



SIGMA COLLEGE OF ARCHITECTURE

Moododu, Anducode Post, Kanyakumari District, Tamilnadu - 629 168

Website : www.sicarch.com E-mail : sigmagroup155@gmail.com

Contact : 04651 - 209 039 Mobile : +919443370072



**TECHNICAL NEWSLETTER
VOLUME 10 APRIL 2020**

TABLE OF CONTENTS

CITY HERITAGE AND REGENERATION	4
Ar.INDIRA KOLLI M.Arch Principal	
TOURIST SPOT NEEDS A TREATMENT FOR PANDEMIC DISEASE	5
“Essential consideration in tourist places”	
Ar.S.CHINNADURAI M.Arch Head of the Department	
URBAN DEVELOPMENT AND DESIGN ACCORDING TO DIVERSE CLIMATE REGIONS	6
Ar.R.REGHU M.Arch Assistant Professor	
ECO-SISTEMA INSTALLATION	7
Ar.R.ANAND GODSON M.Arch Assistant Professor	
SUSTAINABLE HUMAN ENVIRONMENT	8
The Role of Data in “Smart Cities”	
Mr.P.S.STEM EDILBER M.Sc,M.Phil Assistant Professor	
WATERSHED MANAGEMENT AT URBAN-SCALE	9
Ar.M.PRIYADARSHINI M.Arch Assistant Professor	
SPEEDY AND LOW COST HOUSING	10
Ar.K.KEERTHANA B.Arch Assistant Professor	
INTERNATIONAL MANAGEMENT INSTITUTE, KOLKATA	11
Colour Facade Glass Light & Shade	
Ar.T.DINESH PANDIAN M.Arch Assistant Professor	
DESIGN OPTIMIZATION	12
Ar.N.NISHYA M.Arch Assistant Professor	
FLYWHEEL ENERGY STORAGE SYSTEM	13
Er.Z.JENNER M.E. Assistant Professor	
STRENGTH AND DURABILITY ASPECTS OF REINFORCED SELF COMPACTION CONCRETE USING GLASS FIBRE	14
Er.C.JENIL KUMAR M.E. Assistant Professor	

PHENOMENOLOGY IN DESIGN	15
Ar.K.ASWIN PRAKESH M.Arch Assistant Professor	
SCENT IN ARCHITECTURE	16
Ar.T.JOSEPHINE SABEENA B.Arch Assistant Professor	
CONSTRUCTION WITH RECYCLED MATERIALS-PART I	17
Er.E.M.JERIN SHIBU M.E. Assistant Professor	
“AÚRA” - BREATHING LUNGS OF THE CITY	18
A strategic solution to tackle Air Pollution	
Ar.M.RAGHAVENDRAN M.Arch Assistant Professor	
GREEN CONCRETE	20
Er.R.RELIN GEO M.E. Assistant Professor	
DECONSTRUCTION	21
Ar.DHENUKA NANDHAN M.Arch Assistant Professor	
CARBON NEUTRAL ARCHITECTURE AS AN EMERGING TREND	22

CITY HERITAGE AND REGENERATION

Ar.INDIRA KOLLI M.Arch
Principal

Cities are manifestation of power ,technology , need , resources, culture , customs , practices , religion and economic status. Cities are not evolved in a single day , week or month. Its evolved through years and ages . Its is on going process. In india we have beautiful diversified class/community of people, which are of rich in culture and customs. In India There are many beautiful cities evolved on the basis of mentioned above conditions. Indian cities were influenced by Indians , Muslims, and Europeans.Hisorically religion was given highest priority, so that, most of the religious buildings constructed on hill tops. Also some of the cities were established on hill tops because of security & defensive mechanism, resources availability etc. All historic cities are an outcome of great technology ,Material,Topography,beliefs&customs, and context. This is what we inherited from our ancestors since ages to now.

In today's context people are more advanced , settlements and cities are transforming, ruling system changed, invention of new material, industrial development, new methods , practices & changes taken place in culture ,traditions all together we are in different approach and environment. At present we are in the state of merging with historic city settlements.

Its high time to realize how good & healthy our traditions, customs, practices, construction methods & techniques, artistic approaches , vales. Most of the cities are in today's context , few core areas are historical. As we citizens of country ,its our responsibility to protect our built heritage. Policy makers has to consider in depth concern towards cities , while making city policies and strategies. And take expert consultation while making master plans and city planning. Built heritage of our cities are property of nation. Country should contribute handsome financial funding to protect , regenerate our blend characters of built heritage of cities for the benefit of future generations.



Jodhpur's walled city



Islamic city



Colonial

TOURIST SPOT NEEDS A TREATMENT FOR PANDEMIC DISEASE

“Essential consideration in tourist places”

Ar.S.CHINNADURAI M.Arch
Head of the Department



Economy generated through tourism plays a vital role of a country's economy. Many communities rely on this tourism for their needs and necessity. After the recent pandemic disease people may be afraid to move from place to place especially in public areas. They may feel it as a life threat, if exposed to the disease, when they use public gathering places. In spaces like Shopping mall, Theaters etc. it is easier for the people to maintain the social distance but public spaces like tourist spot (e.g. Mahabalipuram) maintaining the social distance will be a tough job for the authorities.

