SIGMA COLLEGE OF ARCHITECTURE

Moododu, Anducode Post, kanyakumari District, Tamilnadu - 629168
Website : www.sicarch.com | E-mail : sigmagroup155@gmail.com
Contact : 04651 - 209 039 | Mobile : +91 9443370072

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HEALTH OF AUCKLAND WATERFRONT DEVELOPMENT

Ar.Chinnadurai.S M.Arch

Head Of The Department

The health of the Auckland Waterfront Development is predicated on occurrences of public space within its physical and perceptual parameters. This article suggests the importance of merging these parameters within future urban planning strategies by examining how public space may encourage the exchange of information.

The intangible resources which create and occupy public spaces are discussed as operators of exchange. The Auckland Waterfront corridor is clearly defined by its physical area and general stakeholder interests. Public transportation is presented as the impetus for new connective design strategies.

The Auckland Waterfront corridor is such an area, whose development and subsequent successes have been limited to particular pockets, while ignoring several high value areas for public space. As the population of Auckland continues to increase its centers will density – a ripe opportunity for collaboration between different entities if managed appropriately.
Public space will always have the potential to operate as an exchange for a tremendous amount of INTANGIBLE RESOURCES. While most resources are defined by their physical property uses – timber is flexible, fish is consumable, and electricity is transferrable – the intangible nature of information, as a resource, is defined by its seemingly infinite amount of personal and collective perception.

The identity of primary users within this model are local residents from Auckland Central and regional residents with cause to travel into the CBD with weekly and monthly frequency. Secondary users are other New Zealand residents who may travel to or through Auckland with limited yearly frequency or who may simply have a strong unwavering perception of Auckland.

DRONES IN CONSTRUCTION

Ar.Reghu M.Arch
Assistant Professor

One of the most visible and frequently mentioned changes in construction is the use of UAVs – more commonly known as "drones." The construction "industry is finding a multitude of benefits from aerial photography and the collection of data with laser, infrared and other sensors than can be used to produce 3D maps for earthwork calculations, thermal imaging for inspection, and point clouds for BIM models."22 This survey found that contractors are already using UAVs for:

Tracking job progress
- Logistics and production planning
- Inspection of areas difficult or impossible to access
- Safety monitoring and support
- Land surveying, thermal imaging, laser scanning, and other data collection

The chief executive officer of a drone manufacturer was recently interviewed and offered the following observations concerning the use of drones in the construction industry.

"A large development site, like a highway or an apartment complex, needs to be meticulously mapped by a team of surveyors. Depending on the project, this can take weeks or even months. But a drone that is operating on highly sophisticated software and that has state of the art cameras onboard can do even the most complex job in a fraction of the time, sometimes in minutes ... Aerial mapping is a huge cost saver. But it is also a tool that propels construction into the future by giving developers information they previously had no access to. ... Knowledge is power. Knowing what needs to be done, and precisely how it needs to be done. It is something that every project manager dreams about. Getting rid of the guesswork brings a construction project into the 21st century, something that is long overdue."

Another recent article highlighted the potential cost savings resulting from the use of drones on a construction project in the following manner.

"When it comes to paving roads, mistakenly adding a quarter inch of extra material over 10 miles can boost the final bill by a quarter million dollars. To avoid such mistakes, managers are increasingly seeking to improve the overall precision and accuracy of construction projects with automatic machine guidance ("AMG"). AMG links construction equipment with onboard computers that use data from 3D models and GPS to guide operations – saving time and money as well as improving safety and quality.

This particular article explains how drones are currently carrying and using RGB cameras.25 However, the article notes that the drone is capable of carrying small LIDAR sensors also. Unlike many other drones that are manually operated by someone on the ground with a radio-control device, drones such as the one discussed in this article navigate by use of GPS Real Time Kinetic ("RTK") technology and are designed to be controlled by a robotic total station.

