



1

Building a safe hospital

Architects can only make provisions to make building safe at the time of hand over, but the operation team has to maintain those provisions

BY MANU MALHOTRA

The National Health Policy, 2017 that India has recently adopted offers significant opportunities for the private sector. The magnitude of these opportunities can be understood by considering a few facts from the 2017 policy.

- Increasing hospital beds to 2 per 1,000 people from 1.3.
- Increased public spending on healthcare.
- Significant increase in health expenses.
- Enhanced fiscal capacity to fuel the growth foreseen.

And more importantly, the policy states: "Align the growth of private healthcare

sector with public health goals: Influence the operation and growth of the private healthcare sector and medical technologies to ensure alignment with public health goals. Enable private sector contribution to make healthcare systems more effective, efficient, rational, safe, affordable and ethical. Strategic purchasing by the Government to fill critical gaps in public health facilities would create a demand for private healthcare sector, in alignment with the public health goals."

The government is claiming that it will make 'strategic purchasing' and involve

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private healthcare sector to assist it achieve the goals spelt out in the 2017 health policy. With such growth potential, there are important questions:

1. How do we build hospitals that quickly?
2. How do we build hospitals that are sustainable (financially and environment friendly)?
3. How do we build hospitals that are safe (limiting ourselves to safe infrastructure/building as per the latest NBC)?

The above questions are not in any particular order of importance but are necessarily a part of principles that should guide all of us as owners, operators, planners and architects.

Creating a healing environment

It is evident that in addition to adding new hospitals of approx 100-200 beds in small urban areas and adding medium sized hospitals of around 300-500 beds at district levels, our healthcare infrastructure will also upgrade the existing Government hospitals. The governments at centre and state will also make provisions to allow private partnerships in 'existing hospitals' by leasing out some departments (that are capital intensive) or complete hospital to private healthcare providers for a certain period of time (20-30 years). PPP is definitely one aspect every stakeholder is looking at.

To bring about this change quickly and participate in such opportunities, we stakeholders will need a change in our approach. This when translated into tangible action would mean that we all would need to ensure that we get the fundamental concepts correct and understand the framework within which one would have to perform. These 'fundamental concepts' will require different inputs from each stakeholder. And it is foreseen that the healthcare architect (with proven experience of understanding the capital expenditure related decision, operation, maintenance and retrofitting of building) would be the ideal asset to any owner/decision maker. Such an architect could



integrate the efforts of all stakeholders and could play a key role as a coordinator and not just be a designer of a pretty looking building. This approach could form a trend that could have the capability to bring about the transformation our country needs.

Reducing construction time

A reduced construction time is every owners' dream expectations, and that merits attention especially that of the architect. The cost of capital today is so high that savings in time can result in significant offset of financial burden on owner. This could in turn help hospital owners keep his treatment costs low and simultaneously reduce gestation period. As a thought leader, I always tell my clients it's not important to be the 'first' one to do it, what's important is to do it 'faster' and 'do it right the first time'. Such expectations have started forming a steady trend in corporate healthcare projects. Owners are demanding a reduced timeline in construction and demand from architects on 'how the architects plan to achieve it' at the interview stage.

To support such trend, architectural professionals have started changing the way the deliverables are structured. We treat our deliverables as 'instruments of archi-

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3

tectural service', we use them to convey our solution to the owners and contractors. Two of the important instruments are 'the drawings' and 'the construction contracts'. We deliver our drawings in very defined stages, and each stage has a formal start and a formal end with 'sign offs' as milestones that are linked to our invoicing system. This creates a defined demarcation that benefits the owners and us. This allows the owners to have a tangible means to track the progress made and also understand his contractual liabilities.

Similarly, the other deliverable are the 'contract documents' and the way we structure our contracts in 'manageable/ flexible sized portions'. These contracts are tightly woven with the way we make our drawings. Concepts such as 'Owner Furnished Contractor Installed', 'Owner Furnished Owner Installed', 'Contractor Furnished Contractor Installed' allow a clear demarcation and flexibility in choosing what material is to be supplied and what material the contractor will be expected to provide. This significantly assists in reducing construction time by allowing manageable control.

In addition, a trend has emerged wherein more preference was given to 'commercial off the shelf material' and 'power tools' with our contracts. Even though the initial cost

of such material or cost of 'power tools' may ostensibly appear to be expensive but the time advantage they offers can easily eclipse the high initial cost. Simple substitutions of on-site/bulk material/products such as ready mix concrete, dry mix plaster, precut and bent rebars for reinforcement, dry walls can offer great saving in time and cost, yet maintain high quality and high uniformity expected in any construction.

Sustainable buildings

Responsibility towards environment is our biggest responsibility. Buildings account for 40% of global energy consumption. Hospitals are service intensive and their continuous operation 24x7 cause them to consume a lot of energy and result in expenses that are very hard to sustain. The current trend expects the hospital to be environmentally sustainable. Apart from the environmentally sensitive planning that is mandatorily required, there is another aspect that is fast becoming a trend due to the rapid increasing operating cost.

The departmental planning that allows the engineering to be shared/switched off during period of low occupancies can result in significant saving in operating cost. Segregation of areas related to hours of usage (12 hours operation v/s 24 hours operations v/s

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dependent on occupancies). A simulation of operating cost at the initial stages of the project can predict and identify the problems at the inception stage and result in a sustainable building.

Safe buildings

Hospitals have a special position in our society, they have been accorded a status that requires an higher importance factor in structural design. However, apart from the structural safety, fire safety remains an area of intense concerns especially in light of fire incidents in the recent past. The fire in various hospitals in India established the challenges of evacuation and storage practices related to hazardous materials. On the other hand, the Grenfell Tower fire in London made us all aware of the risk of fire due to improper choice of material in seemingly harmless external cladding. The London fire also established that dangers involved in 'design and build contracts'. Many a times, the primary focus shifts from 'safe building' to 'cheap building'.

Very often, the provisions of the Part IV (Fire & Life Safety) of the National Building Code are seen as inhibiting or limiting. However if the essence of the provisions is understood, then they can result in a paradigm shift in our design approach. The NBC concepts of Fire Prevention, Life Safety, & Fire Protection are intended not only for architects but also for the owners and operators. Even though the owners/operators rely on the expertise of architects and MEP consultants, after the hospital becomes operational, the responsibility changes hand and, with passage of time, the original provisions are forgotten and accidents are caused. It's important to understand the importance of this and engage with architects and consultants even after the completion as they make changes during the operations or renovations (over the lifespan of the project).

We stakeholders realise that neither 'absolute safety from fire is not attainable in reality' nor 'panic in a building on fire is



avoidable'. But we all can plan to ensure that we make all provisions such that it causes a delay in 'the onset of panic' and reassurance and guidance is given to occupants in form of 'announcements and annunciations'. Architects can only make provisions to make building safe at the time of hand over, but the operation team has to maintain and operate those provisions and ensure that :

- Occupants move towards exits that are easily seen within a reasonable distance;
- Occupants movement is unobstructed and there is no undue congestion in path of travel;
- Smoke/ fumes are not allowed to enter the passage that evacuees are supposed to use.

The three main questions that are put forth merit the attention of all stakeholders and must be addressed in the project report of each hospital. This will ensure that we have a strong and reliable infrastructure and the operators of such hospital will have ample time to focus on their main goal of 'providing healthcare' and the administrators will be able to adequately facilitate the doctors and care providers. 



Ar. Manu Malhotra is director with RSMS Architects.

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