The spaces inside these heritage precincts must have all precautionary actions taken to ensure the health safety of the people and awareness should be given for public that these spaces will be safe. Safety measures like furniture design to maintain the social distance and also sanitation facilities should be provided. If all these measures are taken with at most care then the people will feel safe to visit these spaces thus helping the economic growth around these spaces. So by redesigning these spaces, the economy will be sustained forever.

URBAN DEVELOPMENT AND DESIGN ACCORDING TO DIVERSE CLIMATE REGIONS

Ar.R.REGHU M.Arch
Assistant Professor

Cold Climate Region

The standard of highest high temperature increase and lowest amount high temperature loss stand out in structure designs in these regions since of the drizzling and chill conditions. multifaceted and nested centre chairs that maintain the high temperature surrounded by and the chilly air exterior should be planned in wintry ambience regions. Heat failures have to be condensed by using least base neighbourhood in inhabited buildings. Segmented structural design should be avoided in town scale. In urban planning, packed in and severe urban texture that are lock to each erstwhile and do not tolerate wind surrounded by are experimental. Fully and partially unfathomable blocked statement channels that employ the heat of the earth and positioned dissident or more than position, roofed or semi-covered bazaars, coved streets and avenues with arcades are the machinery of the architectural surface. The union touch should be planned with the rationale of preventing the possessions of wind, and places that can make use of the sun at the highest point should be created while consortium big construction units. The hillsides opposite south and southeast should be favourite throughout the collection of inhabited areas in direct to make use of the sun. furthermore, the middle sections of these hillsides can be relevant to decrease the wind effect and to be sheltered from the chilly airflow. Natural resources such as *bricks* and adobe bricks that have high heat cargo space capacity are frequently seen in construction in such type of weather regions. The resources used should have lofty heat combination capacity.

Mild Climate Region

This kind of temperature is the generally appropriate temperature that provides reassurance with bare minimum heat dissimilarity connecting summer and winter. The quality of soft climates is the occurrence of poles apart temperature environment caused by the seasons. Safety beside cold endure and operation of the sun should be provided all through frost and the cooling possessions of the wind speed should be benefited in summer. In this kind of temperature regions, the direction in 17.5 degrees east from the south provides the equilibrium in temperature diffusion. Direction of elevated buildings should be firm according to the wind consequence. Structure arrangement should avert wind and permit sun in the coldest stage and be extensive surfaced and avoid sun during the newest stage. Facade varnish resources such as grass, soil, asphalt, stone, etc. should be used in the spaces among buildings. The resources to be used stuck between buildings should be preferred to stop wind throughout the smallest quantity hot era and increase speed wind, imitate sunrays and supply permeable surface stability during the hottest period. all through the winter, sun control ought live applied in the holes in the fortifications and ceilings in instruct to make the most of the sun at the highest level. The magnitude and properties of the windows change according to the regions.

Conclusion

As a product of fast inhabitants augment and unexpected urbanization, injurious, uninteresting and insensate new environments are life form shaped without taking physiological and climatic needs into account in conflict to conventional architectural systems. This procedure affects the eminence of urban life pessimistically and stands out as a development and intend problem.

ECO-SISTEMA INSTALLATION

Ar.R.ANAND GODSON M.Arch
Assistant Professor

Acoustic phenomenon produced when a wave is reflected on a surface and returns to its emitter. system: (from Latin *systēma*, and this from Greek *σύστημα* *sýstēma* 'meeting, set, aggregate') Complex object whose parts or components relate to at least some of the other components. Eco-Sistema (echo-system) appears in the site as a structure that echoes the landscape and the community that gives life to it. It is an open and flexible system that, through a process of adaptation, spatially overlaps its structure with the existing forest to define a new reality together with it.

Echo of the material, in a cyclical experience, the wood becomes a forest again but with a new appearance and character. Inverted trees that in their interdependence relationship determine a constant seating surface that acts as a support for dialogue: with ourselves, with the place, with other, with others, with everyone. Fertile land for the superposition of our ideas, our experiences, our emotions.

Echo of a community that grows and evolves. Eco-Sistema was built as a satellite project for Hello Wood Argentina 2020 in the countryside working together with volunteers during a week. The first decision was to think of an element where we could sit (and feel) in the forest. So we designed a kind of virtual diamond 305 cm high that barely rests on the ground and defines two opposite corners contained by translucent sides.