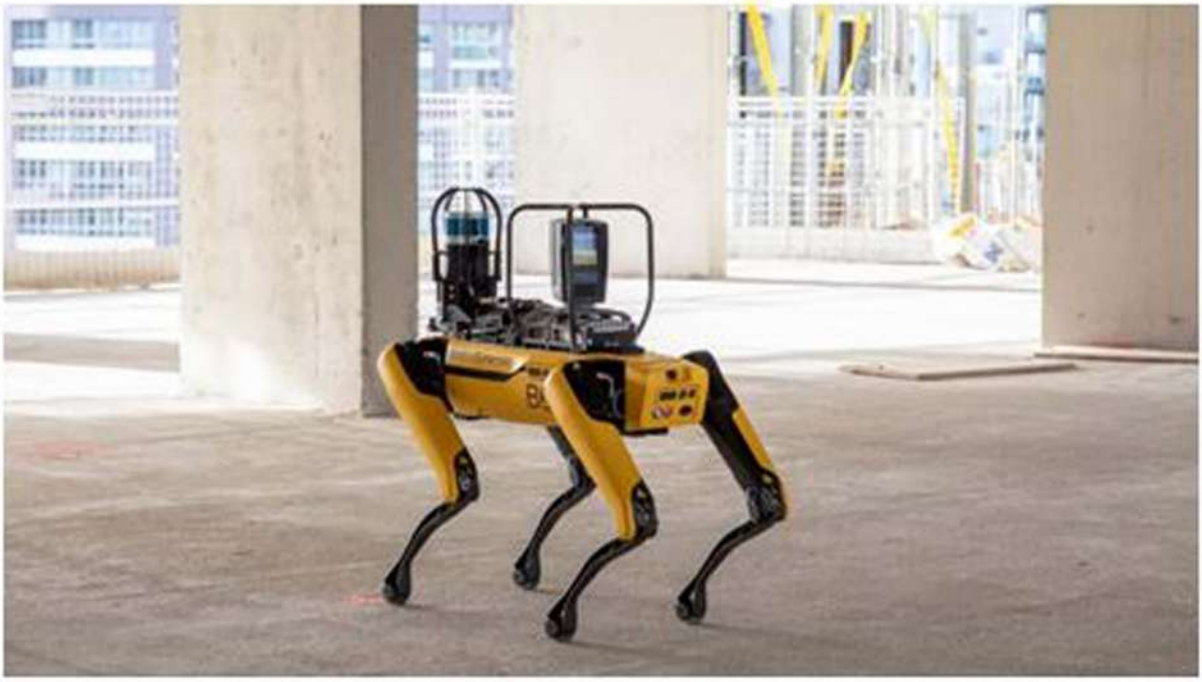
ROBOTICS IN ARCHITECTURE

Ar.Dhenuka M.Arch
Assistant Professor

In architecture, robots have mostly been used to choose and position materials, such as bricks. Using multiple robots, architects can control movement, and coordination, as an alternative to design and programming, followed by fabrication and construction. Robots are ideal for real-time design and construction.

Multinational mobility companies and technology startups such as Ford, Tesla, Toyota, Uber and Airbus are investing billions of dollars into autonomous robots, also known as self-driving vehicles and passenger drones that could transport us around cities and around the globe. There are autonomous bulldozers, excavators and construction vehicles that run themselves ... without a human operator.

In November of 2020, Foster + Partners announced a collaboration with the robotics design company Boston Dynamics. Together, the two have been testing Boston Dynamics' robot dog, Spot, to help capture and monitor progress on construction sites. The robot boasts the dexterity to climb stairs, avoid obstacles, and traverse rough terrain, allowing it to monitor building sites and collect data quickly and easily. In this way, designers and contractors can remedy errors rapidly and at minimal cost, ensuring that projects progress according to their set timeframes and budgets. With manual data collection, errors might be noticed at a much slower rate and communication between contractors may suffer as well. Thus, Spot optimizes construction monitoring and on-site collaboration.



