.N

Abstract: Globalization has direct impact on the growth of our cities. As cities grow, the consumption of resources is also growing at a very rapid pace. Loss of green cover is directly proportionate to the growth of cities. The aim of this paper is to demonstrate how Green Infrastructure can be integrated and implemented to create a sustainable and green city by considering the case of Bangalore, Capitol city of Karnataka.

Bangalore was once known as garden city, pensioner's paradise, air conditioned city. But with the impact of globalization, today Bangalore is known as IT hub, Silicon Valley. With rapid urbanization and subsequent population increase, Bangalore's image has changed to garbage city, most polluted city. Bangalore is facing many environmental issues such as water crisis, floods during monsoon, loss of wet land and biodiversity, ground water depletion etc.

The multi scale approach to solve these issues is green infrastructure. Green infrastructure supports the blue and green network for the city, in order to save environment. 

Green infrastructure provides urban design opportunities for designers and planners. It should be integrated with other land uses like residential neighbourhoods and transportation hubs.

This paper explores possible green connection routes to connect neglected Urban Heritage sites, Parks and Lakes to neighbourhoods. Implementation of the network would provide a citywide network of safe streets for residents to walk or bicycle to the neighbourhood parks.

Keywords: Climate, Urban Design, Environment, Sustainable, Green Infrastructure, Community.

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BUILT ENVIRONMENT & URBAN FLOODING:
A CASE STUDY OF GURGAON

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Abstract: In current scenario Indian cities are subjective to the ascending pace of urbanization. Post liberalization the nation witnessed a consolidated change in terms of development. The rapid industrialization, increased housing demand along with amplified need of commercial areas consequently demanded change in the development pattern. To stride with the other global cities and in order to surface as a global economy, India invested in multi sectoral development. This progression of development led to a state of affairs where the spatial planning of cities was just confined on paper and a contrary situation was on the grass root level. Indian cities are now attracting foreign investments in full swing and are in the race of becoming global cities. One such case in point is Gurugram. The city is personified with it’s multinational corporate working economy, a high priced residential market and an internationally competitive commercial sector. Irony to this development is when the city makes headlines for 18 hour long traffic jam during monsoons, overcrowded junctions and high rise high density development. This paper shall be focused on the development of Gurgaon and the consequential problems. This shall also highlight the issues related to the transportation network and the resulting urban flooding. The paper shall address the recommendations and strategies for the traffic management in the city.

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STRENGTH POSSIBILITIES ON FLYASH BASED INTERLOCK PAVERS

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Abstract: To enhance the strength property and keeping sustainability in point of view, flyash is used as a mineral admixture and partially replaced with cement in various proportions like 0%, 5%, 10%, 15%, 20%, 25%, 30% and 35%. Around 48 interlock concrete paver block specimens were cast and kept for water curing for the period of 7 & 28 days and calculated compressive strength for all specimens and compared each other. It was noticed from the results that interlocks paver blocks with 15% & 20% replacement of cement with fly ash shown steep increase in strength and concluded 20% is optimum.

Keywords: Interlock Pavers, Fly Ash, Sustainability, Compressive Strength, Cost Analysis, Mineral Admixture.

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SICK BUILDING SYNDROME AN APPROACH THROUGH BIO-PSYCHOSOCIAL MODEL

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Abstract: The research is a qualitative analysis of the sick building syndrome instead of making it in a detailed manner of quantitative analysis which usually researchers had done before. Methods: Paper is a study of SBS based on document and interviews so to clearly understand symptoms and its relation with bio psychosocial model. Paper deals with SBS concerns and its surrounding issues and how it affects people through an indirect method.

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SIGNIFICANCE OF DESIGN IN THE USAGE OF A SPACE – A CASE OF RESIDENTIAL BUILDING

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Abstract: Architecture can be broadly termed as designing spaces. Spaces do have great influence on the behaviour of the users and the vice versa that users influence the character of the space holds equally good. A space which is designed or made (by humans) has a purpose it caters to. The same space will have a good degree of flexibility which may cater the function or the purpose it is not designed for. The unintentional usage of the spaces good or bad, might be a conscious effort sometimes. The gap between design thought and flexibility is caused by multiple factors (instantaneous circumstances, social, user behaviour, changes in the continuum) and might not be always thought of during the design process. Looking after the real time usage of the designed space can indicate to what extent the usability of a space can be perceived during the design stage initially. This paper deals with the residential building and the usage of the space and the factors that influence the usage of a space though not designed to achieve the same, thus predicting the degree of interference a designer can actually make consciously or unconsciously.

Keywords: Design, Usage, Flexibility, Significance, Uncertainty, Perception.

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