biltrax

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Architecture of IMMUNISATION

Edifice Consultants

MuseLAB

Architecture Discipline

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Ashish Bhargava

Godrej Interio

UGA

Merino

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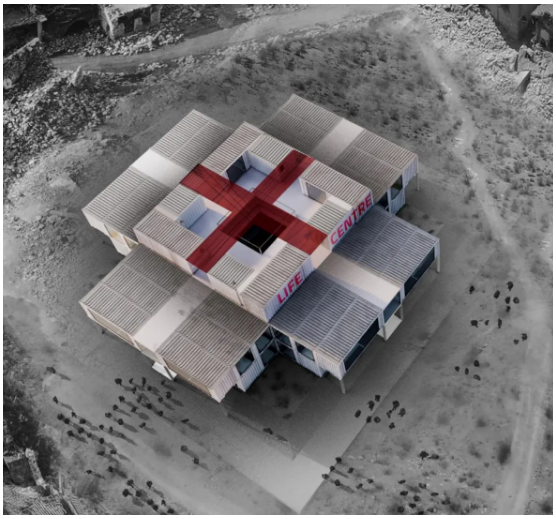

The design of the current stock of healthcare facilities needs to be looked at through the lens of disease control –– and changes made accordingly. It is essential to segregate functions into multiple, separate building wings with reduced widths, and to add buffer zones in between. This would aid natural cross-ventilation within indoor spaces, reducing the risk of infection by increasing the rate of air exchange and avoid interference of services and maintenance areas with procedure areas, allowing for greater isolation of diseases.

– Rahul Kadri, Partner and Principal Architect, IMK Architects

From the Editor's Desk

Dear Readers,

In the last couple of years, the world as we know it has changed significantly owing to the COVID-19 pandemic. This pandemic has forced us to rethink the way we lived and worked. It has pushed us to work from home and taught us to prioritize our family's and our own mental, physical, and emotional health and well-being. The lackadaisical attitude towards cleanliness and hygiene that a majority of us had, quickly turned into an almost obsessive compulsion to sanitize everything.

What also changed, and quite significantly at that, is the way medical and healthcare facilities functioned and operated. Healthcare Architects and Designers in collaboration with medical professionals had to think quickly on their feet on how to adapt medical and healthcare facilities to best suit the ever evolving needs of the pandemic. They had to be very strategic in optimizing the designs, as the pandemic has had a high transmission rate. It also meant that going forward, all new medical and healthcare facilities needed to be designed keeping all the learnings from the pandemic in mind. It thus has called for a change in the way design has been thought out and practised.

It is with this in mind that we at Biltrax Media chose to feature prominent thought leaders, young professionals, hospital design entrepreneurs and building material manufacturers that have actively and consciously focused on healthcare designs and products in our third issue of the magazine, aptly titled 'The Architecture of Immunization'. From COVID-19 hospitals to emergency isolation spaces to pop-up hospitals and vaccination clinics, this issue aims to cover details of the construction industry including – new trends in healthcare architecture, upcoming hospital design projects, and the work that various organizations undertake in the industry.
The reality is that the pandemic has forced us, as architects and designers, but most importantly as humans, in the way we live. It has pushed us to self introspect our habits and best practises and made us more aware of the fact that the post pandemic world is going to have to adapt and adopt the standards created during and due to the pandemic in order to better facilitate the healthcare industry. The sooner we accept this and incorporate it into our daily life and designs, the better our outcomes will be. So here's to celebrating thought leaders and their work where they went above and beyond, thinking outside the box and creating functional masterpieces that set the tone for healthcare architecture of the future!

NEHA TAMBE
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About BILTRAX MEDIA

Biltrax Media is owned & operated by Biltrax Construction Data. It chronicles architecture and construction with a focus on the role of data analytics, technology, engineering and government policies on design. It brings to the fore ideas and perspectives from a more rounded spectrum to delve deep into industries that play a huge role in the systems but are seldom spoken about in mainstream media.

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Construction Area

38,083+ INR-Crore
Construction Value

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Construction Area

27,314+ INR-Crore
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Creative Designer Architects (CDA)

Ravideep Singh

Administering humane healthcare environments

By Sakshi Agrawal

Creative Designer Architects (CDA) is an interdisciplinary architectural practice based in New Delhi. With a portfolio of notable projects of diverse typologies across Asia, the firm has earned several accolades for its works in healthcare architecture. Ravideep Singh, the Associate Director at CDA revels in the communicative power of design. He discusses the intricacies of capitalization while planning sensitive environments like hospitals. Blending seamless functionality with value-driven design, CDA envisions creating environments that redefine benchmarks for quality healing facilities and positively impact its surrounding communities.

It's encouraging to see your firm's traction towards healthcare architecture. Is there a unified course of action while designing such sensitive environments?

At CDA, the approach is highly flexible and project-specific. We take the generic notions of sustainability and altruism a notch up, to a level where it makes the conventional spatial environments responsive to the needs of the immunosuppressed patients, stressed caregivers, and energy-intensive hospital infrastructure. At CDA, we design healthcare environments that reflect our ethos of creating a highly functional 'departmental parti'.

Your Tetra-D mantra is "define – discover – devise – deploy". How do you establish these dictums in your process?

We begin by **defining** the project brief, constraints, and opportunities. Then we **discover** the targeted goals and objectives based on exhaustive research into the site, medical program, extended stakeholders, and the environment. This is the most crucial phase as it sets the guide rail for innovation. Step three is to **devise** researched solutions to achieve these goals carefully. And the final step sets the foundation for **deploying** and implementing creatively engineered solutions through cutting-edge technologies and strategies that aim to streamline complexity.

How do you incorporate the "biophilic" concepts in your designs to create architecture that "heals"?
A plethora of studies validate the positive impact of nature on a patient's healing and stress reduction in caregivers, which ultimately leads to better delivery of care. In Healthcare environments, we identify areas where patients spend long hours, such as waiting areas, patient rooms, infusion therapy areas and so on. We then strategically introduce natural views by designing these areas overlooking courtyards and vegetation depending on the site conditions and surroundings. In most of these areas, we furnish the interiors with natural colours and patterns, which have also shown to comfort patients and caregivers.

Architecture and design have the power to contribute to the recovery of a patient. What parameters must one work on while designing healthcare facilities?
At CDA, we strongly believe in research and evidence to drive our design and planning process. Several EBD (Evidence-Based Design) studies suggest that patient recovery is a strong rationale of patient experience, patient satisfaction, and stress reduction. These can be achieved by reducing environmental stressors such as noise, streamlining wayfinding, and then introducing positive distractions such as natural views and artworks.

Yashoda Hospital carries with it the story of how a retail space was transformed into a responsive healthcare environment. What did you capitalize on while planning the space and what were the problems encountered?
During the planning phase, we reconfigured the floor plans of the mall with sole emphasis on carefully zoning the medical departments on the existing structural grid without any significant alteration to the structure. The departments were planned in a way that would augment seamless intra and inter-departmental functionality.

Shorter floor to floor heights posed challenges for the execution of hospital mechanical systems such as HEPA filters. The small structural bay size of retail also posed some challenges for achieving the required square footages for certain departments. Yashoda Hospital was a challenging project, but our expertise and experience in healthcare buildings and the commitment to create meaningful architecture came in handy.

Well-lit Atrium at the Yashodha Hospital.

Retail space revamped into an outpatient facility with waiting areas in Yashodha Hospital.


Waiting Area at the Yashodha Hospital.

Conversion of a retail facility to Yashodha Hospital. (Before)

Conversion of a retail facility to Yashodha Hospital. (After)

In continuation to the previous question, how can retail spaces be revamped to convert into hospitals owing to the pandemic situation in the country? Given the gap between the demand and supply of hospital infrastructure, can interventions be made to convert unused public spaces to makeshift hospitals?

Transforming a retail space into healthcare depends on several factors. Converting a retail building into an out-patient department or ambulatory care facility is somewhat more achievable than an inpatient or critical care facility – which can be more challenging. The atriums and waiting areas of malls can seamlessly transition into the patient waiting rooms. The shops and retail units could assume consultation, treatment, and diagnostics functions with reconfiguration and shielding wherever required.

Several other factors, such as the structural bay size, availability of space for mechanical systems, and reconfiguration capability of existing systems amongst other factors, would allow us to determine the '**conversion quotient**' of a space.

We must understand that converting unused public spaces into makeshift hospitals or alternate care facilities (ACF) is an 'Emergency Response'. These areas should be identified in advance, preferably adjoining and adjacent to large hospitals. These facilities can leverage critical hospital modalities such as imaging and surgery which are difficult to replicate in the ACFs.

From a health planning perspective, we believe the surge in bed capacity should happen in two phases. Phase 1 is when hospitals should expand capacities within the facility by providing electrical, plumbing, medical gas, and mechanical services. These spaces shall be equipped with flexible areas that can be reprogrammed when needed. During times of acute emergencies when the demand exceeds the Phase 1 capacity, ACFs should be enabled.

In PSRI Hospital, thoughtful interventions enabled a facility that balances both magnificence and functionality. Could you walk us through the process of its conceptualisation?

The new wing of the PSRI Hospital was envisaged as a multi-speciality expansion of the existing facility, situated in suburban New Delhi. The brief demanded the unification of the new block with the decade old building, thereby improving the functionality and efficiency of the various departments.

Due to the unprecedented expansion, the two isolated blocks of the facility were supposed to be as unified as possible, making the functioning of departments efficient and the circulation of patients and staff easier. The magnificent entrance portico resting between the two blocks demands prominence and attention. The re-planned vehicular circulation allows the visitor to drop off at the blocks' entrance before parking their cars in the basement.

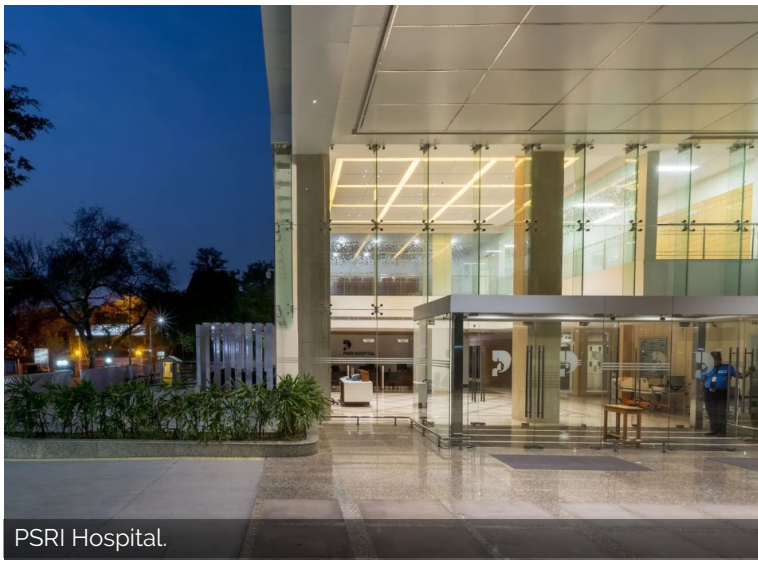
The new expansion being a tight-fitting block, had no significant visual connections for the scale of the building. The exteriors were meant to be an understated yet modern prototype of the existing block's design. The restricted design approach creates a contemporary rendering of the existing block, manifesting evolution.

Lastly, what is one "non-negotiable" aspect in all your design approaches?

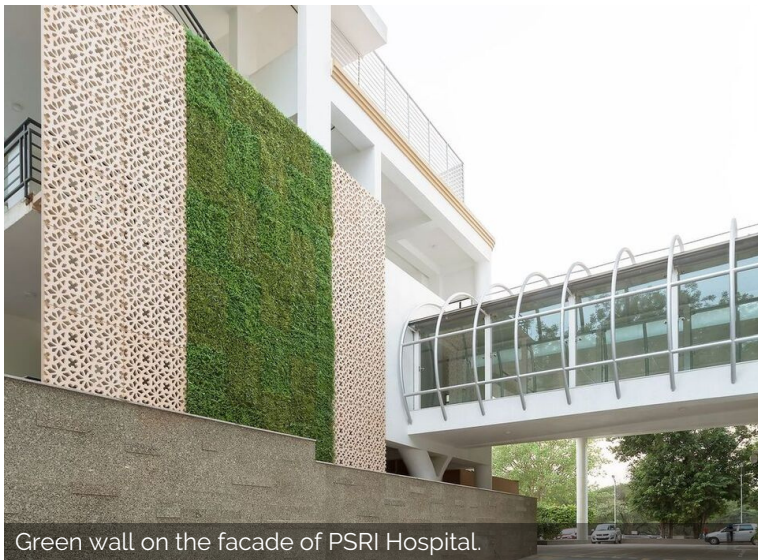
Natural Light! Departments and areas where patients tend to spend long hours, such as waiting areas, patient rooms, infusion areas, should receive ample natural light – that is non-negotiable at CDA.

> At CDA, we strongly believe in research and evidence to drive our design and planning process. Several Evidence-Based Design studies suggest that patient recovery is a strong rationale of patient experience, patient satisfaction, and stress reduction.


Interesting play on the walls of the stair-way.


PSRI Hospital.

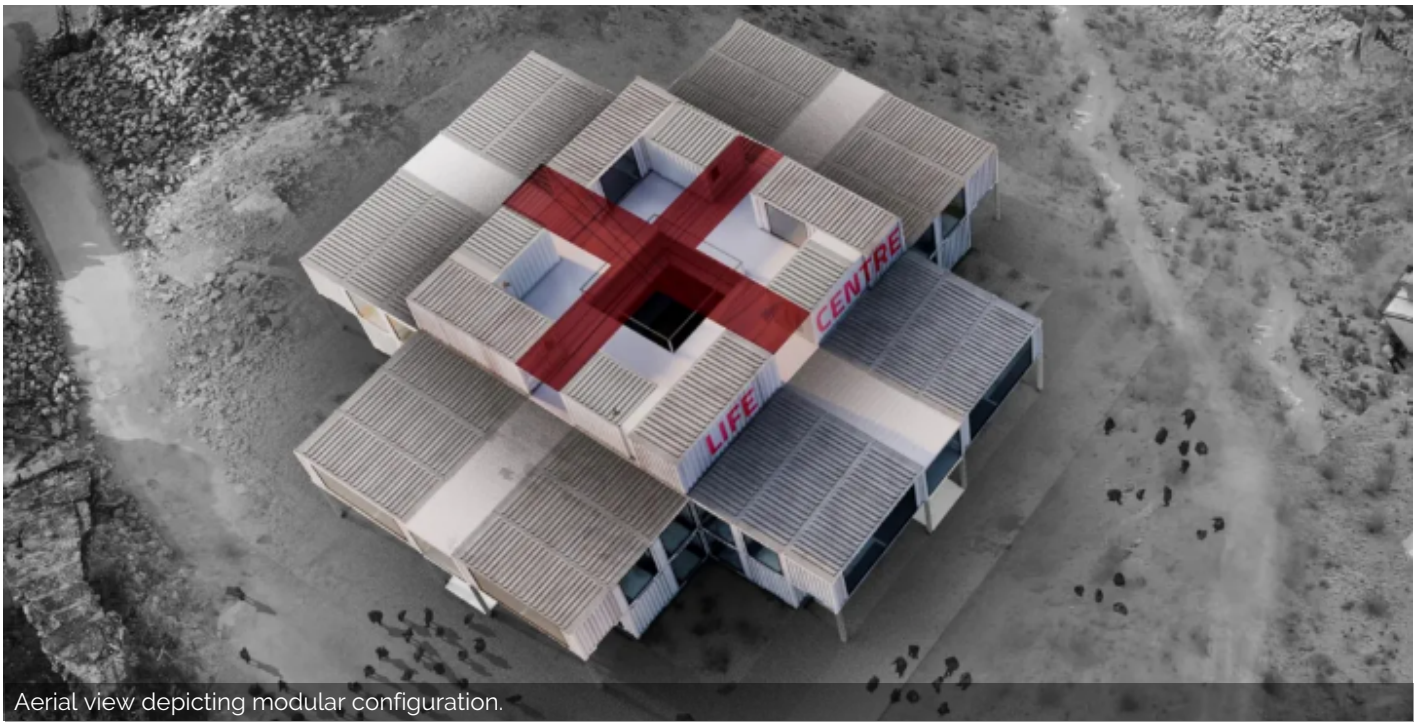
Waiting Area at the PSRI Hospital.


Green wall on the facade of PSRI Hospital.

Architecture Discipline

Life CMF

Post Industrial Waste to Primary Health Care



Aerial view depicting modular configuration.