HOW TO STRUCTURE BUILDINGS AS BRIDGES

Ar.Raghavendran . M, M.Arch
Assistant Professor

Metaphorically, building bridges equates to creating new opportunities, connections, and paths. The first bridges likely formed naturally with logs falling across rivers and natural depressions, though humans have also been building rudimentary structures to overcome obstacles since prehistory. Today, technological advances have made it possible to erect bridges that are both impressive and sculptural, playing a key role in transportation and connectivity. Usually needing to overcome large spans, with few points of support, bridges can be quite difficult to structure. But when is the bridge more than a connection between two points, instead resembling a building with a complex program? How can these 'bridge houses' be structured?Before the widespread use of steel and other tensile-resistant materials, bridges primarily consisted of arched structures. Crossing the Meles River in Turkey, the Caravan Bridge is the oldest known arched structure, built in 850 BC. At Bridge-Pavilion, a SpaceStation project, the structural system is mixed. On both sides, concrete pillars with a 1.2m x 2.5m section support a 0.6m wide and 2.2m high beam, whose main core is steel in H section wrapped in reinforced concrete. On both sides, there are a series of secondary beams perpendicular to the main. The floor is suspended on the secondary beams through tensioned steel columns. To balance the bending moment in the middle of the main beam, a row of columns is placed on both outer sides of the columns.

In general, in fact, in many contemporary projects, steel is the main material for overcoming the large spans and strong support needed for bridge buildings. At BIG's The Twist Museum, the daring twisted volume of the bridge museum is structured like large space trusses. “The museum's double-curved geometry is made up of straight aluminum panels 40 cm wide arranged like a stack of books displaced slightly in a fan motion.”,

PREDICTING THE WEATHER WITH MARKOV CHAINS : II

Mr.P.S.Stem Edilber M.Sc,M.Phil
Assistant Professor

Transition Matrix

		tomorrow	
		S	R
today	S	0	1
	R	0.75	0.25

We can also display the above information in a diagram.

The Markov Chain

This diagram hits home the fact that probabilities are completely dependent on the current state, not the weather yesterday or the day before that.

Lets make some predictions

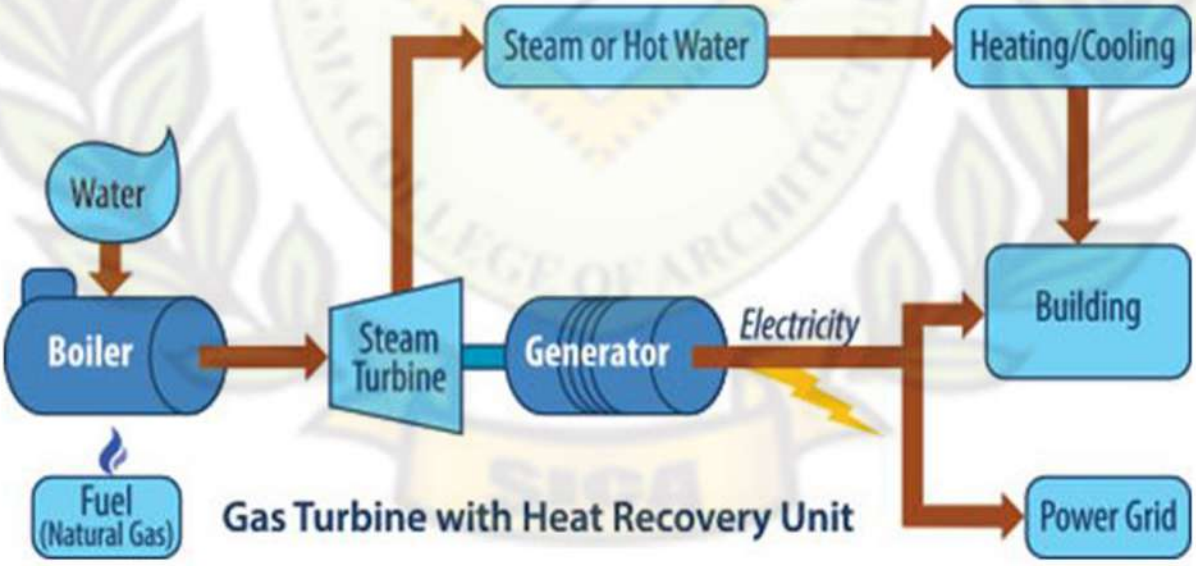
Example 1:
The previous 3 days are [rainy, sunny, rainy]. What's the probability of rainy weather tomorrow?

