

CHALLENGES BEFORE CONSTRUCTION INDUSTRY IN INDIA

ABHIMANYU RATHI¹ AND ABHILASH JAGTAP²

^{1,2}Research scholar, PRM College of Engineering and Management, Badnera – Amravati (MS) India.

Abstract: *The construction industry is the second largest industry of the country after agriculture. It makes a significant contribution to the national economy and provides employment to large number of people. The use of various new technologies and deployment of project management strategies has made it possible to undertake projects of mega scale. In its path of advancement, the industry has to overcome a number of challenges. However, the industry is still faced with some major challenges, including housing, disaster resistant construction, water management and mass transportation. Recent experiences of several new mega-projects are clear indicators that the industry is poised for a bright future. It is the second homecoming of the civil engineering profession to the forefront amongst all professions in the country.*

1. INTRODUCTION

The construction industry is the second largest industry of the country after agriculture. It makes a significant contribution to the national economy and provides employment to large number of people. The use of various new technologies and deployment of project management strategies has made it possible to undertake projects of mega scale. In its path of advancement, the industry has to overcome a number of challenges. However, the industry is still faced with some major challenges, including housing, disaster resistant construction, water management and mass transportation.

The construction industry sets in motion the process of economical growth in the country; investment in this sector contributes 6.5% of Gross Domestic Product (GDP) growth. Every Re.1 investment in the construction industry causes an Rs.0.80 increment in GDP as against Rs.0.20 and Rs.0.14 in the fields of agriculture and manufacturing industry, respectively. Statistics over the period have shown that compared to other sectors, this sector of economic activity generally creates 4.7 times increase in incomes and 7.76 times increase in employment generation potentiality. Many challenges are a direct result of construction operations, while others a result of indirect, peripheral activities. A surprising number of challenges are not construction issues but must be addressed and managed by the construction manager to ensure project success. Non-construction challenges that face are part of the business landscape include legal issues, government regulations, environmental concerns, and socio-political pressures. It is critical that understands the demanding realities that he or she faces in the planning and control of construction operations. Economists believe that if the current national level initiatives are consistently supported along with a few new initiatives in the areas of education, health and labour, this country will be in the driving seat and on a one-way street of growth. The particular emphasis on infrastructure development will put India on a road map with Brazil, China and Russia towards becoming a developed nation by 2050.

There are various challenges in the construction industry which are as follows:

1. Challenges Regarding Utilization of New Materials, Equipment, and Technologies
2. Challenges Regarding Project Management
3. Other Challenges

2. CHALLENGES REGARDING UTILIZATION OF NEW MATERIALS, EQUIPMENT AND TECHNOLOGIES

New mega-project undertaken, involvement of international consultants, and participation of Indian consultants/contractors in international projects has led to infusion of new materials, equipment and technologies in the construction practices in India. While manufacturing of new materials is going on at a more aggressive pace, the manufacturing of new equipment is constrained by large capital investments and the uncertain markets. However, the growing market for such advanced equipment will eventually push the entrepreneurs to manufacture these also. The country is also faced with a dire need for qualified technical manpower. The following are some of the newer initiatives of the construction industry in the area of materials and construction strategies.

1. Corrosion Resistant Steel (CRS)

2. Pre-engineered Buildings (PEB)
3. Urban construction strategies
4. Machine Automated Slip-form Pavers

2.1 Corrosion Resistant Steel (CRS)

The cross-section of bars produced by CRS treatment process has a strong outer layer of tempered marten site and a ductile inner core of ferrite-pearlite. The duality in the constitution gives these bars their unique combination of high strength and high ductility with additional desirable properties: no residual stress, uniform properties along the length, high bond strength, and superior bend ability.

2.2 Pre-engineered Buildings (PEB)

These are a special class of buildings, which are constructed by assembling pre-built primary framing systems with other secondary structures and claddings Various types of framing systems such as clear span rigid frames, beam and column frames, space saver frames, single slope, multi-span and lean-to frames are available depending upon the needs of the builders.

