

IDEAS AND SUGGESTIONS FOR SPEEDY CONSTRUCTION OF LARGE HOSPITALS AND OTHER HEALTHCARE CENTRES IN INDIA CONSIDERING THE ON GOING PANDEMIC AND THE FUTURE – USING PRECAST CONCRETE TECHNOLOGY

- A RESEARCH PAPER PROMOTING HOLISTIC GROWTH IN THE HEALTHCARE AND CONSTRUCTION SECTOR IN INDIA.

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ABSTRACT: THIS PAPER FOCUSES ON HOW WE SHOULD EFFECTIVELY UTILISE THE TIME TESTED AND GLOBALLY ACCEPTED METHOD OF PRECAST CONCRETE CONSTRUCTION FOR THE MUCH NEEDED FAST GROWTH OF HOSPITAL INFRASTRUCTURE AND OTHER HEALTHCARE FACILITIES. IT WILL BE HIGHLY IMPERATIVE THAT INDIA BUILDS MORE MEDICAL FACILITIES INCLUDING LARGE AND SMALL PUBLIC / GOVT. HOSPITALS, PRIMARY AND SECONDARY HEALTH CARE FACILITIES IN A VERY FAST & TIMELY MANNER. THIS NEEDS GOVERNMENT INTERVENTION AND SUPPORT OF THE PRIVATE SECTOR IN TERMS OF LAND, BUILDINGS, IMPORTING MACHINERY, AND TRAINING PERSONNEL IN MANUFACTURING AND ERECTION OF THE BUILDINGS.

Items that are discussed more specifically are as under:

- Leveraging current /existing development and fresh investments in the form of manufacturing infrastructure to kick start further hospital construction on an all India basis.
- Leveraging infrastructure growth with healthcare mechanism
- Creating hubs for manufacturing excellence at strategic locations.
- The paper takes the liberty of proposing multiple but closely related issues as listed above which should be possibly considered by the Government for further improvement and also link fiscal incentives for speedy implementation of the same.
- Creating set of standardised hospitals whose plans and designs are pre-approved by CPWD and manufacturers to ramp up designs accordingly
- Fiscal benefits/ waiver of import duties on Precast machinery to be imported for manufacturing of precast components

KEYWORDS

India, Precast, Precast concrete panels, Prefab, factory made buildings, healthcare, hospitals, development, medical infrastructure, hospitals, Income Tax, medical, Covid-19

INTRODUCTION

Precast concrete construction is a time tested and well accepted technology throughout the world. In most developed countries a large proportion of multi-storied buildings are made out of steel or of precast components or a mix of both. Precast concrete is a construction product produced by casting concrete in a reusable mould or "form" which is then cured in a controlled environment, transported to the construction site and lifted and fitted into place. In contrast, cast-in-situ/ place concrete is poured into site-specific forms and cured on site.

Precast technology is used for foundations, columns, beams, slabs and exterior and interior walls. By producing precast concrete in a controlled environment (typically referred to as a precast plant), the precast concrete is afforded the opportunity to properly cured and be closely monitored by plant employees for better quality. Using a precast concrete system offers many potential advantages over onsite casting. Production of precast concrete units is always done in factories or in flat/levelled ground, and stored in factory spaces/ yards using heavy lifting equipment such as gantries. There is greater control over material quality and workmanship in a precast plant compared to a construction site. The grades of concrete used in Precast Concrete can be / are higher than conventional in-situ concrete due to factory environment and this is an important quality aspect of this type of construction.

The forms used in a precast plant can be reused hundreds times before they have to be replaced, often making it cheaper than onsite casting when looking at the cost per unit of formwork. Standard precast buildings planned well in advance could easily store a huge quantum of the required components (Columns, beams, slabs, even staircases, wall panels etc.) for just in time deliveries. When there is a huge standardisation in multiple buildings planned, the costs get lower and deliveries improve. The investments in setting up a precast unit are high, but with guaranteed business such investments pay off fast and the cost of construction gets reduced and most importantly fast deliveries of quality components is assured to take care of issues in the larger interest of the state/ nation.

1.0 Some important statistics related to India to consider scaling up Precast concrete production for hospital construction.