SUSTAINABLE HUMAN ENVIRONMENT The Role of Data in “Smart Cities”

Mr.P.S.STEM EDILBER M.Sc,M.Phil
Assistant Professor

The Role of Data In Smart Cities:Math Science Challenges:

Smart systems to reduce congestion and pollution thru traffic prediction and optimization Real- time rerouting of commuting passengers Vehicle sharing systems Energy Management Water Management Health care allocation in emergencies Keeping citizens informed of municipal services (especially during disasters)

Example: Traffic Management

Some math sci challenges: intelligent transportation systems, Integrated fare management Road usage charging Traffic information management

Real-time road traffic management:

Key role of sensors Monitor actual traffic situation (volumes, speeds, incidents) Control or influence the flow using that information to:

Reduce traffic congestion

Deal with incidents

Provide accurate information to drivers and authorities

Grant proper authority/routing to emergency vehicles

Math sci challenges:

Analyzing transit needs in short and long term

Help citizen to navigate the city

Design adaptive urban transportation systems

Detect and predict travel demand

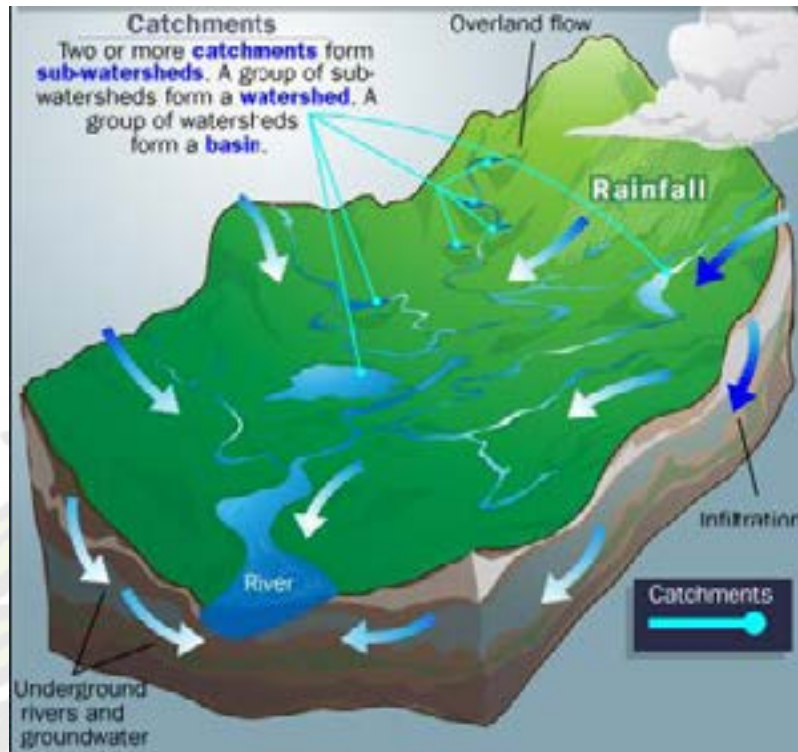
Offer real-time alternative routings

Improving event planning and management: predict effect of an event on urban transportation



WATERSHED MANAGEMENT AT URBAN-SCALE

Ar.M.PRIYADARSHINI M.Arch
Assistant Professor



Watershed:

Land area from which all water drains, flow into a same destination such as a river, pond, stream, lake, or estuary.

It is a catchment basin that is bound by topographic features.

Functions of watershed :

Receives water from atmosphere, which results in infiltration and percolation into subsurface, leads to storage of rainwater in subsurface.

Runoff of excess water which cannot find way to subsurface
(Surface watershed management)

Watershed management:

Watershed management is the study of the characteristics of a watershed aimed at the sustainable distribution of its resources and the process of creating and implementing plans, programs, and projects to sustain, enhance watershed functions that affect the plant, animal, and human communities within the watershed boundary.

Land owners, land use agencies, stormwater management experts, environmental specialists, water use surveyors and communities all play an integral part in watershed management.

Features of a watershed include:

- Water supply & quality,
- Drainage,
- Stormwater runoff,
- Water rights, and
- The overall planning and utilization of watersheds.

Water resources problem:

Too little water: Water shortage

Polluted water: The discharges of wastewater by industry and households have considerable detrimental effects have considerable detrimental effects on water quality and on public and ecosystem health.

Too much water: Increased frequencies or magnitudes of floods.

SPEEDY AND LOW COST HOUSING

Ar.K.KEERTHANA B.Arch
Assistant Professor



Why Low Cost Housing Construction Required?

For any nation whether developed or developing this is mandatory for them to make their rural areas a major priority for concern. Prosperity of nation lies in the fact that their rural and backward areas are developed enough to fulfill the necessities of the residents living there.

Are Low Cost Houses Safe?

There is a myth in minds of many people; they think that whenever construction is accompanied with low cost the material used will always be of a low-grade quality. Well this is not the case always.

It depends on the intellect of the builder you are working with. He should have the ample amount of knowledge to take such decision which will cut the cost of whole project

So, there are some methodologies which can be adopted to cut the construction cost and still achieve the best:

Selection of Load Bearing & Framed Structures for Low Cost Housing Construction

When we layout our plans for the construction we should always concentrate primarily on the structure we have are going to use. So, this is often the primary area of concern i.e. the structure. It should rather be Load Bearing Structure rather than using Frame structure. The Load Bearing structure has several advantages:

Cheaper in case of normal low rise building. As the cost of construction is low because lesser amount of concrete and steel rods are required.