Based on our previously trained model. Tomorrow has a 75% chance of sun and 25% chance of rain.

COGENERATION
The Combined Generation of Heat and Electricity

Er.E.M. Jenner M.E,
Assistant Professor

Cogeneration conjointly called combined heat and power (CHP), is an extremely economical method that generates electricity and heat at the same time. By utilizing the exhaust energy from gas turbines, steam is generated which can be utilized for a variety of applications. By using Cogeneration, efficiency can be attained more than 80%, which makes Combined Heat and Power generation one of the foremost energy-efficient strategies of power generation. The benefit of cogeneration is that by using a single fuel source both heat and power can be generated. The advantage of cogeneration is that it saves money i.e. it reduces the thermal and electrical cost, saves energy by using the waste heat from the turbine, increases predictability and reliability, and also it reduces CO2 emissions.



TOP DOWN CONSTRUCTION

Er.E.M. Jerin Shibu M.E,
Assistant Professor

Top down construction is the reverse method of bottom-up construction in which the permanent structure is built from top to bottom of the basement along with deep excavations. In this method, the basement floors are constructed as the excavation progresses. The top down method is used for deep excavation projects where tieback installation is not feasible and soil movements need to be minimized, metro station construction, tunnel construction, underground construction etc.

Construction Procedure

1. Construct the perimeter wall, Construct piles. Place the steel columns or stanchions where the piles are constructed.
2. Cast the floor slab of first basement level.
3. Proceed to the first stage of excavation.
4. Start construction of the superstructure.
5. Cast the floor slab of the second basement level proceed to the second stage of excavation.
6. Repeat the same procedure till the desired depth is reached.
7. Construct the foundation slab and ground beams, etc. Complete the basement.
8. Keep constructing the superstructure till it gets finished.

Advantages of Top Down Construction

1. Early restoration of the superstructure is possible even before the completion of the building. This greatly reduces the time for construction.
2. Concrete diaphragm walls are more cost-effective.
3. Easier and economical construction of roof.
4. The structural slab act as an internal bracing for the support of excavation, thus reducing the number of tiebacks required.
5. The virtually vibration-free operation minimizes the potential for ground movement and its resulting detrimental settlement.
6. Eliminates the need to underpin adjacent structures.

NANDAVANAMS

Ar.M.Priyadarshini M.Arch
Assistant Professor

From the literary and epigraphic sources, we come to know that our temples were located amidst groves and fertile belts. (for ex. Alagar malai-was called s 'Mal irum solai'.) Many inscriptions in temple, notably in Srirangam and Periyakovil talk about land grants for Nandavanams and Pushpavanams.

These were maintained mainly for the purpose of providing Flowers for the deity. In addition, medicinal herbs were also grown. This tradition of Nandavanam is continued even today, however they have shrunk in size and do not have the variety of plants mentioned in literature. Recent studies have found the evidence of extensive flower gardens near Kajhurahao temple. It is probable that the temple itself was surrounded by a belt of gardens.

Most of the 'nandavanams' in and around Madurai have either shrunk in size or simply disappeared. Unavailability of funds and manpower, and shortage of water are often cited as reasons for the disintegration of an age-old institution. Only a few major temples such as Meenakshi Sundareswarar Temple has its existing 'nandavanam' maintained with the support of the corporate sector.

These are similar to sacred groves in the rest of India. Traditionally such gardens and forests, which surrounded the temple, would hold trees and plants that would be beneficial to the temple. For instance, they would provide oil to the lamps, medicines, fruits and flowers for worship." While traditionally sacred groves existed before a temple did, Nandavanams were built around a temple. But functionally, they were similar.