India is the second most populous country in the world, with a population of 135 crore (1.35 billion) people. In 2019, about 26.62 percent of the Indian population was in the 0-14 year category, 67 percent into the 15-64 age group and 6.38 percent were over 65 years of age. India is one of the largest countries in the world and its population is constantly increasing. It is the world's sixth-largest economy by nominal GDP and the third-largest by purchasing power parity (PPP). According to the International Monetary Fund (IMF), on a per capita income basis, India ranked 142nd by GDP (nominal) and 124th by GDP (PPP) in 2020. To give an idea about India's ability in the world of pharmaceuticals, India is the world's largest manufacturer of generic drugs, and its pharmaceutical sector fulfils over 50% of the global demand for vaccines.

2.0. Movement of population into cities, a global and Indian phenomenon and the need to scale up hospital infrastructure fast

By 2050, the global population is projected to increase to around 9.8 billion. It's estimated that more than twice as many people in the world will be living in urban (6.7 billion) than in rural settings (3.1 billion).i.e. 2/3 rd of the world will be living in cities. The same is true for India. This movement of people to cities can trigger a health crisis in time to come, especially during any pandemic.

Have a look at the current scenario in India:

- 350 million (35 crore) Indians will live in the cities by 2030
- 700 million (70 crore) Indians will live in the cities by 2050 (2 times the current entire current population of the USA)
- To accommodate these people India needs 100 to 200 new cities / towns/ satellite towns
- In India farming accounts for 58% of India's population, but accounts for only 14% of its GDP.
- To survive, Indian needs to grow at 8% but agriculture can only sustain growth at 3%. It is inevitable that millions of Indians will move from villages to the cities for employment, daily wages and lower level jobs.
- When we decided to create 100 Smart Cities, urbanisation was considered as an important and unavoidable necessity and for which smart cities were thought of as a solution.

All the above scenarios make health care facilities of prime importance to be done in a mechanised, specially vertical construction being the need of the hour as it takes care of space available and congestion in cities.

3.0 Allotment of funds for Health Care through budgets in India

The Indian government budget 2021 increased the spending on healthcare by 137%, only due to the sudden impact of Corona/ Covid-19 pandemic. The increased spends on the healthcare sector through PM's Atmanirbhar Swasth Bharat Yojana will improve infrastructure, and is in line with industry expectations of 2.5%-3% spend of the GDP, and also the GDP National Health Policy 2017 target of 2.5% by 2025. The past spends were to the extent of just about 1 percent or a little more. In the Union Budget 2021, investment in health infrastructure expanded 2.37x, or 137% YoY; the total health sector allocation for FY22 stood at Rs. 223,846 crore (US\$ 30.70 billion).

The government announced An allocation of Pradhan Mantri Aatma Nirbhar Swasth Bharat Yojana with an outlay of Rs 64,180 crore over next six years to ramp up primary, secondary and tertiary level care institutions in the health system, existing national institutions, create new institutions, to cater to detection and cure of new and emerging diseases. This will be in addition to the National Health Mission.

Apart from the launch of Aatmanirbhar Swastha Bharat Yojana, the Finance Minister also proposed setting up 17,000 rural and 11,000 urban health and wellness centers while presenting the budget. In the Union Budget 2021, the Ministry of AYUSH was allocated Rs. 2,970 crore (US\$ 407.84 million), up from Rs. 2,122 crore (US\$ 291.39 million).

It is to be noted that overall, India's public health expenditure (sum of central and state spending) has remained between 1.2% to 1.6% of GDP between 2008-09 and 2019-20. This expenditure is relatively very low as compared to other countries such as China (3.2%), USA (8.5%), and Germany (9.4%).

4.0 The consideration of how to get the delivery of such an extensive hospital construction organised:

Despite the above schemes announced the main question remains as to how we can urgently implement action to create new and adequate major/ minor hospitals and primary health care centres and all the new initiatives. The question remains of implementation and execution and delivery, something that the country has always lacked in, except some niche area or projects. What is needed is action to deliver and not just budgetary allocation and planning. The question of actual implementation of funds into action is yet another issue, just like the planning of a large project is one subject matter and the actual delivery of a project is yet another thing. Implementing and supporting new methods / or those not used extensively is the need of the hour.