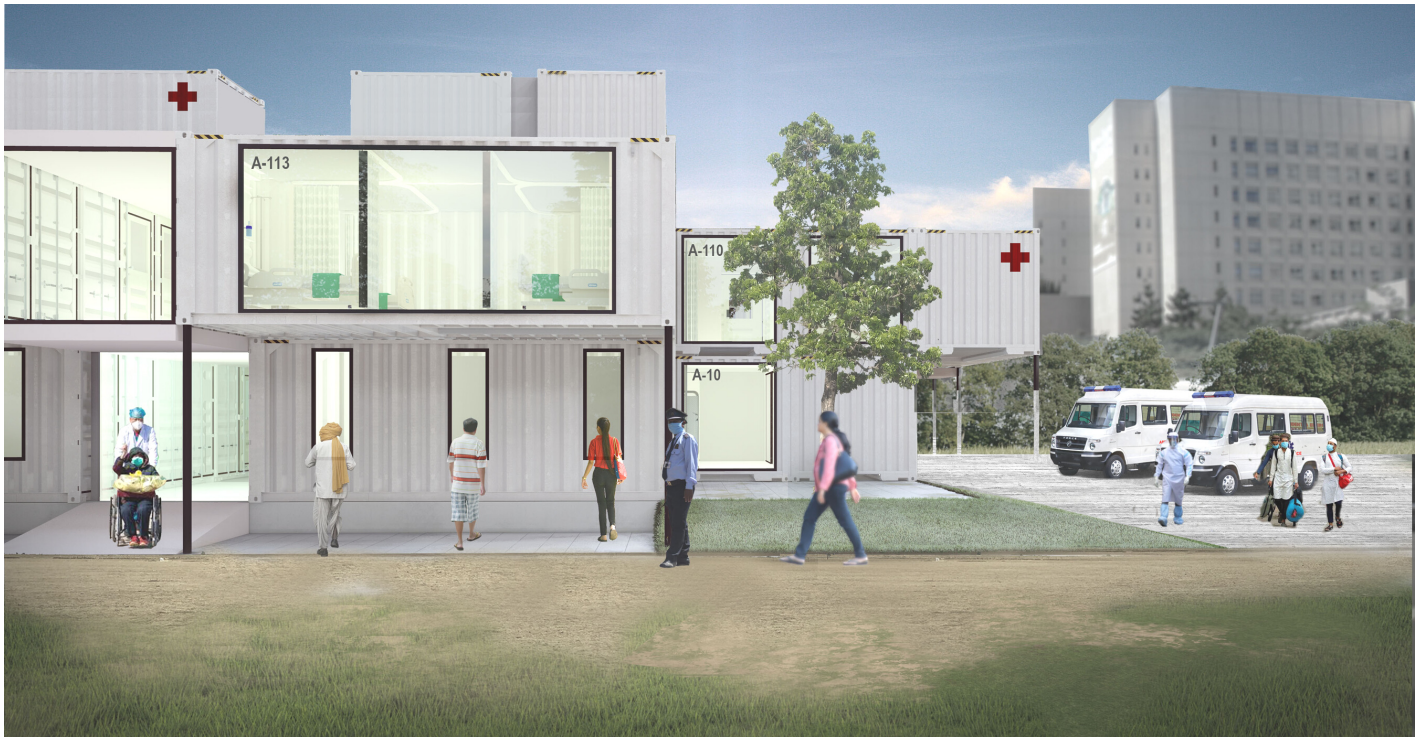
By Sakshi Agrawal

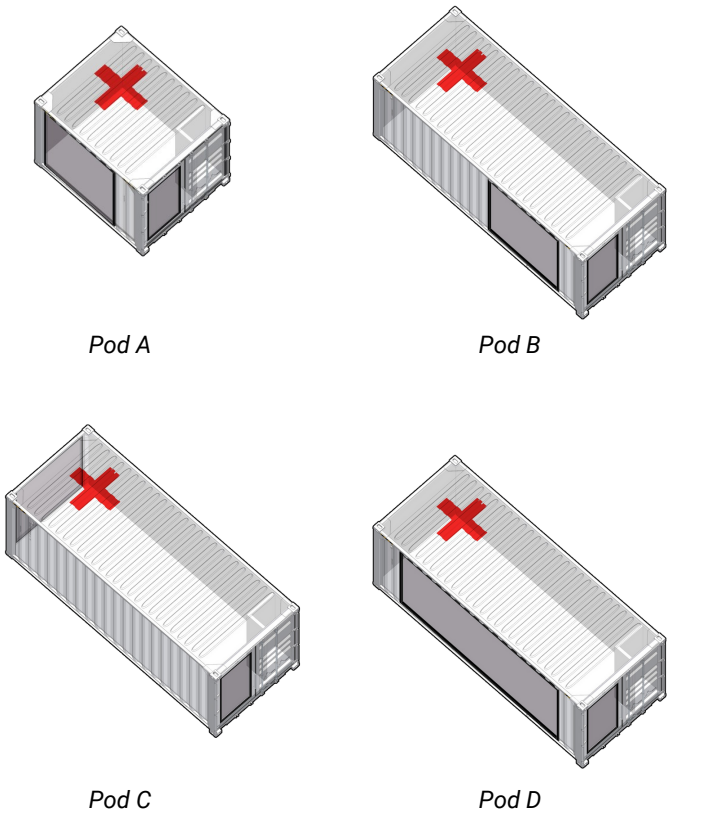
The statistics of patients and death tolls owing to the COVID-19 pandemic have posed dire questions on the availability of primary healthcare infrastructure across the world. This overwhelming chaos surfaced the need to reinvigorate the spatial configuration for primary healthcare facilities in times of crisis and emergency. We are painfully aware that hospitals can no longer suffice the blows from such pandemic waves. Architecture Discipline, a multi-disciplinary architecture practice, has proposed a modular solution to create a comprehensive community medical facility- "Life Community Medical Facility (Life CMF)". Akshat Bhatt, the principal architect, has repurposed the humble shipping containers to create prefabricated pods that will comprise diagnostics, intensive care, and isolation and recovery units. He explains, "Globally, healthcare systems have been overwhelmed fighting the pandemic and a growing population of infected people. Temporary, ad-hoc solutions are a viable alternative to conventional medical facilities, aiding the treatment of vulnerable affected communities."

LIFE CMF is a community-oriented and patient-directed installation that aims to deliver comprehensive, culturally competent, and high-quality primary health care services. It integrates access to disease screening, pharmacy, test labs, OPD consultations, emergency treatment, IPD care and treatment and recovery management, quarantine, and isolation, right in the vicinity of the patient's location. Each CMF can adapt to providing primary as well as emergency health care integrating a variety of medical services including mental health, substance use disorder, and oral health services. The modular assembly of Life CMF allows it to be deployed in inaccessible regions and vulnerable communities, like disaster-struck areas, war zones, or refugee colonies.

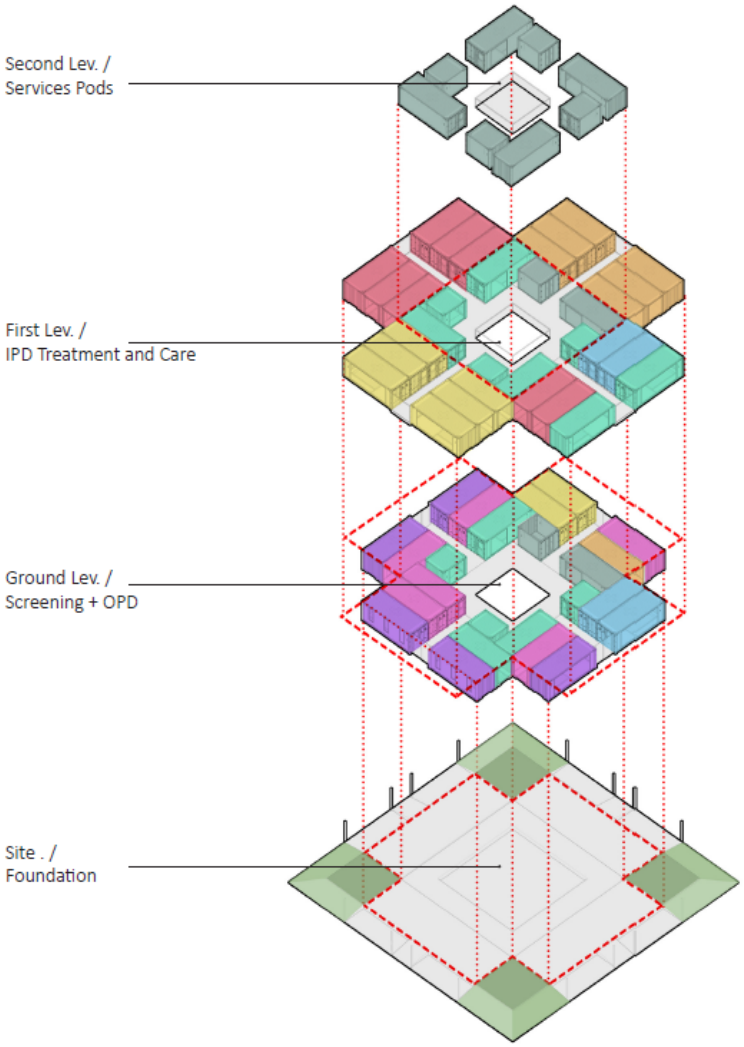
Objectives and Operational Goals

The fundamental objective of Life CMF is to develop patient-integrated care centers that will serve the needs of diverse medically underserved areas and populations. Each CMF promises high-quality and culturally competent primary care, as well as supportive services such as health education, translation, and transportation. These modules will provide services regardless of a patients' ability to pay and charge for services on a sliding fee scale. They shall operate under the direction of patient-majority governing boards of autonomous community-based organizations. These include public and private non-profit organizations and tribal and faith-based organizations.





Life CMF Container Types



Assembly Diagram of the Life CMF

Design Modules and Assembly

Life CMF Container Types & Modifications

Containers are ideal because of their inherent strength, easy transportation, deployability, and relatively low cost. In addition, shipping containers can be deployed anywhere in the world with the clinic already assembled within the container. This means pop-up clinics can be operational within days after deployment.

The two sizes of shipping containers used for this are-
Small Container: 10′-0″ x 8′-0″ x 8′-0″
Medium Container: 20′-0″ x 8′-0″ x 8′-0″
Containers are modified and distinguished primarily on the basis of the door and window locations. Each container pod is prefabricated and provided with a shaft to allow services ingress and egress.

LIFE CMF Customized Medical Applications

Each pod module is flexible to be configured singularly or in a combination of two or more containers to function as a primary care unit, critical care unit, surgical suite, trauma/emergency unit, isolation pod, recovery pod or support functions such as pharma unit, screening unit, or diagnostic labs, or any other medical as well as administrative space as needed by the clients. Prefabricated offsite each module is fitted with all the furniture and equipment specific to the function that the pod is being designated.

LIFE CMF Pod Configuration and Assembly Diagram

The primary prototype of the LIFE CMF is configured in a simple cross layout both in plan and elevation. This helps in recognizing it within any location as a healthcare facility. Within a Site square measuring 96′ x 96′, the container pods are layered concentrically to allow lateral expansion in both X and Y directions as per spatial requirements of the medical center.

Application of Life CMF in situations of emergency.

Impact

Each CMF can access prompt health care in areas where economic, geographic, or cultural barriers limit access to affordable services. They are designed to deliver care to the most vulnerable individuals and families – including people experiencing homelessness, agricultural workers, residents of public housing, the veterans, as well as those in midst of emergency situations like pandemics, natural calamities – floods, earthquakes, or warzones.

Intermodal containers, better known as shipping containers, will be assembled to form the structure of these CMFs. This industrial after-waste is given a second life where they become flexible modules that can be easily deployed and moved to remote regions. Akshat Bhatt shares his thoughts on this reincarnation of shipping containers. He says, "I think it's fascinating to take something forgotten and give it new meaning and purpose. Assembled using discarded intermodal containers (shipping containers) as the structural element of a medical clinic, these CMFs can bring affordable and scalable health facilities to the remotest regions of the country and the world."

IMK Architects

Nithin Hosabettu

Hospitals Then and Now

By Twinkle Tolani

The ongoing pandemic has brought many issues in the country to light. India's healthcare provisions are not only lacking in quantity but also quality. The team at IMK Architects strives to design for the needs and aspirations of the community by introducing the new through diligent research while retaining context. Nithin Hosabettu – Design Director at IMK Architects states that evolution in healthcare design has been brought about by technological advancements. Right from their second healthcare project – the Owaisi Teaching Hospital in Hyderabad to today, the firm has been witness to the evolution of healthcare design in India. With this Nithin points out the needed shift in design focus from technology to user experience. Nithin believes, "To design flexible spaces and facilities that incorporate new technological innovations, there is an imminent need to reinvent and redesign our healthcare infrastructure. Hospital design needs to move away from the stereotypical boxed design that caters to solely technical requirements and towards patient-centric health centers that uphold user experience and well-being. Emphasis should now more than ever, be on creating healing spaces rather than medical treatment facilities."

Healthcare buildings are often described as "healing spaces," but are they? Charged by emotions such as stress, anxiety, and uncertainty, hospital environments are hardly breeding grounds for soothing emotions. Recently, the concept of 'biophilia' or a human being's innate affinity for nature has been gaining ground. "This concept holds a lot of potentials. Nature's healing potential has been well documented and observed scientifically. For hospital staff, a connection with nature helps in reducing stress levels, fatigue, and improves work efficiency. A positive environment is achieved due to a human being's innate sense of calm when closer to nature. The biophilic design also aids in the faster recovery of patients, which in turn helps to reduce/ease work pressure – creating an overall sense of well-being within the built environment of the hospital."

Often in designing for healthcare, patient experience shadows staff experience. Providing adequate spaces around the patient's beds for easy inspection, designing nurse stations that have a direct line of sight to the patients, good natural lighting and ventilation to help reduce fatigue, and incorporating soothing colour schemes to help create a positive work environment for the hospital staff are some design considerations employed by the firm.

The concept of biophilia is adopted mindfully in Symbiosis University Hospital and Research Centre. The courtyard has maintenance-free tiles and stones. It enables the user to experience the greenery without direct access to it to prevent the spread of dust or soil within the interior space of the hospital. Nithin feels, "Hospital planning should play a vital role in curtailing the spread of diseases and not act as a catalyst in amplifying the spread of disease. This can be achieved by better planning, zoning, and segregation of areas, use of the right materials, providing natural ventilation in as many areas as possible. The HVAC systems in hospitals should have smaller decentralized units to help prevent cross-infection."

The ongoing pandemic forces designers to rethink healthcare design. It does not refer to an aspect or two, but the approach to healthcare design. Architecture does not play a prominent role in such scenarios but has a more 'behind-the-scenes' responsibility. The unavailability of space and the inferior quality of the available space is making this crisis harder to tackle.


Symbiosis University University Research Centre.


Patient beds in alignment with the nurse station.


Natural Ventilation has been in incorporated in the design.

Speaking about the make-shift hospitals sprouting in the country – like the Wankhede Stadium in Mumbai – he says, "I would suggest having a 'Quick Response Plan'/'Disaster Management Plan'. Under this, we plan for such situations where we design prototypes of such centers or facilities that have been thoroughly thought of and planned right from drawing board to the last finishing installations. This can be enabled by creating a complete manual where everything is integrated and coordinated. The manual can include the required information right from material sourcing, quantity, all aspects that can be thought about before such unforeseen situations and can help in saving both time and lives."

Cable and pipe entries

Safeguarding smooth and steady construction at every stage

DEEPAK CHANDULAL SHEWANI
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UGA manufactures gas- and watertight building entries for cables and pipes. The company has developed, manufactured, and supplied the highest quality building products for more than 25 years. They offer customers first-class service through competent consulting and a high degree of flexibility. Deepak Chandulal Shewani, Managing Director of UGA India, discusses the advantages of their products, their take on Indian manufactured products, and the pandemic's impact on the globe.

How will these products ensure smooth and uninterrupted construction? Can you give a brief about your most sought-after products?

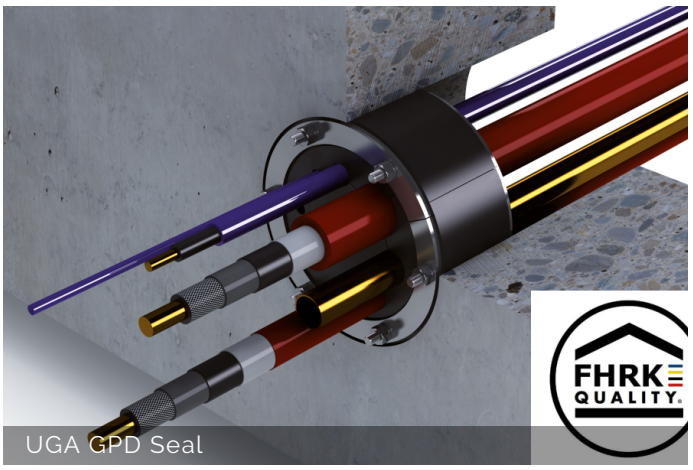
UGA products are designed to be utilised at any project stage to ensure smooth and uninterrupted construction, be it the ongoing precast construction stage or after completion, post-installation step. Our building industry practices core cutting for cables and pipes through walls. Therefore, our most sought out products are GPD rubber press / RRD annular seals) that are made of high-grade EPDM rubbers.

Can you shed some light on the recent international exhibitions to be participated in by UGA? What products will be presented, and how will those align with the construction market?

UGA India started its operations in Nov 2020 and has not participated in any international exhibitions. We are looking for an exhibition platform where the crowd of all 3Cs (Client / Consultant / Contractor) of the construction industry will be present to spread awareness effectively about this unique and new sealing technology across India.

UGA is primarily known for "Sealing the Impossible". Our products can seal all the cable and pipe entries per customer requirements. UGA has a wide range of sealing products that can incorporate BKD and GPD / RRD sealing systems post-construction.


Double Sealing Packing, installation view.



UGA GPD Seal

How have operations been impacted due to the market headwinds faced by the industry on account of COVID-19? With the pandemic easing, what is the recovery path?