INNOVATION IN URBAN AGRICULTURE

Ar.T.Josephine Sabeena B.Arch
Assistant Professor

ABSTRACT

The specific interactions between urban farming systems and their various urban environments produce specific opportunities and challenges for technical, social, organizational and institutional innovation. Key areas include high land prices , opportunities and risks of applying recycled urban water and nutrients food safety and risks of exposure to urban contaminants. They want to adapt and intensify production in space-constrained conditions, opportunities for agro-enterprises in accessing close markets, combining multiple functions ,social inclusiveness ,and want to interact with a dense and typically intrusive regulative, policy and designing surroundings . Urban agriculture, and the event of property urban food systems a lot of usually, progressively forms a part of town agendas for social innovation.

During this context, social innovation is meant to be a replacement model valuable creation that tries to mobilize human skills and resources within the town as a method for problem-solving and also the identification of solutions. Its characteristics area unit collaboration and authorization of all concerned stakeholders, and the use of latest tools such because it, on-line resources and social media. For this, cities got to evolve new services with their voters by changing into catalysts and innovations brokers. It conjointly needs new sorts of leadership, and also the implementation of applicable social environments and networks that support innovation. The implementation of appropriate social environments and networks that support innovation.

ZERO ENERGY BUILDINGS

Er.Relin Geo.R M.E,
Assistant Professor

In the history of our planet sporadically temperature change went on before except for the primary time these changes related to human activities. dioxide (CO2) that's emitted throughout the combustion of fossil fuels changes the composition of our atmosphere. The uncontrolled use of fossil energy results in the depletion of world reserves of non-renewable energy sources. The area, wherever it's potential to scale back the consumption of fuel and, consequently, energy consumption and emissions into the atmosphere, is that the housing stock, that consistent with numerous estimates consumes thirty to forty you look after all energy.

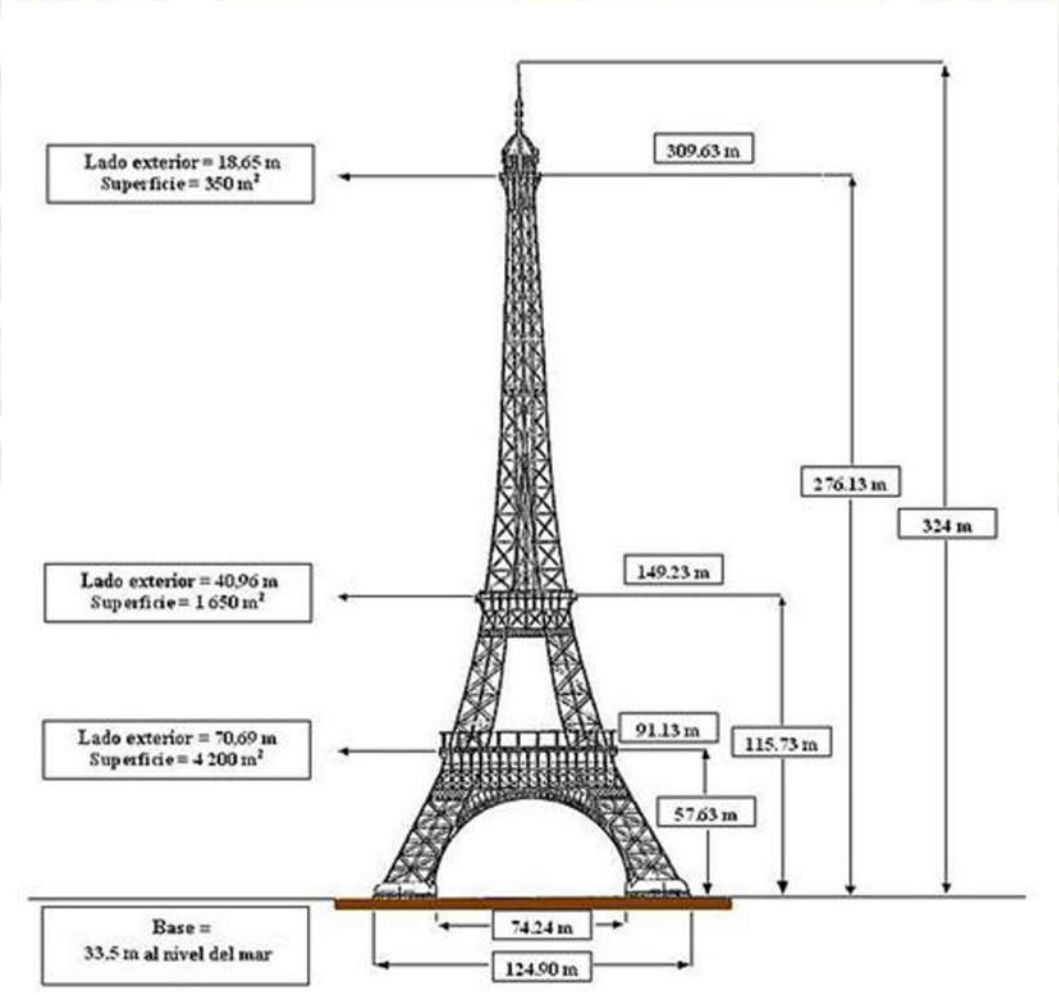
First expertise within the construction of buildings with low energy consumption:

The German scholar Wolfgang cur from the Institut fÜR Wohnen und Umwelt GmbH and the Swedish prof Bo Adamson of urban center University square measure the primary United Nations agency planned the thought of building energy passive homes. In 1990, in Germany, in Darmstadt, the primary house was created, it gave rise to the event of latest technology within the construction of energy-passive homes. The experiment was successful, and to conduct additional analysis, the Passivhaus Institut was supported by Dr. Fastom in Darmstadt in 1996. For seventeen years of the Institute operating more or less fifteen thousand buildings has been created that correspond the definition of a passive house.

CALCULUS IN ARCHITECTURE

Ms.R.Maria Anushiya M.Sc
Assistant Professor

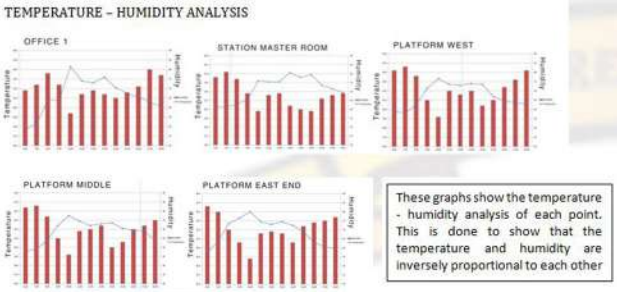
Calculus is the study of how things change. It provides framework for modeling systems in which there is change, and a way to deduce the predictions of such model. Calculus was utilized in the designing and construction of the mathematicallysound Eiffel Tower. It is important for an architect to understand the forces acting on the structures design. Architects also use integral calculus to calculate the amount of materials needed for constructions from collapsing. Even Eiffel Tower was constructed with calculus in mind, focusing exclusively on wind resistance.