5.0 WHY PRECAST CONSTRUCTION WAS NOT POPULAR OR DID NOT TAKE OFF IN INDIA.

Precast technology delivers buildings in a very fast and timely manner and that is the main benefit. The other benefit is cost savings in large scale projects and repetitive buildings / units. All these years builders in India did not have any serious restrictions on completing projects in time and delayed deliveries would not attract penalties. However with the onset of RERA (Real Estate Regulation Act) provisions, timely deliveries could change the definition.

5.1 INDIA'S EXPERIENCE IN PRECAST TECHNOLOGY

Though the volume of Precast construction in India is negligible compared to the overall construction (cast in situ), India has executed many large projects in residential and commercial construction. Indian companies in the engineering outsourcing domain for many decades have excellent experience in Precast detailing, Steel detailing, BIM and Rebar detailing (just to name a few engineering design and detailing activities). They have worked for years for large USA and Europe based contractors and consultants conforming to different U.S. and European codes. The same experience can easily translate into deliveries for India.

Prefab/precast structures need large factory spaces/ storage yards and advanced and expensive machinery , mostly all imported from the western world. India does have a few companies of large precast manufacturing plants that can assist in the process.

The well-known manufacturers of precast components and erectors/ contractors in India for large scale building projects – commercial & residential -are Precast India Infrastructures, Magicrete Precast, Teemage Precast, BCC Precast, VME Precast, BSBK, MBM Precast, Amrapali Precast, and a few others. The listed companies are some well known ones and listed only to give a broad idea of our ability in this sector. There are a few others too.

Some of the very well-known companies that have contributed to the engineering in the area of precast and other related software for engineering and modelling in the above domain are Pinnacle Infotech, Precision Precast Solutions, Neilsoft, PanGulf, Excelize, Advenser, Insteel Engineers and others . Again, the listed companies are some well-known ones and only to give a broad idea of our engineering, modelling and drawings ability in this sector. There are many medium and smaller sized ones too across India. Indian companies and their employees have by now mastered the software requirements and platforms of the Precast concrete business such as Revit Precast & Tekla Precast. Up-skilling of factory and site staff can also be organised by the industry internally. Currently software usage training is mainly done by private institutes across India which have flourished on line and off line. It is however important to make Precast concrete training more comprehensive in terms of engineering and software usage at the 3 year Diploma and 4 year degree level to ensure availability of professional staff.

One of the most well-known companies in the world which supplies precast concrete technology machinery is ELEMATIC, a Finnish company that is already well established in India. There are other in the world as well. The setting thus is right for Indian precast concrete industry & actual deliveries of projects to take off. Most large contracting companies are capable of delivery a precast hospital buildings in record time whether they set up captive plants or outsource the supply of the precast elements like precast beams, columns, walls, slabs etc. The investments in plant and machinery is heavy,

yet, some large projects in precast concrete in the housing sector have been implemented by setting up captive plants near the construction site. An example is the mass housing project in Naya Raipur, Chattisgarh where the construction of 40,000 residential unit is under execution under the PMAY- Pradhan Mantri Aawas Yojana. BSBK is one company that is executing the manufacturing and erection of the precast concrete buildings.

It is to be noted that there are many very well established Precast manufacturers of several products for the infrastructure industry who know how to manufacture and deliver /erect as per technical standards, items like precast/ pre-stressed girders for bridges, box culverts, precast tanks, drains, chambers, compound walls, trenches, etc. Thus the skills set of the industry is well established to deliver a lot of things. The number of companies that are however into large scale building projects are few and may not deliver large scale hospitals in quick time frames, so the need of the hour is government support to scale up the existing players and get in new ones or collaborate with existing ones and also fresh investment into this sector. Unless the industry sees a big potential in this area, a major opportunity to harness internal skills to scale up healthcare infrastructure in a big way could be lost. Policy decisions from government and mandatory tender conditions to promote this area of work is the immediate need of the hour.