Coronavirus has primarily impacted the growth of almost every country and is responsible for the slump in GDP worldwide. However, India has not been affected mainly in comparison to other countries. Nearly every industry sector has seen a fall in their sales and revenue. India's GDP growth has fallen to 4.7% in the third quarter of 2020. Shutting down steel factories has damaged the supply chain resulting in a drastic surge in raw materials prices. Due to this outbreak, almost 80% of Indian companies have witnessed cash flow difficulty, and over 50% face operational issues. Businesses that had just started moving back to normal after the first wave were hit hard by the second wave, which was particularly challenging and disrupted the normal functioning of businesses.

Now, almost after one and a half years of lockdown, businesses are coming back on track. The recovery path includes internal and external factors such as fund investment and changing daily business practices like stock inventories, supply chain management, etc., to adapt to the new normal. I think the primary step we should take is to ensure that our company workforce must be 100% vaccinated to avoid further interruption in company operations since they form the company's backbone. The second thing that needs to be ensured is that the government plays an active yet critical role in pulling the economy and businesses out of losses by recognising the need and opportunity for a sustainable recovery of local businesses.

How are the cost and quality of products affected due to their German manufacturing?

The products manufactured in Germany have their reputation because of the unique product design and quality. German manufacturing companies try to provide the best quality at affordable prices. UGA products are used for the most significant projects in the construction and energy sector. They are a service provider that offers its customers first-class service through competent consulting and a high degree of flexibility. With their extensive distribution network and worldwide reach, they are always ready to assist you with your requests.

UGA products are designed to be utilised at any project stage to ensure smooth and uninterrupted construction, be it the ongoing precast construction stage or after completion, post-installation step.

Cannon Design

Yogesh Jog

Directing a post-pandemic framework for healthcare design

By Sakshi Agrawal

"Architects are rightly described as the doctors of the built environment. With their critical eye and the ability to think holistically, their deeper insights reveal the truths and needs of a post-pandemic reality. With the past behind us and the future uncertain owing to COVID-19, the need to rethink the built environment around us is now more than ever. Yogesh Jog, the Vice President and Office Practice Leader at CannonDesign enlightens us on the subject matter highlighting how a framework of flexibility in design can futureproof healthcare facilities against such virus surges. He also talks about how digitally smart hospitals and telehealth which were short-term solutions for infection control will effectively become essential design components in the future.

What led to the establishment of CannonDesign in India?

Our India office was set up over a decade ago with our first project – the Tata Medical Center in Kolkata. We have continued our partnership with the Tata Medical Center Kolkata with the design and delivery of Phase I in 2011 and Phase II of the Cancer Facility in 2019. Our journey has been quite fascinating, with the design crew working on significant projects with prominent Indian clients from the healthcare, education, and IT sectors including Tata Consultancy Services, Amity University, and Tata Main Hospital Jamshedpur, to name a few. Our Mumbai office has a diverse team of fifty designers with global perspectives and international experience. We are committed to the Indian market and keep growing every day.

LAC + USC Restorative Care Village

Covid-19 has ravaged the healthcare infrastructure across the globe. Post-pandemic, what is the path forward to healthcare design in India? What design actions must be considered while designing healthcare infrastructure in the post-pandemic world?

Even before the pandemic, our country was aware that the healthcare sector was failing to meet the ever-growing population needs and there was a dire need for a complete system overhaul at different levels. We saw many hospitals at capacity during virus surges during the pandemic, making the government's plan to expand hospitals in each state in India an even more urgent goal.

There has been a push to create isolation centres and COVID-specific facilities equipped with ICUs and negative pressure rooms. Many existing buildings have been repurposed for this, and both the government and private providers have realized the value of making healthcare buildings flexible to respond to current and future needs. Overall, all providers now recognize the need for expanded and higher quality healthcare across the country, and the importance of bringing it equally to the largest cities and the smallest villages. Hopefully, this momentum continues even once the pandemic wanes.

Here are a few key shifts we'll see in how we design healthcare spaces moving forward and out of the pandemic.

- Health facilities should ensure flexibility and adapt easily to changing patient populations and to rapidly institute infection control measures. This has proven valuable, such as with The University of Kansas Health System's Strawberry Hill Behavioral Health Hospital in Kansas City, Kansas, and its ability to shrink or expand unit sizes.

- Alternate ways of delivery models, such as using prefabricated or modular designs will be favoured. Modular design, in particular, accelerated the timeline for one of our projects, the Los Angeles County and University of Southern California Restorative Care Village, which provides healthcare, housing, and social services for the unhoused population.

- Telehealth will continue to be utilized and may help certain healthcare systems expand their patient population outside the normal geographical patient population catchment area.

- Enhanced HVAC systems that provide thorough circulation and ventilation will be critical not only in healthcare facilities but also in communal living facilities such as long-term care and rehabilitation buildings. Incorporating more negative pressure rooms in hospitals can increase capacity for infection control and isolation needs.

- Within India, crowd management during public health emergencies will also be considered a mandatory step in the planning phases of new healthcare facilities. As we know, airborne illnesses spread quickly in crowded settings. Hence, allowing for more distance in healthcare facilities becomes critical. A new area per bed benchmark should also be considered during new facility design, as it could help significantly control infections during future pandemics.

Your project, Tata Medical Center served as a COVID-19 testing and treatment centre in Kolkata. What strategies and tactics did you adopt for patient segregation, risk mitigation, and critical care?

Last year, our Mumbai office consulted with hospital representatives about how Tata Medical Center adapted to treat both COVID and non-COVID cancer patients. Representatives shared that the hospital identified a zone on the second floor of Phase II of the facility, which normally houses acute and critical care spaces with negative isolation rooms for cancer patients, to treat COVID-positive cancer patients and staff members.

The original intent of Phase II was to increase the bed capacity of the hospital to 437, and this was borne out as well during the pandemic to accommodate the surge of COVID-19 patients in addition to its regular cancer care. Almost immediately after Tata Medical Center had opened its first phase in 2011, the demand for its services far outweighed the capacity of its 183 inpatient beds and outpatient facility. Today, it continues to provide superb cancer care to much of the region, and the flexibility built into the facility's plans allowed it to accommodate COVID-19 care as well.

Tata Medical Centre Facade


Covered pathways at Tata Medical Centre

While testing is seen as a stigma, pop-up testing facilities are a necessity to curb the spread of the virus. In reference to your project COVID Shield, can you explain how this modular facility functions to provide fast and flexible testing solutions?

Modular design and prefabrication speed up the delivery of any project by having the rooms or in this case, the testing booth, built off-site or close to the site and then easily transported to where they will be used. The COVID Shield, which allows for easy testing at workplaces to college campuses, can be assembled by two people. Its pieces collectively weigh 84 Kg with no panel more than 27 Kg, and the COVID Shield comes with clear step-by-step assembly and uses instructions. This portability and easy assembly make it easy to institute at several venues.

Overall, in larger healthcare facilities, modular design helps speed up the installation of "repeatable" rooms, such as bathrooms and exam rooms. The rooms are built off-site and then shipped to the construction site and installed. This can reduce costs, speed up the construction timeline and reduce risk onsite.

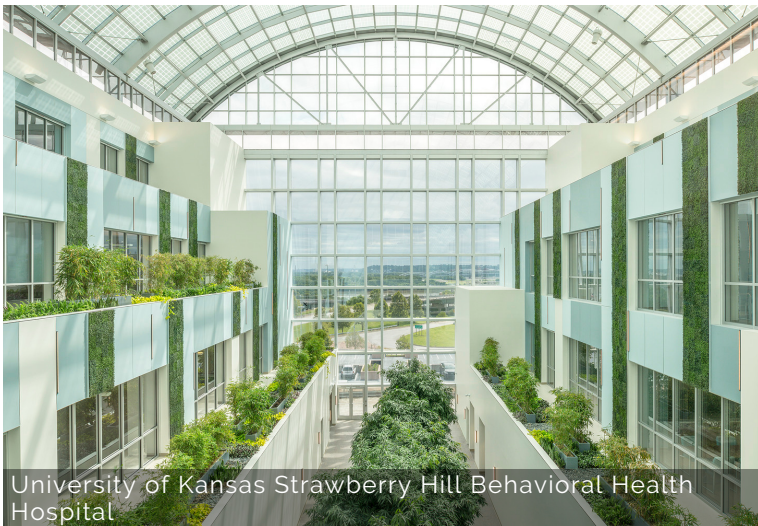
In your opinion, what must the architecture of ideal healthcare environments inculcate- both for the caregivers and the care seekers? How can architecture contribute to patient recovery?

Patients and caregivers spend many hours and days in the same building and making their experience as optimal as possible are key. Creating a healthcare facility that is safe and aligns with industry standards is important, but a healing environment is vital. The various concepts described below help patients recover and make their time in the facility as comfortable and worry-free as possible. Many of these experiences extend to the staff, who spend a lot of time in these facilities and benefit from similar amenities, comfort, and efficiencies. These are a few concepts that improve patient and staff experience:

- Access to nature: Due to the amount of time spent in healthcare facilities, having access to the outdoors is crucial. Research has shown that access or views to nature accelerates healing and helps curb burnout in staff. This can be accomplished through patios, balconies, ample windows, and bringing plant life into the building where safe to do so.

- Technology integration: Telehealth is an obvious arena where technology has improved accessibility to care. But it has also helped within facilities themselves. Wireless tracking devices can allow patients to wait for appointments where they'd like and get notified when it is time for their appointment. Check-in and paperwork for appointments can also be done ahead of time online, streamlining the experience for patients and staff.

- Artwork: Often the artwork in a healthcare facility is an afterthought, one of the last things to be considered in a project. But carefully curated artwork can make intimidating healthcare spaces more welcoming and soothing. In the Penn State Health Hampden new hospital, the organization created a committee to select artists that represented the entire surrounding community. The artists created pieces that depicted various populations in the area, as well as the surrounding rural and urban landscapes, to make all who enter the hospital feel welcome.



University of Kansas Strawberry Hill Behavioral Health Hospital

Can you tell us more about the e-Report launched by Cannon Design for planning and designing the future of healthcare beyond COVID-19?

The eReport was born out of many conversations our lead designers were having with clients during the height of the pandemic in 2020. Many providers were struggling to adapt to the ebb and flow of the virus surge and were looking to our expertise to help formulate both temporary and long term solutions. The CannonDesign team who authored the report consisted of designers, planners, architects, nurses, engineers and more, who used their experience and continual conversations with healthcare organizations to put together this e-Report to guide future planning.

With the pandemic still a major public health issue throughout the world, healthcare facilities are continuing to adapt to the ongoing realities of COVID-19. As the report was authored in the summer of 2020, some of the concepts are out of date, but many continue to be instituted. These include spacing and checkpoints in waiting areas, drive-thru services for testing and vaccination, modified wayfinding and circulation routes to decrease potential contact with infectious disease, flexible units to accommodate patient surges and more.

The industry continues to build a body of knowledge that will have a lasting influence on the way we plan and design health spaces for a post-pandemic future. We will continue to share lessons learned as we work with clients on making their facilities adaptable and ready for whatever the future holds. The more we share best practices and lessons learned, the healthier future we will all live.

What can hospitals and healthcare facilities do to reduce their carbon footprints?

Hospitals understandably use a large amount of energy, much of it towards life-saving equipment and procedures. But there are a growing number of ways hospitals can save energy and reduce their carbon footprint.

- Renewable energy: The use of solar panels on the rooftops of buildings can significantly reduce the need to rely on fossil fuels for energy, which are a big carbon footprint contributor.
- Lighting control: Allowing controllable or motion sensor lighting can help reduce energy usage, as well as improve the patient and staff experience by allowing custom lighting. LED lighting is also a major energy saver.
- Ventilation: In India in particular, using a mix of passive and natural ventilation strategies has proved useful in reducing energy costs. While these strategies are not recommended for critical areas and departments such as surgery, ICUs, isolation rooms and so on, public areas and certain patient and staff areas can utilize them.
- Access to Public Transport: Limiting the necessity to use personal vehicles to get to hospitals can reduce gas usage.
- Access to Nature/ Landscape using indigenous species: The courtyards at Tata Medical Center not only provide a respite space for patients, visitors and staff, but they also use local plants and landscaping that will naturally thrive year-round.
- Designing for Thermal Comfort: Building an efficient building exterior can help with conserving energy costs and maintaining comfort within the space. Controlling solar gain and ventilation are key in creating optimal thermal comfort.

What can architects and architecture do to further the ambition of public health and promote a healthy society?

CannonDesign uses an approach called Living-Centered Design that aims to address not only human needs but also the increasingly complex interdependencies that exist in society. Inspired by human-centred and systems-based design methods, it addresses challenges through the lens of the broader ecosystems they exist within—helping organizations and communities realize an impactful and systemic change. As access to healthcare continues to be a global issue, designers have a responsibility to make healthcare facilities accessible and welcoming spaces for all. Whether this is through improving care in rural or underserved areas or helping organizations address major issues such as mental healthcare or cancer care, we aim to solve these problems in a holistic way that not only improves the lives of users, but also the communities and cities they exist within.

What are you currently working on?

While we are actively pursuing local work, the Mumbai office is an integral part of CannonDesign's Single Firm, Multi-Office strategy towards bringing the best talent from all of its offices to each project. Our design team collaborates with multiple North American CannonDesign offices to deliver complex healthcare, education, and technology projects through all phases of design and construction administration.

We are also working on a few projects in the United State where we are repurposing existing buildings for current and future healthcare. On such projects, the Mumbai studio gets involved in conducting feasibility studies, current state analysis, master planning, phasing, and programming of existing facilities and campuses. Some organizations we are currently engaged with include Children's Hospital of Orange County (California), Barnes Jewish Hospital (Missouri), Richmond University Medical Center (New York), Resnick Sustainability Research Center at Caltech (California), Texas Children's Hospital (Texas) and Ohio Health Pickerington Medical Campus (Ohio).

> We use an approach called Living-Centred Design which aims to address not only human needs but also the increasingly complex interdependencies that exist in society.

Penn State Health Hampden

AARKA Consultants

Jagruti Bhatia

An insightful take on the Pre-pandemic and Post-pandemic Healthcare Infrastructure.

By Sarvesh Joshi

Healthcare workers have been at the forefront in the ongoing battle against COVID-19. Due to the unexpected advent of the pandemic, the healthcare infrastructure went through drastic changes in a short time span. As a result, hospitals designed in the pre-pandemic era are vastly different from the ones designed during and post the pandemic. Multiple hospitals were constructed to meet the increasing need for healthcare infrastructure. Healthcare designers had to accomplish this mammoth task in a constricted timeline. Jagruti Bhatia from AARKA Consultants, who has over 30 years of experience in the healthcare industry, was successful in designing multiple COVID-19 wards during the pandemic.

Miss Bhatia carries a rich experience of consulting and executing more than 400 projects across the healthcare sector on a national as well as International level. In a short time span of 70 days, the sister duo from AARKA Consultants Miss. Jagruti Bhatia and Miss. Niteni Thapliyal were able to accomplish a healthcare project in the challenging terrain of the Himalayas just before the pandemic happened. In an interview with Biltrax Media, Miss. Jagruti shares her views and concerns about the current state of the healthcare infrastructure, the importance of flexible spaces in a hospital and the measures that can be taken to avoid the spreading of infection. Her viewpoints can be looked at as a checklist by all the budding healthcare designers.

The healthcare landscape is changing due to COVID-19. What is one change that has impacted how you work?

The pattern of designing hospitals has changed post-pandemic. In terms of healthcare infrastructure, hospitals are designed to be more flexible. This is also mentioned in the disaster management act, that all healthcare spaces must have facilities that can quickly be converted into a ward that can be used during an emergency. However, it was overlooked by the designers as nobody anticipated the severity of the pandemic. Therefore, in the pre-pandemic phase, these recommendations were not taken into consideration, but in the post-pandemic phase, Urban Planners, Architects, and Designers are being extremely particular while designing healthcare projects. Utmost care is being taken while designing hospitals, flexible spaces have been given more importance now than ever before, which is a sign of good infrastructure, and we need more and more hospitals with such facilities

The Himalayan project was fast-tracked and completed in a short timeline of just 70 days, could you take us through the process?

To start with, our entire team was clear about the budgets, procurement, planning, which was done much before the project started. We had good support from the team as well as the promoting NGO, HANS foundation. We did a lot of reconnaissance trips to the site to understand the kind of work that can be handled by the local people. During these trips we realized that the local people would not be able to deliver the level of workmanship that we required for our project, so we had to take people from Bombay and Spiti to get the work executed.

Climate was a major challenge, at times the temperature was -2 degrees Celsius. As a result, the workers were running away from the project. Thankfully, we had a backup team. We also had fireplaces made on the site to make the workers feel comfortable. Procuring materials was another major challenge as it was unavailable in that region. Materials like a two-way opening door hinge along with a lot of other hardware had to be airlifted to the site. Since the area is prone to landslides transportation became a challenge as well.


Pithoragarh Project - Before Renovation


Pithoragarh Project - After Renovation

The planning and execution had to be done very meticulously as the opening dates were already declared. The chief minister himself being present at the venue made it even more important for us to get the project executed in the given timeframe. We worked hard, and I am grateful to the team that helped us to complete the project in the given timespan.

The project is equipped with high-end healthcare facilities, could you elaborate on that?

The project is equipped with Isolation rooms to treat Infectious diseases like TB and other diseases. We have taken care of the indoor air quality, which was very helpful during the pandemic.


Pithoragarh Project - After Renovation

Maintaining indoor air quality becomes very crucial while designing a hospital. Could you elaborate on the measures taken for the regulation of indoor air quality in this particular project?