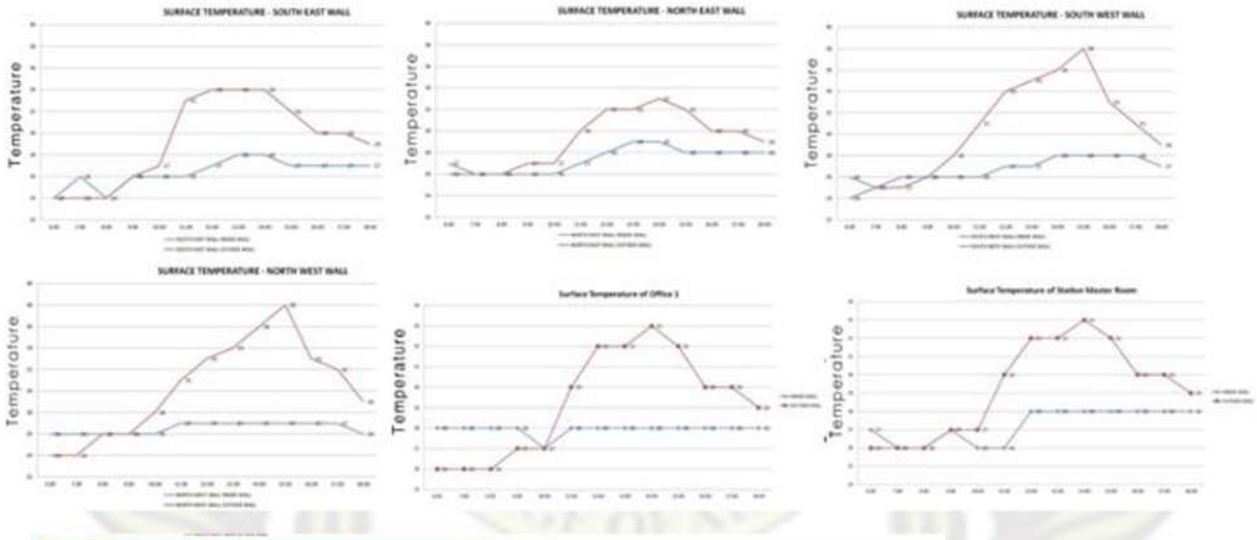


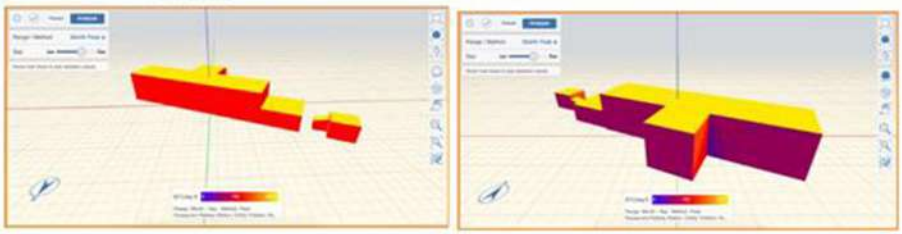
SUSTAINABILITY ANALYSIS OF A BUILDING -RAILWAY STATION
A Case Study of Royapuram Railway Station– Part 4

Ms.ArAshika P, M Arch
Assistant Professor

TEMPERATURE – HUMIDITY ANALYSIS







The surface temperature of the exterior peripheral wall increases from 10 am to 3 pm and then it gradually reduces. The exterior surface temperature of the southwest and North West wall is greater in the evening because of the position of the sun. There is a considerable difference on the interior and exterior wall as the external surface is .getting heated up because of the solar radiation

'VASTU SHASTRA'
THE TRADITIONAL GUIDE OF ARCHITECTURE

Ar.R.Reya, M.Plan
Assistant Professor

VastuShastra is known as the 'Science of architecture' was one of the long-established architectural guidelines which have its origin in the Ancient age, as first mentioned in 'Rig Veda' as Vastospati (i.e; 'vastos' meaning house and 'pati' meaning lord). VastuShastra is the system of rules dealing with the principles of design, layout, measurements, space arrangement, and geometry, oriented to bring happiness and prosperity to the habitats. This conventional guide acts as a substantial consideration while designing positive spaces or buildings in India even today.

Right from early days, Vastu seems blindly adhered to religious beliefs (Hinduism and Buddhism), this is based on the fact that people found it hard to rationalize the idea behind Vastu and hence merged with religious customs so that people followed it without asking WHY?. Therefore in the modern age, Vastushastra is often considered as a victim of unfair interpretation as it lacks a basic idea behind the formation of Vastu and its rationality is still an unknown quest. Few researchers of the modern age realized the importance of Vastu by their personal experience and started to study and explain the principles scientifically.

The recent study concludes that Vastu was created based on five factors which include, Cosmic radiation, Solar Science, Wind energy, Magnetic field of the earth, and Gravitational force in which space, fire, air, land, and water acted as their medium respectively. Among those five factors, solar science (Solar Architecture) has a greater contribution of nearly 75%. Vastu generally aims to bring harmony with all forces of nature. The rationality behind Vastu based on wind, solar science, Magnetic field, and gravitation has been scientifically proven with definite examples, but the rationality behind cosmic radiation is still under voyage.