6.0 Some of the supporting measures to garner investments in precast manufacturing units and support them with orders to speed up actual construction for supporting manufacturers are as under.

It is clear that manufacturing investments and the demand for the same go hand in hand for the evolvement of the industry. To ensure a win-win situation for the Government (read -"population at large"), adequate measures need to be implemented so that we see a fast growth of new and existing and new hospital facilities (reconstruction of many old hospitals is inevitable) . The measures are in larger interest of the nation and not in the interest of the Precast concrete industry only.

-MEGA HOSPITALS WITHIN 10 KMS OF NH /SH FROM A CITY IN SINGLE/ MULTIPLE DIRECTIONS TO BE BUILT BY GOVERNMENT ON ANY RELEVANT PPP FORMAT/ ON ITS OWN

-MINOR HEALTHCARE CENTRES/ HOSPITALS TO BE BUILT ON STATE HIGHWAYS / DISTRICT ROADS

-MINI HOSPITALS THAT NEED TO BE BUILT ON RURAL ROADS

-PROPOSE AN INDEPENDENT HEALTHCARE CONSTRUCTION AUTHORITY OR ONE IN ASSOCIATION WITH AN EXISTING PERFORMING BODY – SUCH AS THE NHAI- (NATIONAL HIGHWAY AUTHORITY OF INDIA, OR THE NHA –THE NATIONAL HEALTH AUTHORITY FOR QUICK AND TIMELY FACILITATION OF HOSPITAL CONSTRUCTION)

7.0 India's experience and expertise in constructing large buildings and specially hospitals in record time

It is to be noted that the recently constructed building for the Government Erode Medical College and Hospital in Perundurai was completed in just 45 days. While the work on the 69,200 sq.ft. building commenced on May 18, it was completed on July 1, despite the pandemic situation, using precast concrete construction technology. The project was executed by Tirupur-based Teemage Builders with 156 employees on-site and another 370 at the factory by adhering to all the Covid-19 precautions. All the materials were manufactured at the factory and assembled at the construction site.

The sheer size of the building and speed at which it was built have helped the structure find a place in the Elite World Records, Asian Records Academy, India Records Academy and Tamilan Book of Records as the "largest hospital building constructed by precast concrete technology in the shortest period".

8.0 INDIA HEALTH CARE BUDGET OVER THE YEARS

8.1 Where does India stand as far as budgetary spends on healthcare is concerned over the years, have we underspent all these years

- India is among the countries having the lowest public healthcare budget in the world, with the public healthcare system in the country merely getting 1.26% of the total GDP.
- Compare this with countries like the United Kingdom, Netherlands, New Zealand, Finland and Australia where all these countries spend over 9% of their total GDP in public healthcare system, while countries like the United States spends over 16% of their GDP in public healthcare, and Japan, Canada, France, Germany and Switzerland spend about 10% of their total GDP on public healthcare.