We have installed an air handling system that provides 0.5 microns filtration. This is the international norm for intensive care air quality. It has a two-stage filtered air conditioning with MERV 9 filters and 0.5 microns filtration with 99% efficiency and unidirectional flow. This type of air conditioning provides both cooling and heating, because, unlike Mumbai, in the Himalayas one also needs the provision for heating.

What were the services provided by AARKA in the Fortis project and since the project was built during the pandemic, did it bring any new challenges?

Fortis, being a corporate entity, was the biggest challenge as we had to submit detailed drawings and proposals multiple times. The major challenge was the number of meetings that were conducted. During the pre-pandemic phase, we could conduct multiple meetings with the clinical team before coming to any conclusion. This helped us in developing the design. Because of the pandemic, we could hardly conduct meetings. Understanding the client's viewpoint through virtual methods became a challenge. Neither the client nor our team were prepared for this. Whenever we met on-site, we kept the agenda very short, only those points that needed to be discussed, were discussed during in-person on-site meetings. Everything else was handled through emails and calls. That was a major learning for Fortis and our team.

Advanced Eye Hospital and Institute by AARKA Consultants

Lobby, Fortis Hospital.

The client was adamant about taking a look at the materials that were going to be installed, going to be installed, such as antibacterial flooring tiles, units such as the bone marrow transplant unit etc. At that point in time, factories were shut owing to the nationwide lockdown that was imposed in order to curb the spread of the COVID-19 pandemic. We had to try hard to acquire the required materials to present before the client. Fortis follows a very detailed methodology, so they had to do some material testing according to their protocols, and since the material was borrowed we had to take a lot of permissions. Another major challenge was the unavailability of the workers. The workers who executed the tasks on-site were not allowed to work as there was a nationwide lockdown in the country owing to the COVID-19 pandemic. The government had only allowed essential services personnel to move around. We as AARKA Consultants had to register ourselves as healthcare architects as well.

What can be done at the designing level to avoid the spreading of infections. What are the kind of measures that we should adopt in the healthcare system as well as in general to avoid the spreading of infection?

I think all the architects and designers need to understand the importance of indoor air quality, they need to understand how the air conditioning needs to be planned, they need to understand the importance of cross ventilation. If there is no air conditioning, how can one allow the air to flow inside a room? These are some really important things that architects need to take into consideration while planning. They also need to plan flexible areas. It is also very essential to understand the infection control materials that are being used. Today we have options like antibacterial pants, healthcare certified green vinyl floorings.

One should make good use of those. Small things that can make a big difference include, chamfering all sharp edges, providing anti-skid toilet floors to avoid patient falls, even the door frames need to be designed in a certain way to avoid dirt catching for patients and workers safety.

One should always think about designing disabled-friendly-friendly spaces, toilets, ramps are the things one should take care of while designing healthcare spaces. In a pandemic situation, the most significant thing to take care of is the indoor air quality, but not to forget, hand sanitizing and handwashing. Every good healthcare worker in the industry will tell you the importance of handwashing. The ICU, the emergency rooms, the operation theatres, or any other special areas need to have provision for handwashing. Post pandemic, one should also provide hand sanitizing facilities in public areas.

Patient Room, Fortis Hospital

MERINO, INDIA

Innovation, Social Responsibility and Sustainable Initiation

Merino website – www.merinoindia.com
www.merinolaminates.com
www.merinorestrooms.com
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Biomass based TPH

Merino is an integrated manufacturer and marketer of interior solutions with a wide array of world-class products for homes, offices, commercial and public areas. Decades of strong market presence and satisfied customers have created high brand recall for Merino. Merino Group was established in 1965 and launched plywood as a surface solution soon. The company then ventured into the manufacturing of high-pressure decorative laminates in 1981. Today, Merino Group is India's No. 1 Restroom cubicle brand, leading furniture OEM supplier & a leading supplier of Pre-Lam panels. Being the World's leading manufacturer of Laminates, the company supplies HPL sheets to more than 80 countries. With a yearly revenue of 215 Million USD, the Merino Group currently has 5 production units generating job opportunities for 4000 plus employees. Launched as a manufacturer of interior solutions, the company has also delved into the Architectural Products, Information Technology and Food & Agro business. The Company believes in utilising its influence for the betterment of society and has launched multiple programs focused on sustainable endeavours and the diverse range of businesses headed by them.

The Merino Group entered the AEC industry, specifically focusing on the interior solutions business by launching plywood in 1974. Soon after this launch, the demand for Merino Ply increased and Merino became one of the most preferred plywood brands in the Indian market. This successful beginning led to the establishment of Merino's first manufacturing unit of high-pressure decorative laminates at Hapur in 1981 followed by the second unit at Rohad in 1995. Over the years, Merino products have become the first choice for architects and interior designers and the company has established itself as one of the leading manufacturers of decorative laminates. Owing to ever-increasing product demands and a desire to innovate and create new products that aligned with the latest international trend, an additional manufacturing plant was set up. This new unit was located in Dahej, Gujarat in 2017, taking the total Merino production capacity to 18 million+ sheets annually.

The Merino Group believes in consistently delivering quality products and services.
The Merino Group is regarded as the pioneer in the plywood industry, but their approach towards Environment and Sustainability is as universal as their approach towards the business. Merino's Mission, "Universal Weal through Trade & Industry" is an effort to keep nature pure and clean. 'Universal' stands for the world – the gamut of Stakeholders, and 'Weal' ensures wealth that is earned without harming the environment. The Merino Group believes that sustainable actions and outcomes create long term values by achieving a balance between economic, environmental and social performances.


Co-Gen plant for Turbine Generator MIL unit-1 Hapur


RO plant for water filtration & recycling in MIL, Hapur

The company has embarked on a program called "Nirmal", which focuses on integrated, multidimensional and holistic transformation broadly covering air, soil, water, waste, and energy.

The Merino Group over a period of time has expanded its manufacturing facilities to Hosur (Tamil Nadu) and Dahej (Gujarat). Multiple strategies have been incorporated to make campuses green and focus on improving indoor air quality by indoor plants. The company is making improvements in optimizing resource usage and reducing the company's ecological footprint in terms of carbon, water, emissions and any kind of waste. The Energy and Resource Institute (TERI) and Visvesvaraya National Institute of Technology (VNIT, Nagpur) were retained to assist and complement The Merino Group's in-house expertise and experience to adopt best practices in energy management, water management, creating value out of any scrapes/wastes, greenhouse gas (GHG) management and soil management. The overview of key initiatives undertaken and their outcomes include:

1. **Energy Management**

The company follows a belief system that, 'the future lies in renewable energy that fulfils our objectives of ecological sustenance and indigenous sources of energy availability'. To achieve this, the company has formulated a three-pronged approach.

- Energy Sources – At present, the company fulfils its energy requirement through a combination of both conventional sources of energy like fossil-based Diesel-Generators (DG Sets), State Electricity Boards (SEBs) and renewable energy sources like Solar, Biomass-based turbines (TG) and Biogas plants (BG). However, over a period of time, the company has shifted their focus and dependence on biomass-based turbines and solar energy as their primary sources of energy to fulfil their energy needs.

- Energy Efficiency – The Merino Group has installed Variable Frequency Drive (VFD) across machines, boilers, pumps, compressors etc. to control load fluctuations, saving electrical inputs and gain overall efficiencies of these systems. Installations of Real-Time Power Factor Correction System at needful places has improved the power factor and reduced demand. Emphasis has been laid on the installation of energy-efficient (IE3) motors in production and other facilities at all establishments of the company.

The replacement of low-efficiency centrifugal pumps with high-efficiency pumps has been done in multiple places to gain in operating efficiencies. Optimal lighting is ensured in factories by the installation of LED lights and saving 30% electrical consumption.

- Energy Conservation – Along with awareness, there are plenty of tangible processes and improvement measures that help the organization in the conservation of energy. In 2021, OTIF projects were implemented to minimize the material movement in factory premises and reduce the dispatch container loading time. The Merino Group has used an adiabatic cooler in a closed-loop circuit for cooling the press, eliminating the secondary cooling circuit by PHE and another water circulation pump. The company believes in keeping the power factor of the plant at 0.999 to conserve energy.

2. **Water Management**

A holistic approach has been undertaken for water management in and around the units, with a focus on the conservation of groundwater. These constructive conservation efforts can be classified into three key actionable implementations:

- Focused practices to reduce water consumption:

The Company has installed 200 and 250 CHM Adiabatic Cooling Towers at Hapur plants that saves more than 25,000 KL water annually. The flash steam recovery system further helps save 15% of the water used in steams. All manufacturing units of the Merino Group have moderated water consumption per unit of the laminate produced through an increase in water efficiency by the use of upgraded technology and a better water management system.

- Recycle and reuse of water:

Water management strategies are implemented at all company manufacturing facilities, using ETPs (Effluent Treatment Plants) and STPs (Sewerage Treatment Plants). The capacity of ETP and STP are 250 and 70 KLD respectively in Hapur plants. This helps treat and recycle over 100,000 KL of water annually in the Hapur premises. The Rohad plant has installed a capacity of ETP and STP of 50 and 100 KL per day respectively. It helps make 50,000 KL of reusable water annually from wastewater. Similarly, with the use of STPs in the manufacturing premises of Hosur and Dahej, the company reuses over 10,000 KL of water annually.

- Replenishing and restoration of water sources:

The Merino group has installed a rainwater harvesting system having a reservoir capacity of over 1,00,000 litres at Hosur. The company has built reservoirs and installed groundwater recharge systems in and around the factory premises. Three such ponds have been developed to recharge groundwater at Hapur to restore nearly 5,53,815 KL of water cumulatively in a year.


Biogas plant in MIL- Hapur


Boiler Area of Co-Gen Plant in MIL-Hapur

3. Waste Management under Circular Economy principles:

The Merino Group has adopted innovative methods to reuse wastes. A system collects all wastes and segregates them into various categories like hazardous (non-recyclable), non-hazardous (recyclable), organic, non-organic, liquid and solid wastes, to plan for the reuse of recyclable wastes and to create a system to carefully dispose of hazardous wastes. Combustible process wastes from manufacturing, like residue of paper materials, laminates, panel products, are used in furnaces to generate heat for drying biomass. Ash generated from boilers and incinerators along with ash from NTPC power plants are used for manufacturing bricks and tiles. These bricks and tiles are used for internal pavements within the factory premises. Organic wastes are converted into manures through bio-conversion processes and the manures obtained are used for plantations in the company's establishments.

4. **Air, including care for emission and air quality:**

- All manufacturing units under the Merino Group diligently adhere to maintaining lower emissions than what is stipulated to bring about a positive change. A major part of the company's cooling needs is addressed by VAM chillers that use waste heat instead of a conventional compressor that is run on refrigerant gases. Wet scrubbers installed in the company's lamination plants at Hapur, Rohad and Dahej help to control air pollution. Along with this, there are electrostatic precipitators and bag filters in manufacturing units to control emissions. The chillers in the production units for process and comfort cooling operate on the latest technology and are more environmentally friendly than the conventional cooling system.

- An important aspect of industrial emission is ozone-depleting gases (ODG) that get released into the atmosphere. At the Merino Group, the company has addressed ways to mitigate this through proper knowledge, training and technological enhancement. Chlorinated Fluorocarbon (CFC) refrigerants have been replaced by the technologically advanced hydrofluorocarbons (e.g., R-410A) refrigerant in over 376 tons of refrigeration (TR) systems annually. This has helped to mitigate an equivalent amount of ODG from the environment. The company's plants at Hosur and Dahej have complete refrigeration facilities based on Non-CFC refrigerants.

- Waste at the facilities is directly converted into useful gases and composts without greenhouse gas emission into the environment. The transformation of biomass (and its embodied "biogenic" carbon) into products has brought about effective carbon sequestration, as these products effectively store CO2 over a period of time. Thus, the use of biomass contributes to a reduction in CO2 levels in the atmosphere and addresses the key issue of global warming.

5. **Soil Care through resilient agricultural practices & green activities:**

- Taking a constructive step towards soil biological health and its conservation, the Merino Group is engaged in enriching the carbon content of the soil using bio manures and desired soil health management practice. The primary goal of these initiatives has been to promote locally adaptable farm practices, need-based usage of agricultural inputs to sustain soil health and crop ecology. It is also to increase the income of the huge number of farmers associated with the Merino Group. Therefore, the development of soil crop/soil specific and cost-effective organic manure customised with major and micro-nutrients and bio-agents/catalysts are under progress by Merino in collaboration with VNIT.

- The Merino Group has taken initiative to establish the economic and ecological sustainability of a small dairy farm with scientific as well as traditional wisdom. It has focused on utilizing the existing herds and establishing the contribution of retired animals. Along with the improved milk yield, the economic utilisation of Cow dung and Gomutra are works in progress.

- Adoption of the 'Miyawaki Method' to grow forests at a fast pace inside the manufacturing campus in Hapur is one of the company's endeavours. In this method, saplings that support each other are placed to grow the plants fast. The Company has taken advice from multiple experts in order to grow the 'Miyawaki Jungle' while placing the 600 samplings into an area of 320 square yards (ca. 268 m^2), in a narrow lane between two large work-shades in the furniture factory of the company in Hapur.

The Merino group also delves into multiple other sectors like the Agro industry, and It Services. In the Agro-industry, the Merino Group began with the cold storage business and subsequently diversified into farming, biotechnology and food processing. The integrated approach enables the company to offer raw materials to the finished product. This integration in both directions has shaped the brand initiative in the FMCG market, where the Company launched potato flakes and 'ready to eat' snack mixes under the brand name 'Vegit'.Merino Consulting Services, a fully owned subsidiary of the Merino Group, is a world-class IT Consulting and Enterprise Software Solutions Company serving 300+ clients across 40+ countries. Merino Consulting Services has 13+ years of experience delivering world-class IT consulting and implementation services to numerous clients across the world, including some big brands.

The Merino Group believes that Corporate Social Responsibility (CSR) is a mindset that instils socially responsible thinking and leverages the skills and resources in order to create a positive change in the lives of underprivileged sections of society.


Vermicompost made by Merino for soil organic care


Crop fields of Merino nearby of Garh Mukteshwar

The company implements its CSR activities through Sri Hara Kasturi Memorial Trust, formed specifically for this purpose. To create a significant impact in the lives of people, the CSR programs are mainly focused on two broad segments:

1. **Education** – The education program emphasizes on educating underprivileged children and empowering them to lead a better life.

- Established in 2013, Swami Vivekananda Arunoday Vidyalaya (SVAV) works as a catalyst in spreading education and empowering the economically weak households to improve their social habits and conditions. Started with just 15 students in its maiden year, the school now enrols students from economically weaker families up to class VI and has a strength of 116 students.

- The pandemic has affected the educational system not only in India, but across the globe. Lockdown confined students within their houses against their inherent and inquisitive nature of exploring things. During such trying times, the teachers from Swami Vivekananda Arunoday Vidyalaya were continuously in touch with the students to keep them motivated. To help teachers transition from classroom teaching to online instruction, the company partnered with Socrates Foundation for Enhanced Learning, Pune for two weeks. The teacher training programme covered multiple topics to enhance their teaching skills, including 5Es of lesson planning, Bloom's taxonomy, good questioning strategies, and peer reviews.

- The trust is committed to aiding students who have graduated from SVAV. Financial assistance and academic support through structured coaching are provided to help them complete their education till the 12th standard and ensure their academic standards are maintained along with fulfilling their nutritional needs. This is currently being implemented in Northern India, at Hapur, Uttar Pradesh.

- Near the Merino campus in Rohad, Haryana the company provides midday meals to Savera School, Jhajjar for differently-abled children and to Bal Griha, Bahdurgarh, an orphanage for girls.

- Prior to the lockdown at SVAV, the school used to offer students nutritious meals three times a day. The impact of the initial lockdown has been very severe for the students' families. To help them sustain themselves during the lockdown, the trust provided them raw food supplies. Along with the local administration, the trust also distributed 1500 packets of raw food supplies to 1500 families, helping them meet their ration requirement for about 10 days


Bamboo forestry by Merino


Administrative Block in Factory- MIL Hapur


Monitoring of Air Quality in Merino factory, Hapur

2. Healthcare – Along with education, the trust believes that the overall development and progress of any nation significantly depends upon the health and well-being of its citizens. The company's free healthcare services for the well-being of the poor is one of the many steps that they have taken towards building a healthy society. The healthcare program is currently limited to parts of Northern India only.
The Sankat Mochan Abhiyaan is a COVID-19 awareness campaign to create awareness amongst the people of Hapur. Multiple activities have been undertaken under this campaign, including:

- Awareness Campaign and Sanitation Drive: With the help of local representatives, the healthcare program covered 23 localities of Hapur. The volunteers organised door to door campaigns, put up banners, distributed pamphlets, medicines, and Ayush Kadha (sachets) for boosting immunity. The trust covered 19 localities and did a complete sanitisation of streets and common gathering places. Local communities were engaged in carrying out this sanitisation drive along with Merino office staff.

- Daridra Narayan Seva Blanket Distribution Drive: To serve the poor and help them beat the freezing winters of December, the staff distributed 990 blankets. The staff went out at night, braving the cold winter in order to identify and serve those who needed it the most.

- Shri Prem Chand Lohia Health Centre(SPCLHC): Healthcare facilities such as OPD services, treatment of TB Patients and Ayurvedic treatment to local people are provided through SPCLHC. SPCLHC also provides medical facilities to needy patients in and around Hapur through mobile vans manned by qualified doctors. Throughout the year, 377 such trips were undertaken to provide medical services to needy patients.