Easier to construct and also it requires much lesser time. Thus this may serve both the needs of low cost also as in speedy processing. It is flexible as well.

Foundation for Low Cost Housing Construction

Now when we talk about the foundation of a building we really need to be very careful as it is the main basic aspect of the project. It involves 10-15% of the total building cost.

Generally, the depth of the foundation of a building is 3-4 feet deep in the soil, but we can alternatively make it up to 2 feet in depth for normal soils. This saves a large amount of total cost. In other delicate or soft soils, such a cost reduction cannot be executed very well.

INTERNATIONAL MANAGEMENT INSTITUTE, KOLKATA

Colour | Facade | Glass | Light & Shade

Ar.T.DINESH PANDIAN M.Arch
Assistant Professor



Designed and developed by Abin Design Studio, the Building IMI, Kolkata is inspired by nature. The sky with its various states and ever changing colors is one of the most dynamic elements of nature and this is what has inspired the built form façade.

The building situated in a very dense residential urban fabric, was a huge constraint and dictated linear planning.

The chromatic glass façade comprises 2 layers of 5mm clear glass each with an intermediate PVB layer 1.2mm thick which acts as an insulator, reducing the heat buildup inside. The façade becomes more dynamic by night when the inside lights are switched on and has a mesmerizing effect on the plaza below. The circulation spaces and spill out zones have been created along the curved glass façade, allowing them to be naturally lit in the day and giving them a more interesting and dynamic feel. The reception has been designed as a triple height space naturally lit by an enormous skylight above. The corridors and spill out spaces culminate around here at the upper floor levels. Care has been taken to ensure that the library is also well lit during the day and has been designed such that it is surrounded by glass on three sides, shaded by the existing trees on site.

Color has subtly been introduced in the interiors as well in the form of colored glass partitions, colored glass slits on the wall or simply in the furniture. An integrated plaza with a water body has been beautifully designed.

The water body receives no direct sunlight and creates a cushty micro-climate. Wherever possible shading trees have been planted and soft landscape is introduced.

It is an institute that has achieved international standards not only by providing state-of-the-art facilities but also by having an architectural expression which represents that.

DESIGN OPTIMIZATION

Ar.N.NISHYA M.Arch
Assistant Professor

Attia S explains that “Building performance optimization is a process that aims to select the optimal solutions from a set of available alternatives for a given design or to control problem, according to a set of performance criteria and constraints”.

Optimization is the process of adding different options to a building design and evaluating the optimal options to achieve low energy consuming building. Optimization can be done by manual simulation method or using computer simulation methods.

In computer simulation different software like Revit, green building studio, e-quest, energy plus, ecotect can be used.



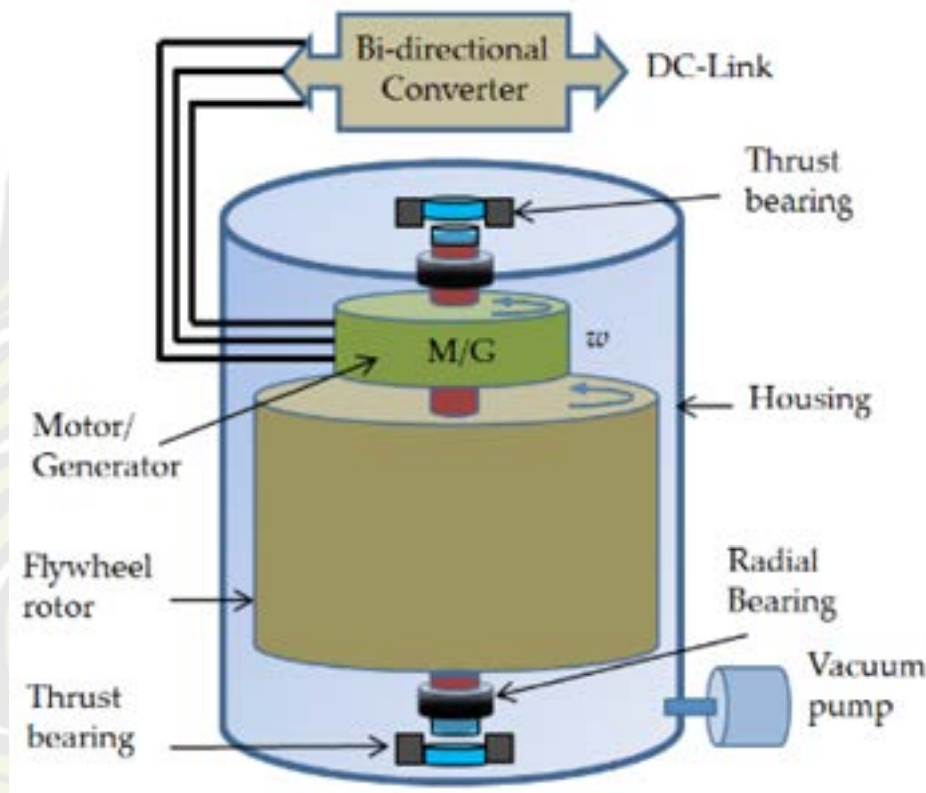
Optimization can be done to following
building components

- Building envelope
- Adding a shading device
- Fenestration opening size
- Adding insulation to the building materials
used.