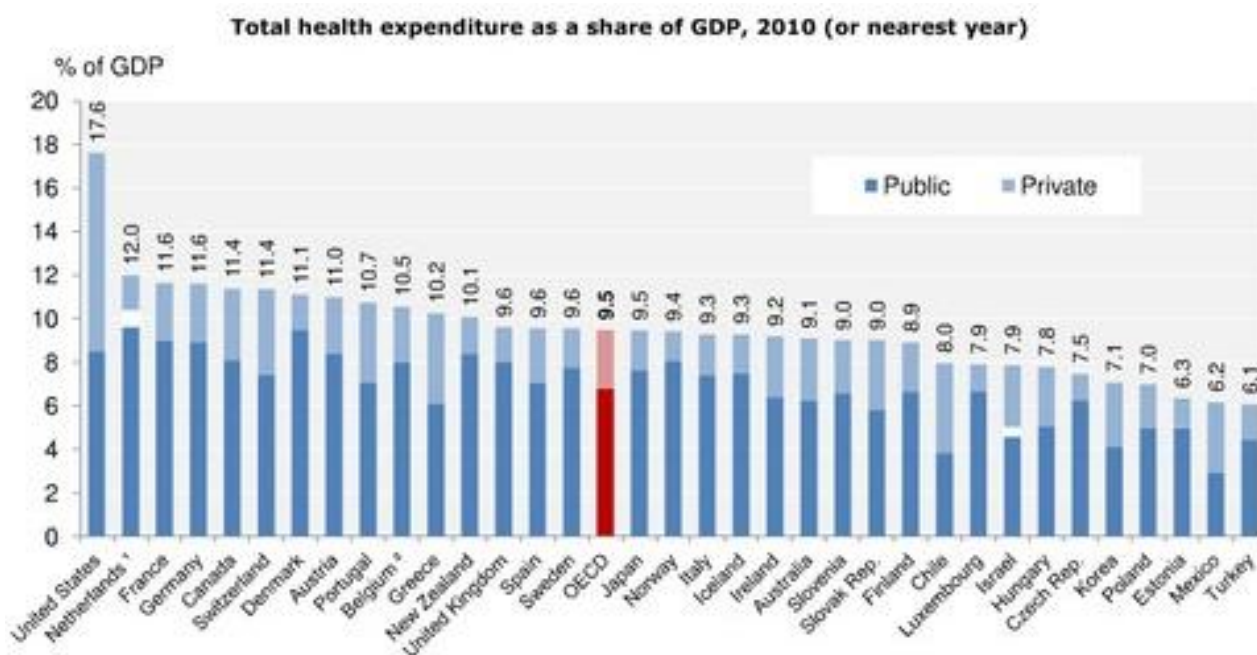
- Even some of the developing countries of the world have more contribution towards the public healthcare system with regards to their GDP compared to India. For example, Brazil has a total budget of over 8% of its total GDP towards public healthcare expenditure. Even neighbouring countries like Bangladesh and Pakistan have over 3% of their GDP going towards public healthcare system.

(All values in INR Crore) Typical conversion factor as of May 2021 is USD 1 = INR 73

The emphasis of this chart is on depicting percentage spends of total.

Year	Allocation for Health (INR crores)	Percentage share of the total budget %
2014-15	33121.42	1.8
2015-16	30626.39	1.7
2016-17	37671.3	1.9
2017-18	51550.85	2.4
2018-19	52800	2.1
2019-20	62398	2.2
2020-21	69000	2.0
2021-22	223846 (post Covid)	6.42(3 times of 20-21)

8.2 Comparison between countries as regards health cost v/s GDP



Just for comparison sake, and to get an idea of how less India spends, the following information could be relevant. The U.S. is a very rich country, but even so, it devotes far more of its economy — 17.6 percent of GDP in 2010 — to health than any other country. The Netherlands is the next highest, at 12 percent of GDP, and the average among OECD countries was almost half that of the U.S., at 9.5 percent of its GDP.

Even Mexico, Turkey & Hungary spend more on health care in terms of GDP than India. Where does the momentum need to be in health care movement in India? It will be highly imperative that India builds more medical facilities including large and small public / govt. hospitals, primary and secondary health care facilities. This needs government support in terms of land, buildings, medical personnel, their training colleges in the first place. The civil infrastructure for health care

is highly lacking in India, and creation of this will in turn set the pace for other developments for sourcing medical equipment, facilities, hospital beds, surgical units and other related equipment. There has to be some established government body that drives the entire process of creating a medical infrastructure first.

9.0 Formation of a new body/ associating with an existing successful body to drive implementation

If the Indian budget for healthcare is going to be around even 5% hence forth of its total, you have the possibility of a spending of around INR 200,000 crores every year on healthcare. A large part of such an investment is going to be mostly green field projects in physical or civil infrastructure for hospitals. The average spend in the last 5 years of the budget on health care was approximately only INR 45,000 crores every year. How will the healthcare officials manage quickly ramping up greenfield hospitals and new health centres, or even refurbishing of hospitals on a massive scale with a newly allocated budget 3 times that they have- is a major question. Their experience needs assistance from an established government body at a national level -example: NHAI, that is adept at quickly moving projects to completion that will include land acquisition, design and construction, handover, and accessibility guarantee to millions of Indians. This massive initiative will involve dealing with hundreds of large and small contractors, consultants and hospital specialists, who need to be deftly handled in technical, commercial and project management areas. In such a situation however, conventional cast in situ R.C.C. technology will not suffice. The need is to bring in Precast technology and steel buildings as an option for speedy construction. When most things are settled in standard formats at the factory level, major and repetitive issues/ disputes are minimised for multiple projects across the nation.