Products by Merino

The pandemic has affected the social landscape on multiple levels. Along with carrying out multiple Awareness Campaigns and Sanitation Drives, the trust has also taken some important steps to create the 'new-normal' when it comes to public safety. During the tumultuous period when the whole world experienced the horrific effects of the pandemic, one also realised the importance of cleanliness and sanitisation. New trends like social distancing came into the picture.

The innovators at Merino decided to take the level of public safety a notch higher. So, they introduced a public restroom accessory called 'FootLatch'. It enables users to open and close restroom doors without touching the doorknob. The company is committed to making restrooms much safer and more thoughtful.

"The building material industry will have to adapt and address the changes in the habits of people. Out of these habits, some may fade with time, while some may last and evolve further."

Safer washrooms and the requirement of cleanliness will become a new normal. Merino Restrooms has already launched women and geriatric centric restrooms. Similarly, to enable people to wash hands more often, the company has launched a mobile hand washing unit called PuriWash. Moving forward, the company is looking to evolve restrooms into much safer and thoughtful spaces that address the safety and convenience needs of the consumers.

Merino aims at maintaining affordability (economy), maximising the product value (excellence), and preserving transparency in the relationships (ethics). Making the most use of technology and resources, Merino group has garnered a name for itself for being one of the most innovative companies in the interior designing sector. They believe, being pioneers in the decorative laminates industry, specific technological innovations and benchmarks have given them a platform to use their influence to bring about a change in society and make a difference.

Creative Designer Architects

Can depleted buildings solve India's healthcare crisis?

Mohanbir Singh and Ravideep Singh


Santosh Children's Hospital

Ravideep Singh, the Associate Director at Creative Designer Architects, New Delhi, explains how adaptive reuse in depleted healthcare buildings can bolster our preparedness for future pandemic waves.

While healthcare systems across the world struggled with the pandemic in 2020, India's healthcare infrastructure is now grappling with the third wave. Insufficient beds, lack of medical infrastructure, and overworked staff added tremendous pressure on our healthcare system. In addition, rapid urbanisation has led to increased disused buildings and neglected construction sites.

Preparing for the future

Today, as India continues to battle another wave of the pandemic, it has become imperative for architects, healthcare professionals and policymakers to look beyond conventional approaches. While make-shift beds, portable oxygen cylinders and overworked staff were synonymous with the first two waves, India requires a much more sustainable approach to healthcare infrastructure that is prepared to tackle future medical challenges. Climate change, combined with the pandemic's catastrophes, has led to the emergence of alternative approaches to building sustainable and efficient healthcare infrastructure.

One such approach is 'adaptive reuse' of older, depleted or otherwise vacant buildings. Adaptively repurposing and reusing existing built structures has been a successful endeavour for several industrial and commercial projects. The efficacy of adaptive reuse especially in healthcare, even though sceptic initially, is gradually gaining meaningful acceptance. In the race to outrun the Covid-19 variants, healthcare professionals, architects, and planners are working in tandem to investigate adaptive reuse as an alternative approach to create sustainable and economical medical infrastructure.

Challenges and opportunities

Furthermore, it is crucial to examine the prospects of growth, flexibility and reconfiguration in a repurposed building to allow for a surge in bed counts and accommodate additional care units to serve a larger population. Having successfully delivered several such brownfield healthcare projects at CDA, we consider each of these factors at various stages of the design process, carefully evaluating and speculating on the outcomes of each project.

While every project has unique challenges and opportunities, our goal remains to create a sustainable and healing environment that withstand unprecedented medical catastrophes. For instance, the La Midas Wellness Centre in Gurgaon is a twenty-year-old residential structure refurbished into a high-end wellness centre for women that stands tall as bold street furniture. Diyos Men's Health Centre is another brownfield project that transformed an old derelict residence. On a larger scale, CDA resuscitated 1.8 lakh sq ft of retail space into a full-fledged hospital in Kaushambi, Uttar Pradesh. The expansive atriums of the Shopprix Mall now serve as the entrance lobby of Yashoda Super Speciality Hospital. The Santosh Children's Hospital is an ongoing project in Indirapuram, designed to transmute a dilapidated clinic into an engaging, responsive and altruistic built-form. With meaningful interventions and a thoughtful design approach, adaptive reuse in the healthcare design realm is an opportunity to breathe new life into buildings, their inhabitants and the community.

Paras Hospital, Kanpur

Paras Hospital, Kanpur

Sarvodaya Hospital, Noida

MOHANBIR SINGH
Founder & Director, Creative Designer Architects

"Over the last two years, India has seen an unprecedented rise in the demand for quality healthcare. While the instinctive solution seems to be to build more hospitals and increase bed counts, at CDA, we refute the argument that the inevitable solution to a collapsing healthcare system is to build more infrastructure, like metaphorical crutches holding up a dilapidated entity. As healthcare architects and planners, we have worked on several adaptive reuse projects that transform unused infrastructure into healthcare facilities, as a sustainable, cost-effective approach."

RAVIDEEP SINGH
Associate Director, Creative Designer Architects

"In a pandemic-ridden world, where healthcare systems across the world grapple with decreasing reimbursements and increasing costs, it has become crucial for hospitals to hypothesize strategies that enable setting up and expanding healthcare facilities rapidly and economically. Adaptive reuse offers a sustainable and economical solution to India's increased demand for quality healthcare infrastructure. Thanks to the pandemic-imposed urgency to swiftly ramp up, expand and set up new health infrastructure in the race to outrun the pandemic that has enabled providers and systems to give adaptive reuse a serious thought while developing literature and guide rails for other such endeavours."

The Grace Homecare Bed

Godrej Interio

Addressing the challenges of home healthcare

Grace Homecare Bed.

By Sakshi Agrawal

India was not prepared to meet the healthcare needs of its billion-plus population. When faced with a crisis, humans often embrace changes they would not otherwise consider. Home-based healthcare is one such area that gained ground both among COVID and non-COVID patients. Immunity compromised patients started seeking testing, healthcare monitoring, dialysis, cancer care, and other medical procedures from home. Godrej Interior Healthcare has entered this growing home healthcare sector with its new product – The Grace Homecare Bed. Home healthcare is expected to grow at a CAGR of 19.2% by 2025 in India. This is owing to factors like urbanisation, the trend of nuclear families, advanced technology, and increased awareness. The mortality rates have also gone down with the life expectancy of the elderly increased to 68.7 years (2012-2016) from 49.7 years (1975)

Godrej Interio, India's leading furniture solutions brand, in-home, and institutional segments, launched a unique range of homecare beds. The Grace Homecare Bed is a unique concept wherein the backrest and leg rest can be electronically adjusted with the hand control device, facilitating ease of movement and enabling alternating between sitting and lying down postures. With the new range, Godrej Interio is addressing the need for making homecare safe and convenient for the patient and caregiver.

The ongoing pandemic with its newer strains has introduced a further nuance to the growing preference for home care. At its peak, hospitals ran at full capacity, compelling patients to recuperate at home. It became ideal for hospitals to discharge patients for whom observation will suffice so that they can admit patients who need critical care or extensive procedures.


Grace Homecare Bed.

Godrej Interio's feature-loaded Grace Homecare Bed is designed to make homecare safe and convenient for not only the patient but also the caregiver. Considering the varying levels of patient mobility, the bed has been designed to deliver utmost safety and stability in all positions. The key safety features include full-length telescopic side railings to prevent falls, ergonomic design and DVT (Deep Vein Thrombosis) position wherein the elevation of a patient's legs aids in better blood circulation, preventing clots and swelling. It also comes with a 100 mm gap between the edges of the side rails to provide better visibility and to avoid claustrophobic feeling so that the recuperating loved one can interact with their environment. Its motorized features aid the caregiver in providing better care to the patient while safeguarding their physical wellbeing.

Grace Homecare Bed's elegant aesthetics of the bed minimise the 'hospital feel' and blend in seamlessly with contemporary and classic home decor. With a modern aesthetic, the bed minimizes a hospital-like feel and blends seamlessly into a contemporary and classic decor. The headboard, legboard, and side panels are all made from PLT (engineered wood panels) in two warm shades of natural wood. Aluminium side rails with an anodized finish enhance the premium look. The enclosed box design hides the understructure, preventing misuse and accidents.

ANIL MATHUR

Chief Operating Officer, Godrej Interio

"At Godrej Interio, it has been our mission to enrich the quality of life every day everywhere. While the pandemic triggered the need for remote home health solutions, the governments along with the private sector are increasingly working towards the need to establish the role of home care. Considering the perks and the potential of India's home health care market, leading health care organisations are coming forward to expand their reach in this sector. However, the lack of sufficient medical facilities is a key factor that has caused the growth of this trend. According to ICMR, India shares about 20% of the global disease load, with about 6% of hospital resources and 8% of professional medical staff. At Godrej Interio, we continue to work on innovations that address the unique challenges faced by the home healthcare industry and the Grace Homecare Bed is a testament to it. This bed is designed to make space for healing as it keeps the patient safe during caregiver interactions and allows for uninterrupted, peaceful periods of rest. We take great pride in continuously innovating to uplift the quality of experience in healthcare across India."

SAMEER JOSHI

Associate Vice President, Godrej Interio

"Healthcare facilities in India are often incompatible with the changing needs and lack of awareness is a major contributor with our study revealing that only 18% of patients being guided by hospitals to opt for homecare. Godrej Interio's Healthcare business focuses on creating environments that support patients and families in process of healing. These ergonomically designed healing environments focus on the efficiency, empathy, and wellbeing of all stakeholders including patients and caregivers. The newly launched Grace Homecare bed highlights our design philosophy which is based on adopting a human-centric approach and using adaptive space solutions for improved patient-doctor interaction."

Shree Designs

Kshititi Nagarkar

The architectural design of hospital facilities

By Sakshi Agrawal

Shree Designs, led by Kshititi Nagarkar, houses a team of dedicated hospital architects and healthcare consultants who are "Designing for Healthcare" for twelve years. Based out of Mumbai, the team strives to create aesthetic, sustainable, and affordable facilities in the healthcare sector. Their mastery over the subject matter has helped many hospitals in optimizing their operations and eliminating the inefficiencies often encountered in the processes of care delivery. In the subsequent interview, Kshititi describes her journey and learnings while enlightening us with the best practices one must follow for healthier and sustainable hospital environments. She also explains how 'Scanning, Sanitizing, and Social Distancing' have become the governing parameters of hospital architecture.

Shree Designs holds the legacy of building over 8 lakhs sq. ft. of healthcare facilities. How would you describe your journey- from the maiden years, the progression, hurdles, learnings, and achievements?

Shree Designs focuses on Healthcare Architecture. Our motto of creating healing spaces is a challenge that encourages us to push our creative and logical limits. It gives us immense satisfaction to be a contributor in an industry that is built around improving the well-being of people and is of national importance. This is what keeps us going! We started off Shree Designs as a small team of Three. After six months of market research, networking and campaigning, we got our first big architectural project in early 2010. Soon we bagged two more projects, one in Pune and the other in Mumbai. Being a small team, we could dedicate our entire efforts and attention towards the projects in our hands. As a result, we could surpass the clients' expectations and deliver to their complete satisfaction.

At Shree Designs, we strongly believe in the dictum 'Form Follows Function. Accordingly, every project that we work on is function-personified, mapped and then aesthetically packaged. Gradually, our number of projects has grown along with our portfolio of expertise. We are blessed to have completed more than 25 projects of varying footprints in the last decade. The icing on the cake is that quite a few of these are cases where our esteemed clients for their subsequent expansions, repeated our services based on their good experiences.

Shree Designs has marked its presence across many cities within and outside Maharashtra and is looking to grow by leaps and bounds! Undoubtedly, none of this would have been possible without the sincere perseverance, passion and dedication of our staff along with constant support from our esteemed clients.

Can you tell us more about Curativiti? How is a turnkey model beneficial- both for you and your clients?

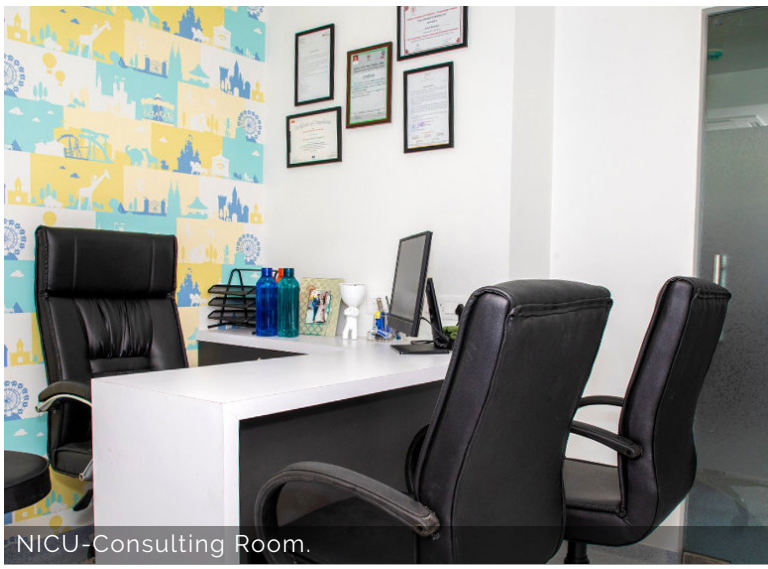
Curativiti is an Integrated Solutions venture powered by Shree Designs for the Healthcare Segment. It provides a one-stop solution for Designing and Execution due to which clients who are typically Doctors, are saved from the hassles of coordinating with multiple agencies. We get the advantage of capturing customer requirements – end to end, translating the details-oriented design exactly into execution parameters, and having more control on fit and finishing.

A lot of anti-viral materials and products were launched in the wake of the pandemic. What are a few finishes or materials that are here to stay?

The effects of the pandemic are going to stay for a long time in minds of people as well as on facilities. Initially, there were temporary actions taken to incorporate antiviral materials and products for Covid Centres but with subsequent waves, the actions have got the nature of permanency and have extended across hospitals and healthcare setups. The good news is that healthcare grade finishes have been available for quite a few years, right from floorings to ceilings. Going forward Anti-Viral as well as Anti-Bacterial types of products will be used for all major areas susceptible to the spread of infections. These products will include Floorings, Laminates, Curtains, Beddings and Anti-Viral coatings for various surfaces.


Oncology ICU.


Symbiosis-Speciality-Clinic-Cath-Lab.


NICU-Consulting Room.


NICU-2-Neobliss-Newborn-Care.


Fortis BMT Room.

Hospital planning requires utmost sensitivity in terms of layout and planning. How can architects and healthcare planners ensure that the functionality of a hospital remains at the forefront, especially in a post-pandemic world?

The pandemic has made people understand the importance of functionality in a design. Requirements like social distancing which hospitals were always required to follow have become mandatory. In the new normal, healthcare architects and planners need to sensitize the clients on factors related to 'patient-centred care' and include them in designing every area in the Hospital. The key is to create designs that have flexibility yet standardization. This creates leverage for healthcare providers to orient as per the periodically changing needs of patients and the facility. Another aspect of high importance for the future is 'Air Quality', particularly in the post-pandemic world. While recirculating air has become the default in our buildings, ventilating with outdoor air is vital to dilute airborne contaminants and decrease disease transmission rates. For buildings without heating and ventilation systems, another option is simply to open windows to let in more outdoor air.

Post-pandemic, how will technology impact the architecture of hospitals worldwide?

Post-pandemic technology will need to facilitate the emerging requirements of patients and clients, primarily giving extra comfort on health and hygiene. Hence, every aspect of architecture and design will be required to incorporate technical features in this regard. To continue with the earlier example, air conditioning technology will need to be configured to incorporate fresh air circulation and also have inbuilt filtration mechanisms like UV filtration. The design of entrances will be required to embed contactless technology for the entry and movement of people. The dichotomy of space utilization versus social distancing can be handled through management systems which can reduce the long waiting lines thus reducing the need for exceptionally large waiting spaces as well as preventing crowding of people.

By and large, all sectors of the economy have felt the sting of the pandemic and the following financial downsides. How can hospitals be designed in an energy-efficient and cost-effective manner?

Healthcare is a constantly evolving space, in terms of technology, both in operations and equipment. Every year, newer and more advanced devices for surgeries are introduced to the doctors thus, it keeps constantly evolving the way they perform medical procedures and provide care. Over the years, we have seen complex surgeries transforming to keyhole surgeries and the duration of stay of the patients in the hospital during recuperation, reducing significantly.

The starting point for us is the proper juxtaposition of healthcare spaces, in terms of function, to achieve operational efficiencies. I believe that we need to design these spaces to be less intimidating, more humane and should support quicker healing. We ardently follow the principles of 'Patient Centred Care' to keep the patient in focus within and outside of the facility.

Our innovations revolve around – design of lighting and acoustics of the indoor space to cater to the sensitivity of the patient; design to control and contain infections within the facility by bringing in the latest concepts; green materials; flexibility in design; design of modular spaces for multi-functional use that cater to the growing and shrinking demand depending on such viral surges. With that in our minds, at Shree Designs, our source of innovation doesn't come from our focus on creating hospitals; it comes from our mantra of Creating Healing Spaces!


Oncology Single Room.


Symbiosis Speciality Clinic single room.


Fortis BMT Room Utility Unit.


Oncology lobby view.