FLYWHEEL ENERGY STORAGE SYSTEM

Er.Z.JENNER M.E.
Assistant Professor

Energy storage systems (ESS) improves the efficiency of electrical systems when there is imbalances between supply and demand. One of the energy storage technology is the flywheel energy storage systems (FESS), since this technology can offer high energy storage capacity & Reliability over other technologies. The flywheel stores energy in the form of a rotational kinetic energy. The input to the Flywheel energy storage system is obtained from the Grid or any other electrical source. The flywheel rotates to very high speed and stores energy as kinetic energy. When electrical demand is more this kinetic energy will be converted to electrical energy. The rotating flywheel is operated by an electrical motor-generator (MG) performing the interchange of electrical energy to mechanical power and vice versa. Flywheel Energy storage Systems are used in various applications such as Wind Turbines, Rail vehicles, Rail electrification & Uninterrupted power supplies.



STRENGTH AND DURABILITY ASPECTS OF REINFORCED SELF COMPACTION CONCRETE USING GLASS FIBRE

Er.C.JENIL KUMAR M.E.
Assistant Professor

REQUIREMENTS FOR CONSTITUENT MATERIALS

Cement

All types cements conforming to EN 197 are suitable. C_3O content higher than 10% may cause problems of workability retention. The normal quantity of cement is 350-450 kg/m³. More than 500kg/m³ cement can be dangerous and increases the shrinkage.

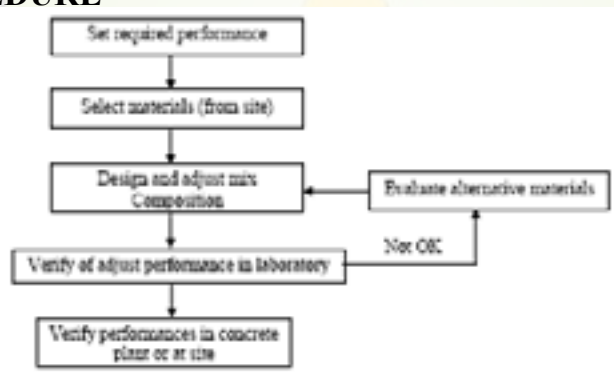
Coarse aggregate

All types of aggregate are suitable. Regarding the characteristics of different types of aggregate, crushed aggregate tend to improve the strength because of the interlocking of the angular particles, whilst rounded aggregate improve the flow because of lower internal friction.

Admixtures

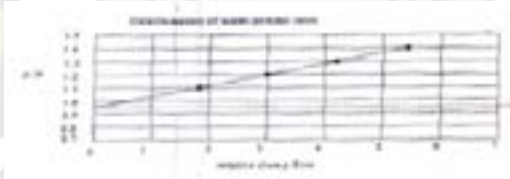
The most important admixtures are the super plasticisers (conplast 430, high range water reducers), used with a water reduction greater than 20%.

MIX DESIGN PROCEDURE



Mix design procedure

In designing the mix it is most useful to consider the relative proportions of the key components by volume rather than by mass.



Determination of optimum volumetric water/powder ratio and superplasticizer dosage in mortar

Final mix proportion of SCC (kg/m³)

Coarse aggregate	706kg
Fine aggregate	912kg
Cement	350kg
Fly ash	142kg
Water	172kg
Superplasticiser	8.8kg

PHENOMENOLOGY IN DESIGN

Ar.K.ASWIN PRAKESH M.Arch
Assistant Professor



Phenomena by Studio Benjamin Dillenburger addressed the idea of phenomenology in design, creating an experiential space that stimulates all the senses and hosts multiple programs.

Starting with the competition's main objective of providing an outdoor recreational space focused around a water feature for the duration of the summer, Phenomena applies an element of fun to each of the senses. Combining the functions of a performance space, projection screen, and fountain, the design invites visitors to indulge their curiosity and exploratory spirit, drawing them throughout the space with changing experiences. In the daytime, its reactive geometry works in tandem with its surroundings, amplifying sounds from the street and courtyard, and reflecting light to create a changing condition of shadow that is made dynamic by interacting with the fountain's mist.

The leisurely activities of the day are transformed when night falls. The space is activated when the sun goes down, transforming it into an over-sized projection space for artists to display their work. With a focus on live media, combined with the faceted curving surface, visitors are stimulated visually, as every angle presents a new perspective from which to view the performance.