Now is also the time to think and link a very fast and successful vehicle to moving forward with something that needs hand holding and assistance and ensure actual delivery of what is needed for the healthcare. To explain in layman's terms, a basic method would be to ensure hospital hubs of different types all along the highway- existing and planned within 5 to 10 kms. of any side of the toll booths created. The toll booths are normally around/ close to exits to town and cities, so the location of hospitals near the tollbooths may mean that the hospitals are close to the densely populated areas. Wherever possible infrastructure can be created and wherever plan are to be made, such an idea is to be incorporated. NHAI/ State Highway bodies / and other bodies have mastered the art of and procurement, contracts, leases and PPPs and they can fast leverage their expertise into action. Also one National body involved in the entire operation can perform faster and better with ownership of many other infrastructure assets in a big way.

10.0 Examining improvement and developments in economy due to transportation spends- allotting/ earmarking funds from highway projects into investments in healthcare infrastructure

10.1 Worldwide, highways are built to connect people and creation of jobs and boost economic development. In India it is the same, but perhaps the last two objectives are not being achieved, the way they were originally expected to.

10.2 In a research paper presented way back in the Journal of Advanced Transportation, Vol. 21, Spring 1987, based on work being performed at the University of Minnesota under contract to the Minnesota Department of Transportation; titled HIGHWAY IMPACTS ON REGIONAL EMPLOYMENT, the time-series analysis presented indicated that increases in highway expenditures do not, in general, lead to long term increases in employment levels. During the years of construction, employment levels do increase. However, this effect is only temporary and disappears when the construction ends. In conclusion, generally, changes in highway expenditures do not cause changes in total employment. Hence there have to be other methods of driving economic growth and employment to ensure investments in highways will ensure local development, and not just help move goods better and faster between two places. Hospital hubs could be one of the best methods for doing this.

10.3 Hospital Hubs- The private sector participation :One Government hospital and one private hospital:

It also observed that private capital investment tends to have larger effects on economic outcomes than public capital investment or highway investment, although the public investment can serve as a complement to the private investment. In this connection, it has become really important that we must have some practical and rational ways of measuring the economic changes that the highway or overall government investments in transport infrastructure bring in to the economy of a particular region. A solution would be to promote hospital infrastructure along all types of highways.

11.0 RECOMMENDED STAGES FOR IMPLEMENTATION

11.1 First stage (developmental stage of factory infrastructure) :

i) Exempt builders, factory owners and developers from taxes on any profits if they set up factories in designated areas far from cities, and in the earmarked zones. These zones could be near main highways and in the vicinity of cement plants. (Set a 5 year time frame from date of commencement of production or till building say 100,000 sq. ft hospital space). A maximum of 3 factories per state could be an initial norm.

ii) Also exempt all import duty on machinery for setting up such plants for the next 5 years.

iii) Also, have reduced or NIL GST on the supplies of precast building components for hospitals.

11.2 Second stage: (Investment stage in hospitals) Anyone (other than precast units) investing in hospital infrastructure in the earmarked locations for hospitals will get GST benefit. (5 year time frame from date of completion of road project construction). The units should be permitted to sell 50% of their production / sales to any other project other than hospitals. After 5 years they will have to pay all relevant taxes and duties and sell 100% of their production to any project, other than hospitals too. This will ensure private sector investment since units will become feasible in the long run, supplying to non hospital construction- commercial and residential.

12.0 Making a new developmental body that includes NHA/ NHAI / CPWD to drive integrated development and representatives of the private sector

A controlling entity should be created that will comprise of national level bodies such as

-NDA: Health Authority of India

-NHAI: National Highway Authority of India

-CPWD: Central Public Works Department

-National Disaster Management Authority (to ensure earthquake/ disaster safety orientation)

-One representative from a manufacturer of Precast building component

-One representative from an engineering design and modelling set up.