DISCERNING SUSTAINABILITY AND ENERGY EFFICIENCY

Ar.Adlin
Assistant Professor

The concepts of sustainability have created highly dominant currents of opinion in our societies for many decades now, penetrating all areas of our lives. No one nowadays goes against the theories of global warming or the ever more important need to reduce emissions of greenhouse gases.Important improvements and innovations are being achieved in the area of architecture, which is the topic that concerns us here. Truth teaches us, though, that we still have a way to go. As a consequence of demographic growth, the proportion of sustainable buildings is very limited and in open conflict with the rise in the number of houses. As an architect our service plays a major role in the environment & society

SUSTAINABILITY:

- Cost saving (High)
- Environmental saving (Low)

ENERGY EFFICIENCY:

- Energy -Saving (High)
- Environmental saving (Low)

Sustainability consists of 99 percent cost savings and 1% environmental savings. That 1% is just PR worth or buy-in for workers. It's the stimulus that keeps environmental professionals working hard. Our sector has been diverted by an emphasis on energy conservation from the original target — an impact on the atmosphere.

Energy efficiency has little to do with the climate. In reality, it could be bad for the atmosphere than doing nothing at all. Performance is equivalent to increased profitability. Increased profitability is contributing to growth. Development contributes to more electricity being used.

What is sustainability if energy efficiency and not what it is?

• The perfect productive organization produces interchangeable outputs and inputs. A fully sustainable organization will have zero waste which will need zero production outside of growth.

• Let's take the IT equipment listed above as an example. As a waste product, IT equipment generates heat. The heat is then either piped through a fan from the server room or cooled with an AC unit. Additional energy is required for both solutions.

• Air-cooled IT rooms, particularly in cooler climates, allow the heat to dissipate outside. This is an energy-efficientsolution. It will also be an energy saving victory to duct the excess heat into surrounding offices to heat workers, but now we have a sustainable alternative. We've got zero waste. The supply of electricity from a green energy source to the IT room will give us an almost ideal sustainability solution.

WHY PRAMETRIC ARCHITECTURE IS CHANGING THE WORLD?

Ar.GnanaShini G, B.Arch
Tutor

Paramteric architecture is becoming an important inseparable part of architecture. The role of an architect changes as the world is spinning around fast and time changes rapidly. So inorder to embrack the emerging world, it is evident for an architect to embrace new modern tools and technologies.

The emergence of new technology is reshaping and will reshape the future of world and architecture. Newer concepts are being developed to witness the growth of modern era. One such emergence is the Parametric design.

Parametric design is a process where design parameters are made as an input and it becomes a design tool and that parameter acts as the factors of the structure.

When made an input, the tool with the feeded parameters gives us the possible and best structure. And evaluating the output, arcvhitect further make suitable adjustments to his creativeness and practical difficulties.

Parametricism is becoming on of the prominent evolution all across the world. Architects are widely using the technologies to create more efficient and marvellous structures. Thus, computational designs are becoming game changers.

And there is no doubt that parametric architecture is changing the architecture and here is a list of key changing factors involved in the process.

One factor is that it combines aesthetics with efficiency. That is the architects imagination is considerably increased than the earlier phases to create visually captivating structures with maximum efficiency.

Computers are becoming the problem solvers and let the architect make lot of trials and error by decreasing effort and time.

And also, it stimulates one's ideas and creative thoughts.
Another thing is, it allows us to make complex design process and gives us multiple options at a given time.

The possibilities are huge in parametric architecture. In earlier centuries it takes months and years to produce a design and now it just takes minutes while thinking about the client's requirements. With the evolution of technology, cities can also be designed within a limited time. And these parametric architecture helps to cities to work smart.
It's also important as an architect to embrace the new technologies and creating effective solutions.

Prof. Dr.T.James Wilson
B.E., M.I. Mar. Tech., MISTE, MBA., Ph.D.
Chairman
+91 9443370072, +91 9750976611, +91 9443370058,

+91 8012561000, +91 9750976622