By generating a space that is at once a stage and an event, Phenomena seeks to challenge the way we experience performances by making the viewer a part of the production.

SCENT IN ARCHITECTURE

Ar.T.JOSEPHINE SABEENA B.Arch
Assistant Professor

Architecture has the ability to serve a deeper function than merely providing shelter. It acknowledges the feelings, desires and the pleasurable capacities of the people. Many buildings have become image products that lack existential depth. Multisensory architecture finds its relevance in this context. As Finnish architect Juhani Uolevi Pallasmaa puts it, 'In memorable experiences of architecture, space, matter and time fuse into one singular dimension, into the basic substance of being, that penetrates our consciousness. Architecture is the art of reconciliation between ourselves and the world, and this mediation takes place through the senses.

The role of eyes: Architecture is regarded primarily as a visual phenomenon. Thus, we have many buildings that are designed to please the eye but fail to delight the body as a whole. Eyes absorb the visual qualities of a space. Vision is capable of stimulating other senses in our body. The auditory experience: Vision is directional while sound is Omni directional. Thus, sight isolates while sound integrates. The loss of senses in contemporary architecture can be attributed to the ignorance of acoustic intimacy. Sound can lend characters to a space: intimacy or monumentality, invitation or rejection, hospitality or hostility. For instance, an echo created in a narrow street or inside an empty cathedral not only yields the spaces their own identity but also connects you to them.

Architecture and the senses Perception is of prime importance when it comes to studying architecture in relation to the senses. Our perception of spaces is always mediated by the senses. 'Traditionally, there are 5 main senses the sense of sight, hearing, touch, taste, and the sense of smell. Other senses can be added to the list, such as the sense of temperature, pain, and what is sometimes called the kinesthetic sense, which informs us about the movement and position of the various parts of our bodies'.

Phenomenology in architecture is the study of the phenomena or experiences of daily human life and is part of the development of Western philosophy. Phenomenology in architecture embraces the aim of transforming people from uninvolved spectators to active participants. It is essentially a qualitative examination of the experiences of people. Each of us experiences world in a different way because we develop a unique personalized model of the world and exist in it. Phenomenological investigation focuses on the sensory experiences developed by a person in a particular environment. The unique understanding of a phenomenon a person encounters induces a response in him which is also unique. This is deeply influenced by culture, age, gender and beliefs.

CONSTRUCTION WITH RECYCLED MATERIALS-PART I

Er.E.M.JERIN SHIBU M.E.
Assistant Professor

Waste is generated from all directions. They not only require huge space to stock it, but also pollute the environment. The polluted environment is harmful to human health and for the sustainability of system. Thus, generation of waste must be minimized or recycled for human use. Further the growth in industries is continuously throwing huge quantities of wastes and byproducts such as, Ground Granulated Blast Furnace Slag, Recycled Course Aggregate, etc. Also huge amount of municipal waste is generated every day in each Indian city and World over. For example, Delhi alone generates about 650 tons of garbage every day. By 2020 its amount may reach 1,800 tons. So it is necessary to recycle and use it as construction material especially for sustainable development.

Ground Granulated Blast Furnace Slag (GGBFS)

Ground granulated blast furnace slag (GGBS) is a non-metallic product consisting essentially of silicates and aluminates of calcium and other bases. The molten slag is rapidly chilled by quenching in water to form a glassy and like granulated material. The replacement of cement with GGBS will reduce the unit water content necessary to obtain the same slump. In addition, water used for mixing is not immediately lost, as the surface hydration of slag is slightly slower than that of cement. Reduction of bleeding is not significant with slag of 4000 cm^2/g fineness. But significant beneficial effect is observed with slag fineness of 6000 cm^2/g and above. The advantages of using GGBFS in concrete it reduces heat of hydration, refinement of pore structures, reduced permeability to the external agencies and Increase resistance to chemical attack.



Fig 1:Ground Granulated Blast Furnace Slag

Recycled Course Aggregate

Recycled course aggregate from demolition waste after light crushing and sieving. After sieving, fines left out can be used as filler in plinth of building or highway embankment or can go back to river bed from where river sand is coming. Then make concrete with such aggregate after mixing with required amount of cement and other ingredients as per design. Since the waste is being generated all over the country so it should be managed locally or recycled nearby (recycling unit should be tailor made to that area) and used in construction industry there itself. This type of processing the waste will make the system sustainable. Thus, demolition waste after processing can be used in many applications as given below.

Low grade fresh concrete

Use such Concrete in casting conventional type of bricks

Highway Construction for casting curve, chute drain, median drain & side drain components of Highways

Demolition waste or recycled materials used in embankment filling.