2.3 Urban Construction Strategies

Large-size precast piers are used in the construction of flyovers over existing roads or other utility services that are too important to be closed or dismantled for the construction work of the flyovers. These massive precast structures are erected at site with large capacity cranes that are themselves not to restrict the flow of traffic. Besides project design, development, implementation and monitoring are gradually getting transferred to the computers by consultants, project owners and contractors. Some leading corporate agencies are planning initiatives for web-enabled design, control and monitoring of construction projects.

2.4 Machine Automated Slip-form Pavers

These pavement construction machines in use are equipped with machine guidance systems that guide the pavers along the desired alignment of the pavement. These machines are fitted with tilt sensors that deliver information about the longitudinal and transverse slopes of the machines. The PC uses this data to calculate the machine's current position and orientation, and compares it with the project design.

3. CHALLENGES REGARDING PROJECT MANAGEMENT

The various challenges regarding project management are faced by the construction industry are listed below.

- i. Challenges Regarding Work Force Considerations
- ii. Challenges Regarding Nature of the Work
- iii. Challenges for Time Constraints
- iv. Challenges for Environmental Issues
- v. Legal Issues
- vi. Governmental Regulation
- vii. Challenges Regarding Site Selection and Landscaping
- viii. Basic Infrastructure facilities
- ix. Contract Management
- x. Consultancy Services
- xi. Challenges for Project Control
- xii. Challenges for Safety

4. OTHER CHALLENGES

The construction industry everywhere faces problems and challenges. However, in developing countries like India, these difficulties and challenges are present alongside a general situation of socio-economic stress, chronic resource shortages, institutional weaknesses and a general inability to deal with the key issues. There is also evidence that the problems have become greater in extent and severity in recent years. The challenges such as housing issue, environment issue, transportation issue, power issue natural hazards are listed below.

4.1 Housing Issue

Three major bottlenecks in the construction of houses are (a) constraints of taking to the common-man the know-how on making disaster resistant housing, (b) constraints of taking to the common-man the know-how of effectively using local material in house construction, and (c) inadequate finances.

Not with standing this, the State Governments in association with the Central Government have undertaken several housing projects to provide houses to the needy. Two such schemes are:

- i. Valmiki Ambedkar Awas Yojna –
- ii. Indira Awas Yojna –

4.2 Environment Issue

The preserving of environment is a great challenge in a developing country like India, which has a fragile environment that is faced with high levels of land degradation (e.g., erosion, aridity, desertification, drought, flooding, and alkalinity and salinity of ground). The rapid urbanization alongside associated problems like pollution of air and pressure on existing infrastructure with regard to waste management, pose a race against time. India can derive valuable lessons by taking certain steps. Some of the desirable steps are:

(a) Government action: The Government need to enforce legislation and regulations on environmental performances. Licenses and approvals need to be regulated with transparency to ensure that all organizations in the industry operate in an environment friendly manner. Tax holidays and special grants may be introduced to encourage environment protection. A policy of certification and labelling of products need to be brought into practice.

(b) Market forces: Project clients need to insist on better environmental performance of construction companies. Experience from other construction firms adopting or benefiting from good environmental practices need to be disseminated to all.

(c) Institutional initiatives: Professional bodies need to take interest in providing support services to construction firms to function in an environment friendly manner.

4.3 Transportation Issue

The National Highways Development Project (NHDP) aims at 4/6 laning of about 14,846 km of National Highways in the country between 1999 and 2007. Historically, development of National Highways road infrastructure was financed from the budgetary allocations of the government. But, these were of the order of only Rs.2,000 crores. Thus, financing of NHDP was not possible from budgetary source and some innovative financing mechanism was necessary. Standardized materials and design mixes have become necessary in the construction of pavements, in stretches. In areas regions of high temperatures, problems of bleeding and flowing of bitumen are common, which thereby leads to the routing of the pavements. Hence, high grades of bitumen are being used in this type of construction to minimize this problem.