The cost-quotient is always crucial in hospitals, especially in a developing nation like ours, where limited budgets come roped to many projects. Can you please highlight a few sustainable strategies that can effectively reduce the operational costs of hospitals?

Overall a period of time and basis our hands on experience in designing variety of facilities, we have identified few sustainable strategies which support cost reduction without hampering quality of desired output.

High-Efficiency Fittings

High-Quality Patient care can be ensured by the use of Energy Efficient Equipment – for Electrical and Air conditioning. Non-stop patient care can be ensured by continuous power supply routed through UPS to the critical medical equipment and provision of generators for a 24X7 electricity outage.

Building Orientation and Ventilation

Solar heat gains can be controlled by the sensible sizing and positioning of the window surfaces taking the orientation into consideration.

Improving Indoor Air Quality

Providing clean, filtered air and effectively controlling indoor air pollution through ventilation are two key aspects of maintaining good air quality. High-efficiency particulate air (HEPA) filters, in particular, are highly effective in filtering out harmful pathogens and are strongly recommended in areas housing immune-compromised patients. Adequate ventilation rates as per JCI standards and regular cleaning and maintenance of the ventilation system are critical for controlling the level of pathogens in the air. The operation theatres and ICU set-ups need to have a minimum 2-stage filtration system. The patient rooms may or may not have air conditioning but necessarily would have ventilation prescribing to the requisite air changes.

Conserve Water and Electricity

Take advantage of gravity flow where possible for the distribution of water supply. Use rainwater harvesting or a groundwater recharge system – which is mandatory to be provided for hospitals. Installation of a sewage treatment plant. Reuse stormwater or greywater for non-potable applications.

Solar Power

As the costs of renewable energy technologies fall, they are more affordable for health facilities, both as a primary or backup energy source. This is particularly true in the case of photovoltaic (PV) solar power. Including solar panels or photovoltaic cells on the roof will generate electricity and heat water for hospital use from the sun's energy. Alternately the panels could be used to generate power for back –up lighting or street lighting.

High-efficiency particulate air (HEPA) filters, in particular, are highly effective in filtering out harmful pathogens and are strongly recommended in areas housing immune-compromised patients.

How can the spatial experience of a patient be enhanced with design inputs? What design principles and strategies can be adopted at grassroots levels to make hospital patient-centric?

There are Five design principles which are core to make a hospital patient – centric:

Volumetric proportions

Spaces designed with proportionate volumes help create an environment that feels safe, comforting and stable.

Effective Lighting

Allowing Natural sunlight to penetrate a structure helps brighten up the space which makes the space look spacious. The distinction between daylight and electrically lit spaces is significant — Daylight intensity levels are in the range of 10,000 to 40,000 lux, while a brightly lit interior averages between 300 and 500 lux. Daylight can reduce a patient's post-surgical recovery time. The human biological clock or the circadian system plays an important role in maintaining well-being. Studies show that "ICU psychosis", a state of delirium experienced in critical care environments, is dramatically reduced when spaces are daylit.

Artificial Lighting also has a profound effect on the whole ambience and feel of the space. In today's world, we get various temperatures of artificial lighting. White lights give you a bright commercial feel, while daylight gives you a bright yet homely feeling whereas yellow lights give a muted ambient cosy feel.

Enhanced Ventilation

Maintaining a good indoor quality adds to the quality of freshness for the users especially in places where people stay for longer durations like Hospitals, Old age homes, etc. Openable windows which let in Fresh air or a system that allows the flow of fresh air thereby affecting the required air changes will positively affect the energy of the space.

Natural Elements

Humans being a part of the very nature are unknowingly strongly influenced by it. Trying to merge natural aspects like planters, trees, landscapes, flowers through presence or visuals in the experience of space, makes a person feel more connected to nature and helps promote calmness and healing. Large windows that allow connection to nature helps boost positivity in the spaces

Colour Therapy

Colours play a crucial role in adding certain energy to the space, such as cool palettes can be used in places that need calmer ambiences to help boost recovery whereas warm palettes can be used to enhance enthusiasm in spaces. Using the right colours at the right places to enhance the purpose of space gives a completely different meaning to the space altogether.

Gensler

Observations, Perspectives, and Experiences from Gensler in the Hospitality Sector

Anupama Sharma and Diane Thorsen

ANUPAMA SHARMA
Managing Director, Gensler India.

DIANE THORSEN
Director of Hospitality & Residential Design, Gensler

By Sakshi Agrawal

Often referred to as the "sunrise industry", the Indian hospitality sector is expected to witness rapid growth and boom in the near future. Gensler, a global architecture and design firm, has channelled their expertise to this booming industry with its strategic design consultancy, thereby enhancing contemporary hospitality experiences in India. In a conversation with Biltrax Media, Anupama Sharma, Managing Director at Gensler India, and Diane Thorsen, Director of Hospitality and Residential Design at Gensler Dubai, discuss the evolution of the hospitality segment in India and how architecture can further the development goals of the hospitality industry. The experts also discuss ways in which hotels can achieve their sustainability goals, wiping out the financial blows caused by the pandemic and setting the stage for long-term resilience.

What was the turning point that led to the evolution of Gensler's hospitality practice in India? In what ways did the construction industry prove to be different in India?

India is a country that has a very complex history that has always been rooted in spirituality and religion since time immemorial. From historic times to the present, many people visit India for spiritual reasons, bringing in global visitors daily. Additionally, the country's numerous national heritage sites, nature reserves, and parks make India a popular choice for many tourists. This has inspired many hotel chains to start working with India to establish more hotels within the country. Other sources of revenue in the hospitality industry come from businesses that have outsourced their work to India, largely due to lower wages, which in turn has brought business travellers working with international companies.

The strength of the hospitality industry in the country has formed the basis for a global firm like Gensler to venture into the hospitality sector in the country. As a leading architecture and design firm with networks across the globe, Gensler India is a forward-thinking and highly collaborative firm, believing in carbon neutrality and progressive development. We have been doing projects in India since 2009 and play a significant role in the practice areas of hospitality, workplace, mixed-use, food & beverage, and aviation.

The E&C industry in India is set for a strong recovery, boosted by government stimulus spending aimed at accelerating the post-Covid recovery. Gensler has grown consistently through its entire history since 1965 and will increase our global footprint with expansion in this market to support strong market demand. We will continue to make strategic investments in research, practice area diversification, and innovative new services in India's powerhouse economy.

In terms of construction practises, the industry still conforms to fairly conventional methods utilizing concrete and masonry construction, PT slabs, and precast panels on the façade. There are compelling reasons for hospitality brands to consider industrial prefabrication, a construction method in which a hotel is built room-by-room in a factory, with modular units transported to the final site and assembled like shipping containers to create the hotel building. This approach, which has been around for a while, offers a wide range of benefits including shorter schedules, lower construction costs, and reduction in the environmental impacts of traditional construction due to traffic, air quality, and emissions.

How do imbibe cultural influences into contemporary hotel projects across the world, specifically in India? What are the design factors that separate Indian hotels from their global counterparts?

Traditional Indian hospitality, unique cultural craft, and diverse and rich food and beverage offerings provide an opportunity to design culturally relevant and personalised experiences in Indian hotels, creating a strong sense of place for guests.

The hospitality industry will soon cater to diverse needs. Multi-use hospitality developments are on the rise to accommodate a wider array of visitors. The sector is looking to incorporate coworking spaces, extended-stay hotels, and branded residences to better serve guests' evolving needs and increase profitability.

Indian hotels are designed for luxury, hospitality, and personalised care and attention. They are brand beacons of high Indian culture. Wellness and fitness are increasingly closely integrated into the hospitality industry, with wellness integration including amenities and human interaction spaces being designed to manage anxiety. While wellness, meditation, and yoga are ancient Indian traditions, working from home has raised awareness on many levels as people dramatically adjusted their daily exercise routines and creatively reimagined their homes as mixed-use spaces - creating work from home spaces, home gyms, and home meditation spaces. Guest rooms in hotels are increasingly applying these concepts with in-room exercise options, work options, and dining options.


Westin Denver Hotel


Westin Denver Hotel

Digital design experience has emerged as one of the innovations in the post-pandemic world. How will this digital adaptation reconnect people after the pandemic? Can you elaborate on it through your upcoming project for 'Atari Hotels' in Las Vegas? Are there any plans to have similar such experiential hotel projects in the future in India?

Tech-savvy travellers have given way to new types of personalised experiences. Hotels have started to integrate technology into their designs to future-proof their establishments. By offering a hybrid "physical-digital" experience, hotels will be able to cultivate guest loyalty with thoughtful and personalised services. New technology will also help free up physical spaces for renovation as more functions, such as concierge services and wayfinding, are offloaded to virtual platforms.

Gensler uses technology to help solve our clients' design problems across all industries. Our teams are writing programs around parametric design and automating the design process. It's all about process innovation and looking into the future. Another key success factor is our data-driven insights. With access to our Gensler Research Institute, we can predict upcoming trends based on data and incorporate this into our design. This has allowed us to be one step ahead when providing counsel to our clients, extending our analysis, insights, and additional perspective into the original brief.

We've had the opportunity to work with some of the biggest names in various industries. By combining our design knowledge with our clients' rich history and philosophies, we've created some of our best works, including the Atari Hotels. Atari Hotels provides our guests with a unique hospitality experience, inspired by, and built with, classic and modern video game culture in mind. It blends the past, present, and future of video games and entertainment for a destination that offers guests a one-of-a-kind hospitality experience, complete with experiential interactive entertainment and stylized accommodations. The key is to provide an enriching and vividly unique experience that begins before even check-in and lasts far beyond the checkout. Gensler is actively developing our design practises integrating data, AI, and intelligent building systems to create smart spaces with meaningful outcomes from human scale to urban scale. We are working on multiple hospitality projects in Southeast Asia and the Middle East. We are proud that many of our repeat clients have trust in Gensler and our amazing team to keep delivering world-class projects.


Cairo Gate reception lobby.


Living Room,Emaar Beachfront

How has the ongoing pandemic affected the hospitality industry? Are there any novel design norms adopted by Gensler India that are different from other hospitality firms to maintain safety and hygiene in hotels even with full occupancy, which is over and above the established baseline norms prescribed by the Government of India?

The hospitality sector is notoriously slow at adopting new changes. Nevertheless, the pandemic provided a long-overdue catalyst for hotels to reimagine the experiences they provide and the roles they play in their communities. As the industry recalibrates, versatile layouts and innovative design will be key to long-term sustainability.

Hoteliers must balance safety measures with a sensibility that helps guests feel welcome and at ease. The primary focus should be on the guest's health and wellness at both the macro and micro levels. Incorporating wellness-focused changes for health and well-being should become the standard of any hotel stay, and that includes a focus on sustainable design elements.

The challenges we face have accelerated our thinking. This is an opportunity for innovative change both from the designers and owners and operators. When making decisions about where to stay, people now have ample choices. Guests could either choose familiar brands or they look for immersive experiences for those Instagram-able moments, where they could connect with the culture and be immersed and involved. Everyone travelling today has a heightened sense of awareness of their personal space and the cleanliness of their environments, and they will require additional assurances of their safety.

Now, more than ever, hotel spaces will be designed to give people the choice to socialise, be in control of their own experience, and feel safe as they resume travel. Hotel lobbies are typically designed to encourage social interactions, but crowded spaces may create anxiety for guests. Hospitality is all about human connection. We have become aware of the pent-up need for connecting in person following the isolation we endured during the pandemic. As designers, we face challenges during the pandemic, and we don't believe we are on the other side just yet with the new variants. The hotel industry, in particular, was severely impacted. In addition, the world flagged social inequity and sustainability as equally important aspects to address.

What are the factors that make a hotel 'Sustainable'? How can tourists contribute to the same?

Sustainable hotels are businesses that significantly reduce their environmental impact through green best practices in maintenance, services, logistics, products, and supplies. The core elements revolve around reducing waste, saving energy, and cutting down on water usage.
There are many steps a hotel can take to move toward sustainability. Some of them are major capital expenditures, such as replacement of the HVAC system; others are easy to implement and even low-cost.

Options for investing in green infrastructure available to hoteliers interested in long-term ROI include:

- Solar panel installations
- Energy Star-rated heating and cooling system
- Geothermal cooling towers
- Water recovery and recycling systems

When hotels go green, they do less damage to the environment, lower costs, and win goodwill from guests. Sustainability in the business world is essential to achieving growth and satisfying customers. Increasingly, consumers seek out green businesses and pay more for eco-friendly products and services. With ecotourism increasingly gaining relevance in India, there are several examples where guests participate in restoration efforts, and hotel operators focus on local materials, local food sourcing and services, and eco-friendly traditions.

Design is being redefined by sustainability. We are continually evolving our organisation and design processes to deliver innovation aimed at helping clients and communities become more resourceful, resilient, and regenerative. Every Gensler design strengthens the resilience of our clients' organisations, projects, and communities through holistic design strategies that enhance long-term well-being, inclusion, environmental stewardship, and longevity. We work with our clients to establish Key Performance Indicators that align with the environmental stewardship goals not just for jurisdictionally mandated requirements, but also for well-being and inclusive design. For our projects, we also use the lenses of problem-solving, community, innovation, client engagement, culture, and knowledge transfer to establish and prioritise Key Performance Indicators.

Our Gensler Cities Climate Challenge (GC3) is our commitment to achieving carbon neutrality in all our work within a decade (embodied carbon, as well as operating carbon). This means our focus is to design efficient spaces at every scale and employ right-sizing strategies to reduce the operating energy per square metre of a space, without sacrificing functionality or guest experience. There are many challenges in being carbon-neutral, but for hospitality, in particular, the issue revolves around how we find the right balance between luxury and reduction of energy. Every design decision we make takes natural resources and the ecological balance into account.

Arcmax Architects

Designing Efficient, Beautiful and Supportive Healthcare Facilities

Ashish Bhargava

By Keya Desai

Ashish Bhargava, the principal architect at Arcmax Architects, Ahmedabad, emphasises the future of hospitals. His valuable insight into healthcare infrastructure gives us a fresh perspective.

Creating Healthy Hospital Environments

Healthcare architecture is complex yet fascinating compared to various other specializations in architecture. Its purpose is to serve people with medical ailments and help them recover to the fullest. As an architect, it is our responsibility to design a hospital with functional and responsive healing spaces. The hospital management is equally responsible for this and they should incorporate advanced technologies that help medical staff to function efficiently.

Design Efficient, Beautiful, and Supportive Healthcare Facilities

A well-equipped building with functional spaces generates positive outcomes and improves patient recovery rate. An inclusive building should provide adequate workspace and a resting room for the medical staff in every department. This will create a proactive and positive work environment and improve the recovery rate of the patients.

A healthcare project should be completed in time adhering to the budget, fulfilling all the client requirements. The prime factor while designing is to configure the infrastructure in accordance with the existing industry standards for healthcare facilities. Most of the departments have interlinked work procedures, therefore vertical and horizontal placement of departments is the key to good design. In addition to spatial planning, a hospital requires advanced MEP services for the supply of liquids and gases. The services include plumbing systems for hot, cold and wastewater, the pipeline for gases like oxygen and liquid nitrogen, etc. To facilitate the uninterrupted supply of water and gases, special attention needs to be paid to the temperature requirements and humidity. During the planning stage, the medical departments and public spaces should be segregated for better function of the building.


Design follow a specific laid down standard for efficent design

Comfort for Staff and Patients

In today's fast-paced world, the healthcare sector is moving towards corporatization, where patient delight has gained more importance than patient comfort and recovery. Therefore, apart from professional expertise, physical infrastructure plays an important role to promote quality care and cost-effective treatment offered by healthcare facilities.

The building should incorporate all the patient departments and medical facilities. The planning should strategically detail breakout rooms, cafés, lounge areas for the staff and visitors. This encourages a positive attitude towards the employer and the workplace. The services provided facilitate optimal comfort for all the target users. The patients, doctors, nurses, and other medical staff spend maximum time in the building, therefore they require an engaging and comfortable environment.

Healthcare systems should be accessible by all and their quality and efficiency influence the well-being of society. Our infrastructure increases safety, effectiveness, patient-centeredness, timeliness, efficiency, and access. Inadequacies in the healthcare system infrastructure, contribute to poor care quality and outcomes, limiting access mainly among the vulnerable population groups. In today's global era, where our healthcare sector is fast corporatizing, there's a higher drive for our patient delight than patient satisfaction. Thus, apart from the professional expertise, this physical infrastructure plays a very indispensable role in delivering better quality care at a reasonable cost.

Accessibility, quality, and efficiency together constitute optimal hospital architecture from the societal perspective. Our healthcare system infrastructure increases safety, effectiveness, patient-centeredness, timeliness, efficiency, and access. Inadequacies in the healthcare system infrastructure, contribute to poor care quality and outcomes, limit access mainly among the vulnerable population groups.

Facilities provided for quality clinical service are:

- Regionalization and sitting
- Technology assessment
- Maintenance of the physical facilities

External factors that contribute to better healthcare infrastructure are:

- Manpower recruitment and planning
- Adherence to the external standards
- Review activities
- Credentialing and privileging
- Professional societies and research affiliations
- Post-hoc assurance

Promote quick recovery

Proficient healthcare design will lead the business to better outcomes, since patients search for quality care in a healthy and safe environment with the minimum cost. When patients have better contact with practitioners, the recovery rate increases. The studio promotes better interaction through efficient internal planning of departments that facilitates physical proximity between the caregiver and patient, which further improves patient satisfaction.