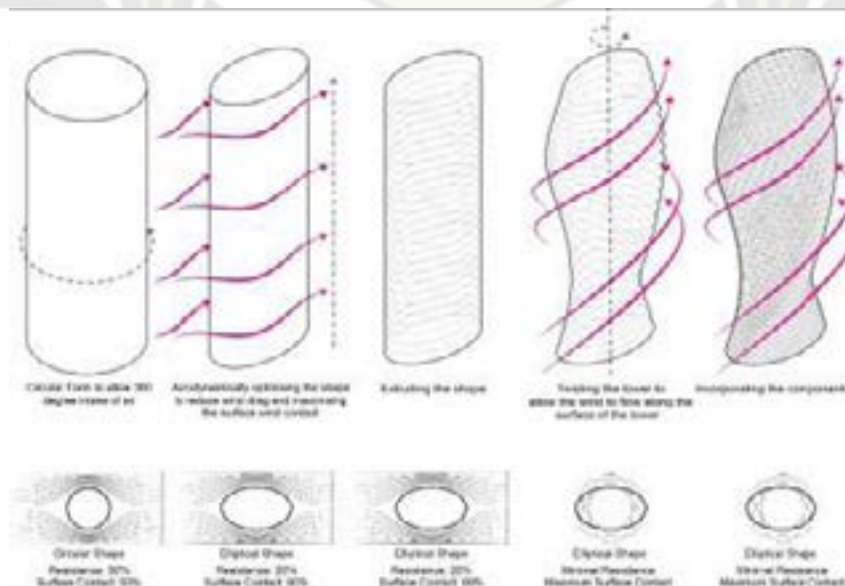
Fig 2:Recycled Course Aggregate

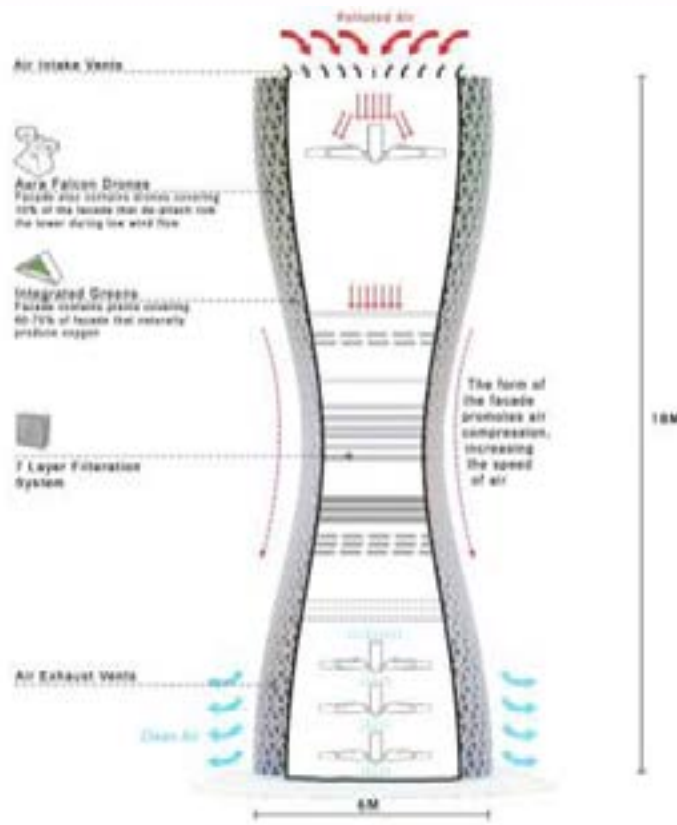
“Aūra” - Breathing Lungs Of The City A strategic solution to tackle Air Pollution

Ar.M.RAGHAVENDRAN M.Arch
Assistant Professor

The non-profit study by Studio Symbiosis looks at a multitude of solutions to create a comprehensive strategy to tackle and rectify air pollution threat, which is denying clean breathable air to the residents of Delhi National Capital Region (NCR).

“Aūra” relates to distinctive atmosphere or quality that seems to surround and be generated by a person, thing, or place. Design of Aūra has been developed using principles of aerodynamics, to create a form that propagates maximum surface area and increased wind speed for a robust and efficient performance. An elliptical geometry has been designed as the starting point, as this gave us the minimum resistance, and also for the same reason is the geometry used for the wings of an aircraft. The form was further developed by twisting the form, this twist in geometry channels the wind along the surface of the tower in the z direction, thereby exponentially increasing the surface area. These cleaning towers designed as 60 m and 18 m high respectively. They can intake polluted air from 360 degrees. “Aūra” has two main chambers. One to increase the relative velocity of the air and the other cleans the massive intake of air before sending it out at great speed and throw. The clean colder air is coming out from the top enabling a greater throw in the atmosphere, travelling larger distances. The cleaning tower designed at 18 m height is able to clean 30 million cubic meter of air every day. Capacity to clean 1,115,000 cu.m. per hour. An average adult working inhales around 16 cu.m. of air over the course of an 8 hour working day.





GREEN CONCRETE

Er.R.RELIN GEO M.E.
Assistant Professor

The specimen of cube of 150mm x 150mm x 150mm and cylinder of 300mm x 150mm were used to determine the compressive strength and split tensile strength of the concrete.