13.0 The need for standardisation of new hospitals and health care facilities across India to cut down on design and development cost and other repetitive time consuming processes and make fast construction of new services possible.

- 13.1 Setting standardised government hospitals at multiple locations (Say Type 1 , A, B and C, Type 2) depending on population, and so on. Even modular units like those looking like 20 ft containers with all nursing home/ medical amenities within can be considered as part of standardisation. The units can be stacked together to form a mini hospital. The units are normally carried on trucks, one at a time.
- 13.2 Setting open spaces for private hospitals (where private bidders can set up their own customised models on free government land acquired on lease , procured by NHAI.)
- 13.3 Using standardised prefab modules/ manufacturing technology and latest Revit Precast/ Tekla Precast / Revit or other BIM (Building Information Modelling) platform / applications to ensure quick turnaround, and standardised drawings and interiors for mass purchase and cost reduction .
- 13.4 The technical proposals and commercial proposals should be standardised using latest software and quantity estimation and cost control methods for each type e.g. CADS-RC. This will save time each new hospital project comes up. Standardised tender documents for multiple facilities could be utilised with one tendering body such as NHA OR NHAI which is adept contract management.
- 13.5 Private investors thus should also have master plan ready for implementation even for standardised hospital projects, drawn up by major international & local consultants as 100% FDI could be a solution. The cost of design also will come down due to standardisation.

13.6.1 TYPE 1 : A Would mean Large Government run hospitals approximately 50,000 sq.ft in area handling multiple general medical needs, but within 5 kilometres outside the first toll gate outside the urban areas of large metropolises. (Tier 1 cities) These could be in multiple locations for one city. These will also incorporate medical colleges run by the centre or state boards. It will also include facilities for residences for doctors, nurses and relatives of patients.

13.6.2 TYPE 1 : B Would mean a Medium Scale Government run hospital approximately 20,000 sq.ft. in area handling above requirements but within 5 to 10 kilometres outside the first toll gate outside the urban areas of Tier 2 cities. These could be in multiple locations for one city. These could also include schools for nurses and para medical training.

13.6.3 TYPE 1 : C Would mean a Medium Scale Privately run hospital approximately 25,000 sq.ft. in area handling above requirements but within 5 to 10 kilometres outside the first toll gate outside the urban areas of Tier 2 cities. These could be in multiple locations for one city

NHAI/State highways can act and acquire land and develop hospitals as its extension of activities, within a well defined model(s) such as PPP/ Cash contracts etc. The monitoring and progress of the healthcare facility will be a extra commercial responsibility of NHAI

14.0 Conclusions:

14.1 If we do not give the healthcare industry and its supporting manufactures/ contractors / erectors the sops to move to cheaper/ accessible destinations at a low cost and close to the population, healthcare initiatives and manufacturing and developments will keep happening at select locations only and migration will keep happening to larger cities for healthcare which are more developed.

14.2 Also, unless we give workable direct and indirect tax benefits to manufacturers in earmarked locations, we can rest be assured that new manufacturing plants will not be set up in reachable distance limits to where hospitals are required to be built.

14.3 Joint ventures with foreign manufacturers / machinery supplies should be encouraged to take this forward.

14.4. Physical and actual delivery of the infrastructure/ product / program is key to the success, and needless to say actual delivery of all the above ideas needs astute leadership.

14.5. In the case of future high rise construction, as would be required by smart cities of the future (where 60% of India's population will live in cities, post 2050)- creating a "manufactured buildings environment" is essential, as space will be a big site constraint in the congested cities. Precast technology will also help builders to handle the labour shortages that arise in India from time to time due to many reasons including pandemics and farming seasons etc.

14.6 One very important fall out of the promotion of precast technology will be alleviation of the acute housing shortage in India and ensuring that the PMAY- the Pradhan Mantri Awas Yojana is further successful due to the quick turn around of housing units. Also, in case of natural calamities like cyclones and earthquakes, prefabricated houses /prefab building components will assist in rehabilitation operations in fast manner with adequate manufacturing capabilities across India.

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(All opinions and views are personal ones of the author)

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Approx. conversion: 1 BILLION USD = INR 7000 CRORE

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