Safety must be the top priority

We design spaces that provide better handling and prevent theft of pharmaceutical drugs. Integrating anti-slip flooring as a protective element, barrier-free design protocols and alarms that will prevent mishaps and ensure safety for all the users are some other measures that can be undertaken to ensure that patient safety hasn't been compromised.

Make way finding simple

The Studio's planned operational layouts ensure ease of navigation. Creating separate walkways for patients, staff, and visitors facilitates trouble-free execution of all medical and nonmedical activities.

Use bacteria-resistant functions

Surfaces and ventilation systems in Medical Centres are strategically incorporated to decrease the spread of harmful bacteria.

Accomplish better performance and acoustical design

Acoustic solutions are provided that decrease unwanted noise in the patient rooms and around nurse stations.

Plan for future

By including flexible design principles, which meet our healthcare facility requirements, there is a better scope of expansion of the services in future.

Our Big Idea for Healthcare Planning and Architecture

Healthcare equity should get an equal emphasis on safety. The Studio commits to various strategies that acknowledge the disparities rooted in our history, and the design process must strive to overcome them. Safety is one of the fundamental parts of a healthcare architect's toolkit. We design healthcare systems to maintain the right protocols that evaluate the complete safety of the hospital environment. The creation of strong tools by collaborating with the clients that measure and promote equity over the life cycle of the project or building will be a major step towards the transformation of the industry.

Upcoming trends in the hospital infrastructure design and planning

The future of healthcare lies in the ability and agility of adopting new technology. Hospitals need to focus on being equipped with modern technologies to provide better patient care. The primary changes required include/include the following:

Cutting Edge Technology to facilitate Connected Infrastructure:

- To facilitate the use of telemedicine as well as virtual visits for regular check-ups, the hospital needs additional infrastructure and IT requirements.
- Hospitals can use AR or augmented reality to integrate various images in patients' profiles and environments.
- Artificial intelligence can be used to predict the outcome of clinical situations as well as helps to improve treatment quality.
- Virtual Reality can be used for simulating clinical situations in neuro-rehabilitation, pain management, and more.
- Wearables like Google glasses can be used for monitoring the patient's health parameters remotely.
- Robotics are used in surgery through telemedicine.
- 3D printing also has enabled the simple fabrication of implants and prostheses.
- Technology has improved hospital infrastructure significantly and enabled healthcare facilities (this would include/cover both primary and secondary healthcare facilities such as health centres, nursing homes, hospitals, super-speciality hospitals etc) to be remotely connected with Doctors and Specialists in various ways.

Use of smart construction processes:

By using smart construction techniques like Design for Manufacture and Assembly that include off-site modular or robotic construction, we design and deliver the most flexible, efficient & cost-effective infrastructure services and facilities. We use Smart Construction Approach that ensures major redevelopment, upgrades the delivery and efficiency of the operational facility. The use of smart technology for construction reduces the overall delivery cost and makes our hospital's assets flexible and adaptable for future demands.

Personalised In-Patient Rooms:
Personalization is key to comfort, which reduces anxiety if the patient is placed in an unfamiliar environment. For this reason, healthcare architecture is working towards personalised patient rooms that will reduce anxiety and enhance satisfaction. Certain features such as patient communication boards & customizable digital signs with the patient name, photos of family, weather reports, and much more will be incorporated in current healthcare facilities.

Hospitals to become patient-centric:
In this competitive world, patient recovery and comfort has become a cutting edge for hospitals to succeed. They have to focus on providing personalised care for their patients and adhere to all hospital standards. Besides home delivery of medicines and home visits of doctors, hospitals could offer mobile apps that will facilitate scheduling & follow-up appointments, thus ensuring that patients are accorded with maximum care.

Architects need to create something visually appealing and equipped for the patients. Design and architecture that are specifically strategized in reducing stress, promoting peace and calm and providing complete comfort are what doctors ordered, so something that architects are happy to see and implement in their healthcare projects for the future.

Future-proofing Healthcare Infrastructure
With costs of healthcare delivery increasing at a rapid rate of spending, it is important to look for better infrastructure solutions that can be applied to many other industries that are facing the same challenges of age-old assets, and need for flexibility, improved costs and limited budgets.

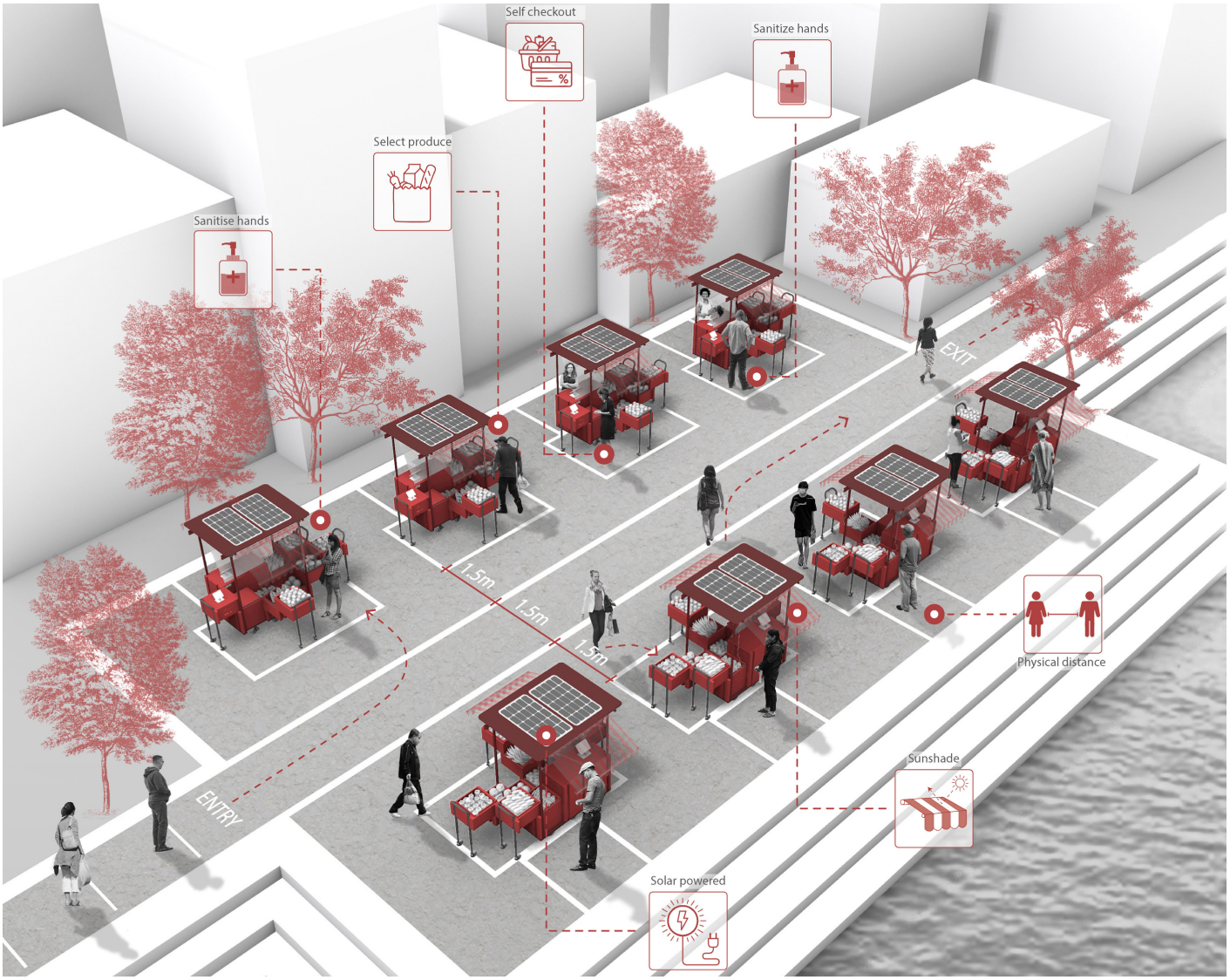
Design and architecture that are specifically strategized in reducing stress, promoting peace and calm and providing complete comfort are what doctors ordered, so something that architects are happy to see and implement in their healthcare projects for the future.

When we look at these things differently, we will be able to deliver more than hospitals. We will deliver agile, diverse, and more sustainable healthcare solutions for our communities.
With the advancement of healthcare technologies, healthcare infrastructure has also evolved in terms of both design and spatial organization. Studios have created visually appealing and well-equipped structures which benefit our society. With the personalised hospital rooms, the growing availability of the micro-hospitals, and facilities that feel like home, better accessibility to our mother nature, convertible furniture for the guests, our healthcare architecture is working innovatively to make our healthcare system a little more comfortable for the patients who are looking for better health and comfort when they want it the most.

Market on Wheels

MuseLAB

A simple approach to a complicated menace



Market on Wheels, by MuseLAB – a Mumbai-based design firm, is a seemingly straightforward design that managed to win the hearts of the jurors at the CoronaVirus design competition by GoArchitect, with its very simplicity. Often the solution to our problems is right in front of us. A little tweaking may produce a better outcome than a long-drawn, complicated process. The complexity of a design cannot guarantee its success. This approach has made MuseLAB's entry an undisputed winner. The module might seem ordinary, especially to those from south-Asian countries. One might take a glance and say it is a contemporary version of the traditional handcart, and they might be right! An idea, or design, is not the end of a problem; it is the beginning of the solution.

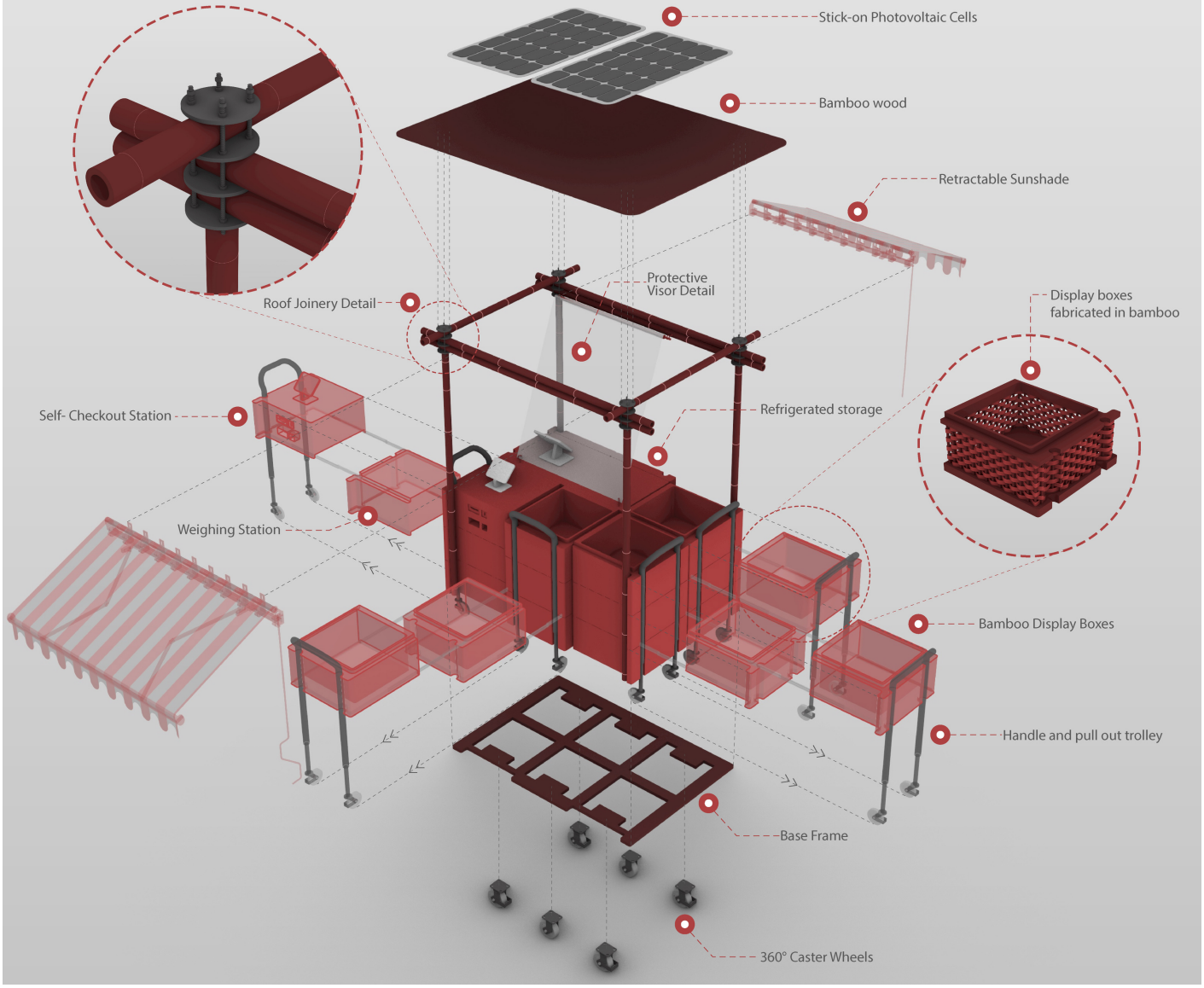
MuseLAB has paid importance to solving the issues at hand – the broken transportation system of grocery items and unemployment of the vendors – rather than creating something radical and eye-grabbing. Consciously prioritizing problem-solving and approachability over the urge to create something atypical and intimidating is as uncommon as it is appreciation-worthy.

Constituting of basic materials like metal, bamboo, and fabric – the module can be recreated in any part of the world and not just in countries where it is already prevalent. Amidst a pandemic, the transportation of fundamental survival goods is crucial, and the Market on Wheels provides an easy and hassle-free method

Vendors can travel or even set up their stall at a spot that's not as crowded as centralized market places. It is these markets that have been hotspots of the virus in the past. However, the module's use is not limited to just pandemic situations. Following the pandemic the cart can be set up in centralized markets too. The on-board refrigerator, easy maintenance, and segregated sections make it a compelling investment for the vendor. Vendors feeling the pressure due to competitive prices could move their carts to another area with ease and earn a more profitable price for their produce.

The cart addresses other pressing global problems too. The solar panels on the roof-top and features such as awnings to make it more self-sufficient. The roof and pull-outs/drawers are of bamboo strips instead of plastic. It's sustainable and makes the storage space breathable, keeping the produce fresh longer. This entire system of goods distribution is both -efficient and resilient; it makes way for small-time vendors rather than fueling flourishing big-brand groceries. The storage space arrangement is so elemental that it could also be used for other items, like medical goods, too.

The Market on Wheels employs off the shelf details or joinery to allow ease of assembly. It also incorporates bamboo storage boxes in a traditional weaving method created by local artisans. The unit is an amalgamation of machine-based and hand-crafted parts.



Looking back at the design, it could be more technology-driven – it could be a driverless automobile, it could be application-driven – but would that provide a livelihood to the already impoverished? MuseLAB could easily design something more aesthetically shocking – but would that aid the pandemic situation in any manner? For designers of the current times, aesthetics play a critical role; however, MuseLAB has tastefully chosen to redesign an existing concept to meet needs while avoiding unnecessary embellishments.

The organization firmly believes in designing for the people. They are dedicated to research through their branched venture – MuseX, and believe in team-work. They love designing for social causes. Although very fulfilling conscious-wise, it hardly fills pockets. In talks with other organizations to help them realize this design, the team is restless but not in a rush. Connections should be good quality not quantity is what they feel. Seeking to strike the right chord with the right audience, they are seeking investors and passionate believers for the cause. MuseLAB's story is evidence to the truth that a successful design does not mean the end of a designer's role, but just the second step towards a better future.

Reimagining Public Transport In The Post-Covid Era

By Pragya Sharma

Since 2014, the transportation sector has been undergoing massive transformation at the policy level. The need for better infrastructure and alternative transport options has been well recognized by the world. And, we have begun to see its stir in India as well. As the country is eyeing rapid development through Smart Cities and AMRUT Cities, there is a growing need for better transportation. The launching of the SATAT scheme (Sustainable Alternative Towards Affordable Transportation) in 2018 is one such example of mobility-focused planning in India. It is the Government's initiative to encourage the setting up of Compressed Biogas production plants. Its central idea is to make Compressed Biogas available for use in automobiles.

Transportation Concerns In The Pre-Covid Times

Despite the above-mentioned initiatives, there have been long-prevailing issues in the country's transport regime. In 2019 alone, India saw 1,51,000 fatalities in road accidents. This alarming figure has been increasing every year by an average of 43%. The increasing cost of public transport is a concern for the country's poor. Travelling outstation has become expensive considering the highly-priced tickets. Alongside, the unavailability of public transport in remote areas is a pressing issue. People have to walk long distances to access public transport vehicles.

Walkability concerns for pedestrian traffic in urban sprawls are massive. There isn't enough room for both vehicles and people to run through the road. More so, India is topping the charts for vehicle-induced pollution. In urban metropolises such as Delhi, the air quality is declining to uninhabitable levels. Supporting a multi-modal transport system and promoting transit-oriented development with technology is becoming a high-priority business. Using digital technology will help speed up the public transportation sector.

How Can Public Transport Be Redefined

Infrastructure planning of the future must provide for an integrated approach towards pedestrian and vehicular traffic. For instance, the "Begin Again" Mission by Maharashtra Government encourages its citizens to take up cycling as a form of physical exercise. If pushed the right way, this could further accelerate into an initiative that urges people to extensively use a cycle for a commute.