The test was done confirming to IS 516 – 1959 to gaining compressive strength of concrete. This test was carried out at the age of 7, 14 and 28 days. The specimens were tested using Compression testing machine. The compression testing machine's ability is 2000 kN. The compressive strength of concrete for various ages are determined in the following table 1 and Fig 1.

% SILICA	% BRICK AGGREGATE	COMPRESSION STRENGTH (MPa)		
		7 DAYS	14 DAYS	28 DAYS
0%	0%	32.45	42.38	50.11
5%	50%	33.03	42.73	51.18
10%	50%	35.40	43.03	52.07
15%	50%	30.29	36.00	40.50
20%	50%	24.29	31.11	38.88

Table 1

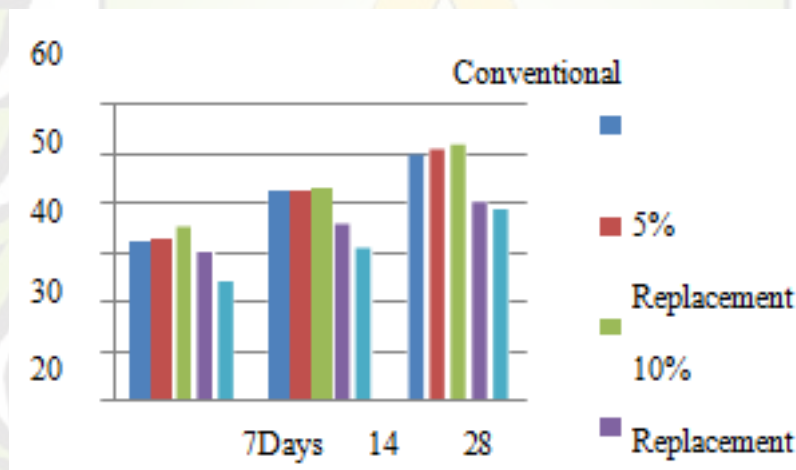


Fig 1

DECONSTRUCTION

Ar.DHENUKA NANDHAN M.Arch
Assistant Professor

Deconstructivism is a movement of postmodern architecture which appeared in the 1980s. It gives the impression of the fragmentation of the constructed building. It is characterized by an absence of harmony, continuity, or symmetry.

If we define “deconstructivism” (although it is not a verified word in the dictionary), it literally translates to the breaking down, or demolishing of a constructed structure, whether it being for structural reasons or just an act of rebellion. It is perhaps for this this reason that many misunderstand the Deconstructivist movement.

Deconstructivism is, in fact, not a new architecture style, nor is it an avant-garde movement against architecture or society. It does not follow “rules” or acquire specific aesthetics, nor is it a rebellion against a social dilemma. It is the unleashing of infinite possibilities of playing around with forms and volumes.



ZahaHadid Architects, Port House, Antwerp

The new building symbolises the dynamic, reliable, ambitious and innovative nature of the Port of Antwerp. It is the daily workplace of 500 employees of the Port Authority and it acts as a meeting place for the many international contacts of the Antwerp port community.

CARBON NEUTRAL ARCHITECTURE AS AN EMERGING TREND

Carbon neutral architecture is an emerging trend in architecture which focuses on neutralizing the carbon-di-oxide emitted into the atmosphere in the construction industry, as the sector accounts for nearly half of the yearly emissions. It is a holistic approach to create a sustainable built environment. Though certain protocols and regulations are made to create a sustainable design, carbon neutral architecture demands for full fledged design solutions to neutralize the carbon foot print during a buildings lifetime.

Carbon Neutral Buildings are bio climatically designed using passive design strategies so that there are fewer energy requirements. The building is created to be self – sustainable to produce its operational energy with the help of renewable energy technologies. The emissions that occur are balanced by climate-positive design initiatives so that the carbon footprint of the building in its term is zero or neutral.

To build a carbon-neutral building, it is essential to follow the principle of 3R's – Reduce, Reuse and Recycle. Besides, the basics of the carbon-neutral building are incorporating passive design principles in the building design along with bioclimatic strategies. The goal can be achieved by providing the building with efficient materials, construction, and energy which is balanced by onsite renewable resources. The building form is achieved considering climatic specifications and comfort of the user without compromising on its function and beauty.

Several organizations are initialing carbon neutral building design around the world to create a carbon free building sector by 2050. The important goal that is put out by World Green Building Council at COP21 in Paris in 2015 is, by 2050 – when 68% of the world's total population started to live in cities, all the buildings will only use as much energy they produce. The 2030 challenge, a North American based organization aims to reduce the greenhouse emissions for all the new buildings to zero by the year 2030.



+91- 9443370072

 Sigma college of architecture

 www.sicarch.com

 sigmagroup155@gmail.com



Prof. Dr. T. James Wilson

B.E., M.I. Mar. Tech., MISTE, MBA., Ph.D.

CHAIRMAN

9443370072, 9750976611, 9443370058,

8012561000, 9750976622