

The nature of construction problems: past and present



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ABSTRACT: This paper aims at deriving a comprehensive understanding pertaining to the different construction difficulties that have been faced in the past and are being faced now in the present also. It provides a vivid analysis of why the problems were faced, the nature of the problems and how they were dealt with.

It has been a long time since the first inception of architectural ideas that had crept into our ancestors' minds. Right from the Stone Age, man has actually been into this act of constructing stuff for making his life easy. At the very juncture of the Metal Age, he got a further boost with the advent of new materials and construction techniques. Furthermore, came the times when architecture was at its peak. Everywhere in the world there was zeal to construct structures that not only made life comfortable for man, but also soothed his eyes. The classical orders of the Greeks packed the punch of serving as better structural members along with being a visual treat. The Romans had been articulate in constructing an efficient system of water supply in the form of a series of arches together being called as aqueducts. It still stands as an example people look up to design urban spaces. Egyptians were no less. They were meticulously constructing pyramids and mortuary tombs that were way beyond the human scale. They had designed the first forms of conveyor systems in building construction. Similarly, India saw the construction of a lot of architectural wonders. Right from the construction of the monolithic stone structures of the Ajanta-Ellora caves and the temples of Mahabalipuram to the Islamic structures of Taj Mahal and the Humayun's tomb it had been a marvellous leap in the form of architectural progress. Finally came the times of controversies about architecture when Gustav

Eiffel proposed the construction of an all metal structure now called the Eiffel tower. There was a lot of noise about the fact that how it would finally look when it was constructed in Paris. Many people said that it might turn out to be a scar on the face of the city. But, now fortunately it is known as the first thing that helps us identify the city of Paris. There have also been controversies about Zaha Hadid's designs. She is one of the pioneer architects as far as the use of fluidic forms is concerned. Her designs have almost always been at the helm of criticism by the senior architects of her times. But, she has been articulate in executing her own designs. Similarly, in the recent times Frank O' Gehry had faced a lot of challenges in bringing up his work called Bilbao museum. He has been criticised like hell up to the level of being called the mad architect. Now as we come up to the fact of such progress in the field of construction, can we deny that there have been no difficulties in the construction of these age old structures? No will be the answer.

As we go back to the times when the monolithic stone structures of the Kailasa temple was constructed, we get to know that no good technology was available at that time. However, they have managed to actually make it possible to form a massive temple out of a single rock. Imagine that how the person who started the construction, actually just used a chisel and a hammer to build such a huge temple. It is said that he started from the top and kept on chiselling till the bottom. It is evident that this wonderful construction must have taken a long time to come up. But, it has not been constructed by a single sculptor. Imagine the difficulty in passing on the same knowledge about the structure to so many artisans over the ages.

There might have been several changes made to this temple structure during the construction. This must have made it even more difficult for the sculptors. Now raises the question of managing the waste that was generated in this process. How were all the cut out stones used? Yes, they were used to make roads and for petty constructions. But wasn't it really difficult to manage these heavy masses? Yes, it must have been tedious. A similar structure had come up previously. The Konark temple in Bhubaneswar, Orissa had a huge contribution in raising the architectural taste of the people of the country. In this construction, they used the method of constructing sand ramps as it was being constructed towards the top end. This had actually ensured that the structure didn't get decayed during the construction process. However, this structure had made use of a huge pole at the centre in the form of a magnet that gave the massive stone structure all its strength. This had been acquired by the British during their reign in our country. But, later on what it was used for nobody knows. Just imagine how that huge magnet was made to stand just by the use of very basic tools. This speaks of the difficulty in constructing structures belonging to the typology of stone temples.

Now, when the importance of Constantinople came into existence, there was a sudden need for the construction of several public buildings. At that time there was a huge recession in the field of construction in Europe. There was a shortage of resources, funds, architects and even labourers. This thing gave rise to a new form of architecture. This form of architecture came to be known as Polymath Architecture. In this form of architecture the existing buildings were used to build several other buildings. The Roman basilicas

were used to build the Basilican churches that formed the basis of Christianity. The columns of the condemned buildings were actually truncated to get a uniform size. As a result, the buildings were having a size very close to the human scale. Explicitly or purposely, this form of architecture happened to be more close to people. Even the foundations of several buildings were used to meet the needs of the times. The rotunda buildings were used to build baptisteries when the question of child baptism came into existence. These spaces required a kind of radiating building plan in order to accommodate the required activity. So, the unavailability of resources at that time was addressed in such a way.

Now, when we come to construction of buildings that are built with the on public money, the question of minimalism comes into existence. The usage of minimum amount of resource and funds comes into existence. Taking the example of a case, when an architect is given task of designing a public building, he has to make sure that he does not raise the cost of the building to the height of making it unfeasible. Nowadays, in case of construction of public buildings, the factor of tender pops up. The person coming up with the most apt design within the least of cost frame usually gets the project. Such a case can be taken up when it comes to the Bilbao museum. It was designed by Frank O' Gehry. He had gone through the criticism of the entire world because of his design. His design was so complex that it made use of aircraft design software. He had actually gone to the point of overusing resources. The frames of the building were made using thick steel sections. A large layer of fabric was used to cover the building. Above this a layer of titanium sheets were used. Around twenty four thousand square meters of

such were used. As a result of this, he was criticised over the fact that a similar functionality and aesthetics was achievable with lesser use of resources. But, he had paid no heed to what the people said. He has a concept of a fish just because he had memories of going to a fish market with his grandma. This vague justification brought about a lot of talks throughout the world. Luckily, the titanium prices had gone down at that point of time. So, he had the privilege of not getting the project cancelled.

When residential projects are taken into consideration, there are several petty issues that come up. Funds remain limited in most cases. There have been cases when construction of a single house has gone through a cease-work period of more than a year just due to the lack of funds. Other religious issues play a vital role in our country when it comes to construction of residences specially. Several people actually back out when the architect is reluctant to listen to his specifications about how the building should be.

Industrial buildings have challenges that are totally different as compared to other buildings. They should have the ability to actually justify all the government norms regarding the minute points like waste generation and hazard safety factors. They should have special anthropometric specifications but they should not use too much of space.

So, as we come to conclude this, we can actually see that several issues are getting solved in this context. Several architects are coming up with innovative ideas to actually cater to the ideas of the government and the environmental impact assessment bodies to make a statement regarding this matter. So let us hope for a hassle free and green future ahead!!!

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