Based on such new-age policies and their applications, the future of public transport in India can shape in the following manner:

Promoting Walking and Cycling

Ever since the covid outbreak, people have dropped the habit of using vehicles for traveling walkable distances. As the population is getting more concerned about their health, walking is the simplest form of exercise they resort to. Even cycling is gaining popularity amongst the millennials. Thus, we could see a change at the macro-level plan of road networks in the country. The roads will be inclusive of designated sidewalks and cycling lanes to bifurcate the traffic. This will also immensely help in curbing road accidents. Building a road infrastructure that better connects the remote places will also help the natives.

> Infrastructure planning of the future must provide for an integrated approach towards pedestrian and vehicular traffic. For instance, the "Begin Again" Mission by Maharashtra Government encourages its citizens to take up cycling as a form of physical exercise. If pushed the right way, this could further accelerate into an initiative that urges people to extensively use a cycle for a commute.

Sustainable Transportation

Switching gears to sustainable resources are going to be the prime focus. Providing affordable E-vehicle solutions will encourage people to buy them. The Central Government's FAME II scheme provides for a subsidy to bring down the cost difference between EVs and ICE vehicles. Promoting sustainability will also help to bring down the pollution levels in the country. Making use of renewable fuels will help in decarbonizing transport. The idea of a net-zero carbon footprint will be propagated. By creating a green label standard for public vehicles, India can restore its people's interest in public transport.

Technology-Driven Commute

The transport sector will see a shift to the digital medium for clerical activities. Leveraging technologies such as IoT, AI, Cloud, and Data Analytics will improve operational efficiency. Ticket bookings, payments, receipts, and challans will be generated virtually. The systems will be upgraded to handle the webpage traffic. Making the tedious process simpler and direct would be the approach for the way forward. Mobile applications to generate travel QR codes would also be developed. This will make way for a secluded yet connected world that ensures public security. The lack of human contact will also ensure resilience.

Planning for Mass Rapid Transport System

Every metropolitan needs to have a strong Mass Rapid Transport System (MRTS). It is essentially a well-connected transport system that connects the city and its suburbs through a network of rail and road. The Metro-1 Versova-Andheri-Ghatkopar (VAG) corridor in Mumbai is a solid example of such connectivity. Even Smart Cities are vouching for this because of the great connectivity it offers. Designing the MRTS integrated with technology will ensure that the system is being designed for future needs.

Elevating India's public transport is the need of the hour. Having an intelligent system in place will ensure seamless and speedy travel. The Covid-19 outbreak has opened up a new facet of development for the transportation industry. It is making the policymakers and designers think beyond the regular and create something sustainable. Thus, the future certainly holds a promising face of public transport in the post-covid era.

Edifice Consultants Pvt Ltd.

Gauri Gore

Post-pandemic Multifunctional Homes

By Shriya Goyal

Founded on the principles of collaborative design, Edifice Consultants has made a concerted effort to improve its immediate surroundings and contribute to the well-being of its occupants and environs. As we move through the pandemic and live with the uncertainty of another wave hitting us and keeping us homebound, Edifice Consultants have come up with the concept of multifunctional homes to allow different typologies to function and operate independently under a single roof. Gauri Gore, the Project head applies her design philosophy and prioritizes user experience and comfort, spatial quality, and contextual sensitivity to the project.

The instability caused by the pandemic has ensured people spend more time in their homes. In the present scenario the dwellings need to accommodate different typologies of spaces such as commercial, institutional and recreational within itself apart from catering to the conventional requirements of a home. Hybrid work strategies have given rise to the concept of comfortable yet functional homes that play the versatile role of a small office space, grocery, laundry and a day care. This mixed-use typology can take centre stage rather than standalone residential complexes to allow for the different functions to operate independently yet intimately.

How can these multifunctional elements be incorporated in existing homes and spaces?

Multifunctional homes allow flexibility to the end users without much effort. The design approach incorporates adjustability in multiple furniture layouts for the same space or transformation of furniture pieces to incorporate distinct functions. It may be achieved by the use of movable partition walls between rooms to transform their uses and functions. There are two options of key homes that enable 1-2 rooms to be accessible separately and function as an office or studio space and also be merged with the house or rented out separately. There is also a trend where adjacent apartments in a building are merged and designed to become one large apartment (termed as Jodi flats in some regions) that allows duplicate spaces such as kitchens to be converted into multi-use rooms.

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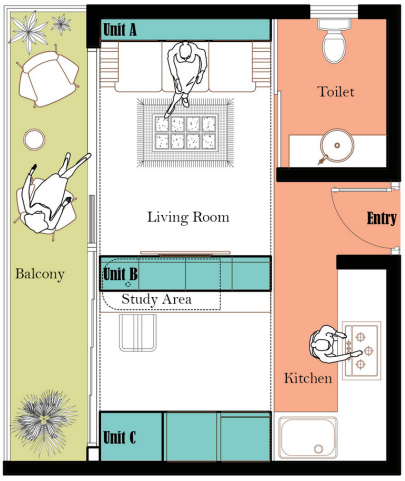
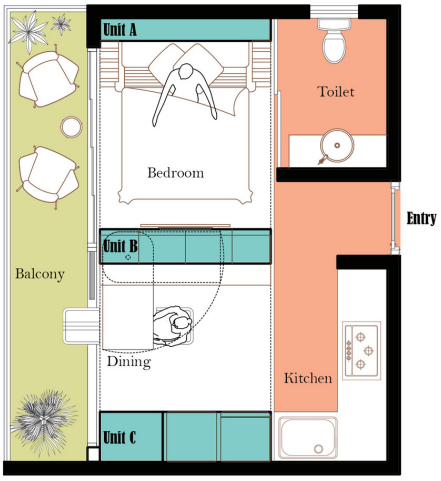
Multifuntional Homes
Edifice Consultants Pvt. Ltd.



Movable Units -
Unit A - Sofa + Bed
Unit B - Wardrobe + TV Unit + Study table + Dining Table
Unit C - Refrigerator + Washing Machine + Storage



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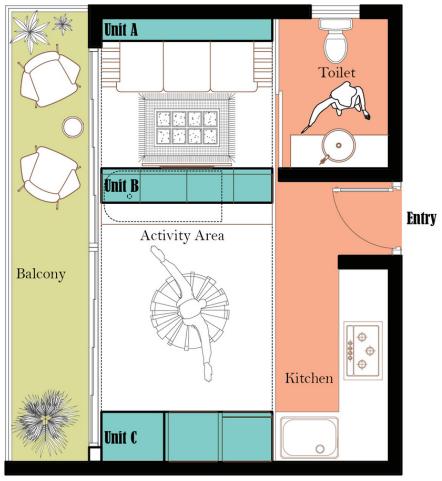

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Unit A - Sofa + Bed
Unit B - Wardrobe + TV Unit + Study table + Dining Table
Unit C - Refrigerator + Washing Machine + Storage

How will the design approach help in blurring boundaries between indoors and outdoors to boost sunlight and ventilation inside the house?

Biophilia and access to open spaces is a favourable characteristic for any typology of building. Balcony, terrace, and bay window spaces in homes have seen a high demand through the pandemic due to people being cooped up indoors. To maximise the ingress of light and visual connection with the outdoors, the trend today exhibits floor height windows. Balconies and terraces allow multifunctional uses like garden, breakfast zone, yoga and meditation space, workspaces and many more, while bay windows serve as ideal reading nooks, nap spaces, and storage spaces based on its scale and detailing.

How will this trend prove to be beneficial after offices commence day-long? Will these furniture pieces become a hindrance to open plan concepts?

Work from home became a compulsion across industries due to the pandemic, however this trend has been fairly prevalent in the IT industry for some time. Now being aware of the benefits of providing the flexibility to work from home, the general consensus in most industries seems to follow the hybrid work model. This signifies that people will welcome the possibilities of a multifunctional home when needed. In terms of furniture, since these convertible pieces are expected to serve multiple purposes, they will not become a hindrance but may not be used extensively as often.

What is the market reaction to this typology? Are there any changes needed for a wider acceptance among people?

On a small-scale, the trend for flexible homes has been explored pre-pandemic too. The developers were still gauging the market reaction to this typology and worked on providing customisation to the homeowners.

However, post-pandemic multifunctional homes have become a necessity to a certain extent and hence the newer products launched will see flexibility as a part of the home layouts. In large residential complexes, the products offer a variety of functions to the buyers in terms of number of bedrooms, size of apartments, views, different apartment layouts, etc. Hence the multifunctional homes are identified as a part of the entire apartment available based on the market inclination. At Edifice consultants, we gauge the developer market and it's maturing over the years with more stringent bye laws, along with the implementation of agencies like RERA, streamlining the project course, also providing incentives to large developers and transparency to home buyers. In terms of design there are a lot of standardisations being followed by large developers today, ensuring timely deliveries and quality products. However, on the downside it sometimes puts the project context in the back seat with only the masterplan and landscape designs corresponding to climatic and cultural context. As we design projects across the country, we are incorporating these new trends of multifunctional and flexible homes and exploring some of the above-mentioned apartment layouts in our upcoming projects.

GAURI GORE
Project Head – Developer Spaces

Gauri joined Edifice Consultants in 2012, after obtaining her Master's degree. Her current role is that of a Project Head. Gauri's design philosophy prioritizes user experience & comfort, and spatial quality. Her designs are characterized by sensitivity to context and sustainability, the latter being one of her core strengths as exhibited by her recent projects being endorsed with the highest LEED certifications.

Gauri is also a Regional Growth Associate, responsible for building business opportunities for Edifice Bengaluru. She also mentors the young designers in the Bangalore studio and is responsible for the design and delivery of developer projects in south India. She also participates in research work at Edifice, and looks out for competitions and opportunities to participate in order to upgrade her knowledge. Gauri also works extensively on community outreach initiatives undertaken by Edifice Consultants. She is very passionate about music, travel and reading.

Earthitects

George E. Ramapuram

Reverse Urbanization

George E. Ramapuram, Managing Director and Principal Architect, Earthitects, explains, "What is 'Life in its Abundance', Reverse Urbanization and how does it lead to a Sustainable lifestyle?"

Surrounded by nature, from his earliest years, George E. Ramapuram's core belief has been rooted firmly within him – "God is the greatest Architect and Nature is the greatest design to ever exist." This core belief is ingrained in George and consequently every member of Earthitects, which has resulted in harnessing Nature to "facilitate 'life' in its abundance by enabling the fullest enjoyment of God's creations. "This inbuilt sensitivity of our signature design style finds expression in every Earthitects' creation. We, at Earthitects, believe that the 'future of living' is a concept we call Reverse Urbanization," says the visionary behind the concept, Mr. George E. Ramapuram.

The Beginning – Core Belief and Design Approach

Being passionate about pioneering, creating, and constantly innovating a positive change in the way we as a world "live", led us on the quest to create a concept of 'living' which would allow us as a species and our world to experience "living" to the fullest.

In experiencing "life in its abundance", the outcome is an ecologically conscious design that works closely with the environment with an uncompromising need for the perfectly balanced relationship between man, the built space and the natural environment.

This inbuilt sensitivity of our signature design style finds expression in every Earthitects' creation, including our private residences at Wayanad and Coorg and our upcoming Private Residences planned in tranquil destinations.

"This inbuilt sensitivity of our signature design style finds expression in every Earthitects' creation. We, at Earthitects, believe that the 'future of living' is a concept we call Reverse Urbanization," says the visionary behind the concept, Mr. George E. Ramapuram.

The Existing "Living" Experience

In most urban settings today, the very basics of "living", such as clean air, adequate water, waking up to birdsong, the joy of being able to taste a fruit fresh off the tree, or even the ability to experience a quiet moment, have started to become a scarcity.

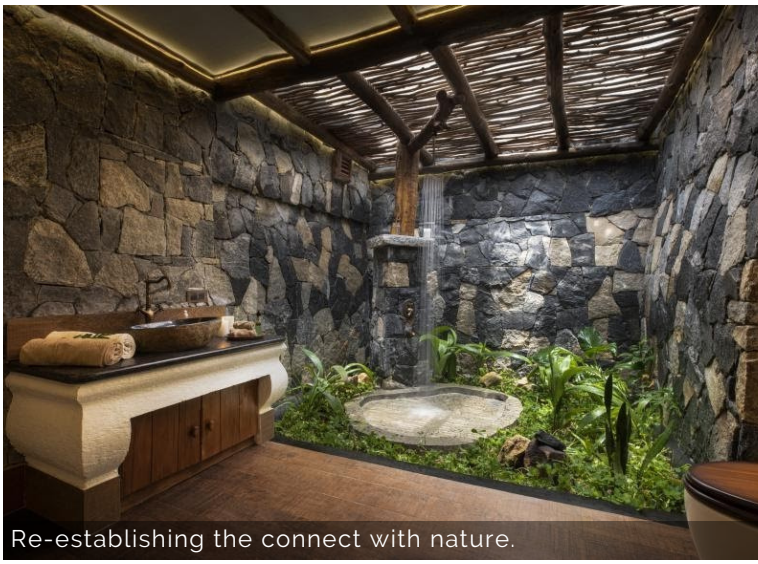
Even the birds and the bees have started to leave us. Are they convinced, too, that our current urban-centric lifestyle is not "living" to the fullest? The natural replenishing capacity of our Earth has been rendered ineffective in most of the current urban settings that we inhabit, due to their high densities of population.

Although, initially, our world's modern, urban-centric lifestyles were a result of the creation of job opportunities in these areas, and consequently the creation of a better lifestyle or "living experience" for oneself. Slowly but steadily, this very same urban-centric lifestyle has led most of us humans to have "living experiences" that are substandard not only for us but also for the natural world around us.

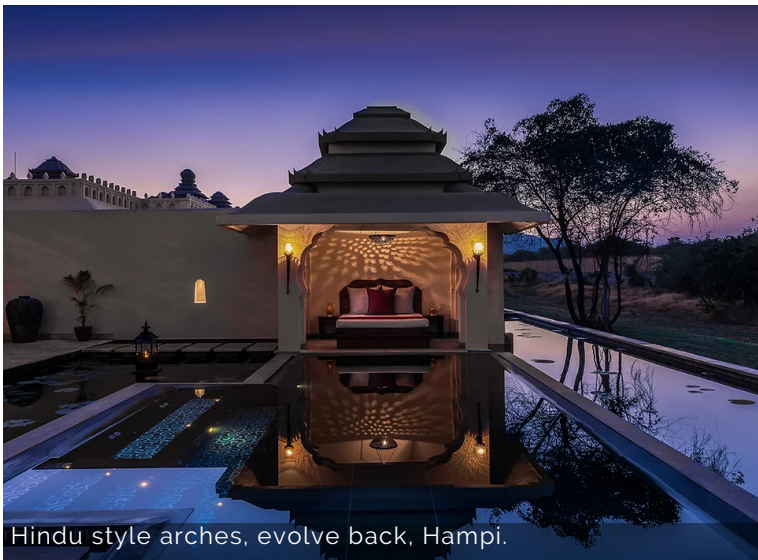
The Need of the Hour

There is now, in our world, more than ever, a need for balance, and a longing for a man to reconnect with nature. With the advent of Ultra High-speed Internet, the ability to now work from anywhere in the world and the abundant availability of conveniences for everyday living in remote locations as well, we, humans.


Stone Lodges, an inspiration from of Mountain Lodges.


Re-establishing the connect with nature.


Essence of their tradition, evolve back, Kabini.


Hindu style arches, evolve back, Hampi.

A Cursory Glance!

Biltrax enables sales, marketing and business development teams of construction material manufacturers, distributors, turnkey and trade contractors, and project management consultants with growth opportunities. Biltrax Media is covering various construction technology innovations happening across the world and their application to Indian scenario.

This issue focuses on sustainability and the need for sustainable materials in the construction industry. The issue features thought leaders of the construction and architecture fraternity that have consistently focused on sustainability, highlighting their notable projects, design principles and future trajectories. The project and profile articles along with the client features in this collection embodies conversations with influential names in the Indian construction and design sectors and some remarkable projects of India by globally known Indian Architects that celebrate sustainable design in it's true sense.

Meet the Team!

Ar. Neha Tambe is a passionate and driven conservation architect and urban planner focused on urban conservation. With a unique balance of work experience both in the fields of conservation and urban planning, she brings together an interesting set of skills that are highly relevant and yet hard to find. Currently she heads the Marketing, Communications and PR at Biltrax Construction Data and is the Associate Editor at Biltrax Media.

Ar. Sakshi Agrawal is an architect hovering along the edge of multiple design disciplines like interior design, architecture, design writing, and research and interlinking them. Architecture to her is a medium to shift dreams to reality. With an architect's eye and a writer's mind, she aspires to pen down the narrative every structure beholds.

Ar. Keya Desai is an architect with a curious soul who likes to observe patterns in nature and incorporate them in design. She likes to work on exploratory yet grounded approaches and understands architecture from the perspective of human values and sensitivity. She believes that if drawings speak more, words articulate the most.

Ar. Sarvesh Joshi, with his love and passion for the craft of designing, is also a keen knowledge seeker. Sarvesh likes to incorporate the three basic principles of journalism, truth, accuracy and impartiality, in his writing, giving the reader a first-hand experience of the space. Imaginative mind being his strength, he believes in grounding his thoughts with the rational way of thinking.

The guest authors include **Ar. Shriya Goyal, Ar. Pragya Sharma** and **Ar. Twinkle Tolani.**

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Data
Insights
Analytics

Biltrax Construction Data is tracking 17,000+ similar projects on their technology platform.

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