4.4 Power Issue

Nowadays, large apartments and multiplexes in big cities are being built with captive power generating units. These self-sufficient of power generating systems are being insisted by the Municipal Corporations at the time of providing clearance to such high budget projects.

4.5 Natural Hazards

India as a nation is quite susceptible to all forms of natural hazards, all of these, floods happen to be the most frequent form of natural disaster faced by the country. It has 40 million hectares of flood prone lands and on an average 18.6 million hectares of its land is flooded annually Earthquakes cause the most dangerous and most devastating natural disasters in India. Over 60% of the land area of the country is vulnerable to earthquakes of moderate to severe seismic intensities. Also, the Indian Ocean is considered to be the six most cyclone prone areas of the world. This exposes the 8,040 km long coastline of the country to tropical cyclones Natural Hazards like earthquakes, floods and cyclones always lead to immense damage and widespread destruction of civil engineering structures. Governments and local

bodies need to develop capacities to cope with natural disasters to mitigate the effects of the natural disasters.

5. Strategies to Meet Challenges :

In developing countries Governments have to perceive that providing quality education and training for the development purpose. governments should adopted number of strategies in developing countries to improve their Infrastructure and increase the chance of development. Such strategies may help to reduce the frauds, dishonesty and embezzlements that are very common in governmental departments.

5.1 Strategies for Education and Training:

Governments in developing countries have to perceive that providing quality education and professional training is a key driver towards sustainable development and prosperity. Higher percentage of the countries' (GDP) has to be spent to improve education, research and development. This will help equipping human resources with state-of-the-art knowledge and technical expertise needed to overcome the engineering and human development challenges of delivering (MCPs) in developing countries.

5.2. Strategies for Policy, Economy, Technology, Infrastructure and Production:

A number of strategies have to adopted by governments in developing countries to improve their situation and increase the chance of developing successful (MCPs). These strategies include establishing political stability, eradicating corruption, encouraging economic, and technological development, constructing infrastructure facilities and increasing productivity. This will be reflected positively on improving public morality and encouraging people to create ideas that lead to growth and improvement.

5.3 Strategies for Healthcare, Life Expectancy and Growth Rate of Population:

Developing countries have to fight a battle against malnutrition, diseases and ill health care. Governments in developing are responsible for providing their people with appropriate health care and services, safe drinking water and sanitation facilities. In addition, increasing the percentage of (GDP) spent on improving the health care sector will provide hospitals with sufficient doctors and facilities for the number of inhabitants of these countries and consequently increase people's life expectancy, decreasing death rate of babies at birth and in early infancy.

6. CONCLUSIONS

In the years ahead, the construction industry in India has to overcome various challenges - be it with respect to housing, environment, transportation, power or natural hazards. Technocrats associated with the Indian construction industry need to employ innovative technologies and skilled project handling strategies to overcome these challenges. The outstanding performance under demanding situations in the past will stand in good stead and give confidence to the Indian construction industry to bring about an overall development in the infrastructure of the nation. The gains of large investments in the mega-projects eventually will feedback to the construction industry itself in the form of better economy and improved work conditions.

References

1. Aggarwal,S., (2003), "Challenges for Construction Industries in Developing Countries," Proceedings of the 6th National Conference on Construction, 10-11 November 2003, New Delhi, CDROM, Technical Session 5, Paper No.1.
2. Ayman Ahmed Ezzat Othman (2013) "Challenges of mega construction projects in developing countries"
3. Cliff Schexnayder and Stuart Anderson (2011) "Construction Engineering Education: History And Challenge "
4. Er. Shrishail Shirur, Dr. Suwarna Torgal (2014), "Indian Construction Industry" IOSR Journal of Business and Management. volume 16, Issue 4. Ver. III (Apr. 2014), PP 65-69.