

Construction Industry Tomorrow: Post COVID - Implementations on Project Management Factors and Strategies

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Abstract: *The Global Health risk all over the world got affected by COVID-19 pandemic situation. The day-to-day life transformed from pre-COVID to post-COVID scenarios with uncertainty, ambiguity and many disruptions. Every Country was affected from this unexpected health risk of Pandemic along with our Country. Many Industries of all walks of life got majorly affected due to nationwide lockdowns and checks on safety, security system of the workers and workplace. Construction Industry is one such industry got majorly transformed embracing many technological interventions, remote working of the seniors, managers and managing the delay, disruptions, less work-force, quality, safety and security checks at most of the projects. The Need of hour to be responsible, considerate citizens to help each other not only medically but also economically, physically and emotionally. This reflected, revised, re-considered in all sectors around the country for major improvement to make the health safety, security, effective progress and growth of the people and its environment.*

Keywords: Construction Industry Tomorrow, Post-COVID Scenarios, Safety and Construction Management methods, Project Management factors for implementation, Necessary Technological innovations

1. Introduction

Project Management in a Construction and Infrastructure Industry has to be formalized with new norms, which become the “basic Norm” or “Standard Norm” revising the existing standards.

The need of the hour for “NEW NORMS” in various Industries like IT, Hospitality and Hotel Management, Retail and Supermarkets, Education, Government and Private sectors and so on requires updating. If we zero down on the Infrastructural, Physical, Safety needs of people to carry on with regular life and activities, then major work on the safety, quality needs to be updated for better living standards without any fear of exposure, contamination and life safety.

1.1 Formulation of the “NEW NORMS: in the Industry post COVID

Due to COVID-19, Human life existence, work, life balance has to be revised, researched, reviewed, revisited and renewed. Re-birth is the main reason, got a new chance to deal with our life and its various other branches that evolves on the day –to-a day life situation. One such Industry and most vital one for humans of all walks of life is their “home, public buildings, workspace, place of worship, recreational space, mode of transport, institutional buildings, etc. We rely on material things so much that without which we feel so insecure and handicapped.

Humans need the most important aspect of life i.e., Shelter, Food, Transportation and Improvised Construction Technology. These industries need some major re-inventions post COVID-19. Project Management in construction industry will have to re-work their standards, norms and bring out revolutionary changes and implementations in their way of work, facilities, safety, quality so as to ensure a healthy, safe environment for providing shelter facilities for all.

Education industry has incorporated some solutions for safe, efficient running of the schools, colleges are being carried out throughout the world through their progressive, effective, smart online education system, also by incorporating all the COVID norms with mandatory steps to follow so that all kids, teachers and supporting staff can attend physical institutions successfully.

Likewise, we need to upgrade, establish certain safety measures, technological interventions and quality ensured system in all other industries especially Construction Industry as we engage major human resource personnel for imaginations to convert into reality.

1.2 Project Management Identification Factors

Any project to start we need to look into few factors to be considered. These Factors will make the project management system to work properly. Project Management system and methodology will help deliver the desired results on time especially in the current COVID like situation.

Factors Include:

- Location
- Availability of the resources in and around the site.
- Transportation – accessibility to the site and the raw material commutation into the site.
- Services and facilities available at the site.
- Availability of labor, workmanship as in skilled and unskilled labor.
- Development around the site during the project.
- Socio-cultural impacts due to the project, which in turn facilitate the economic development in the urban context of the locality.

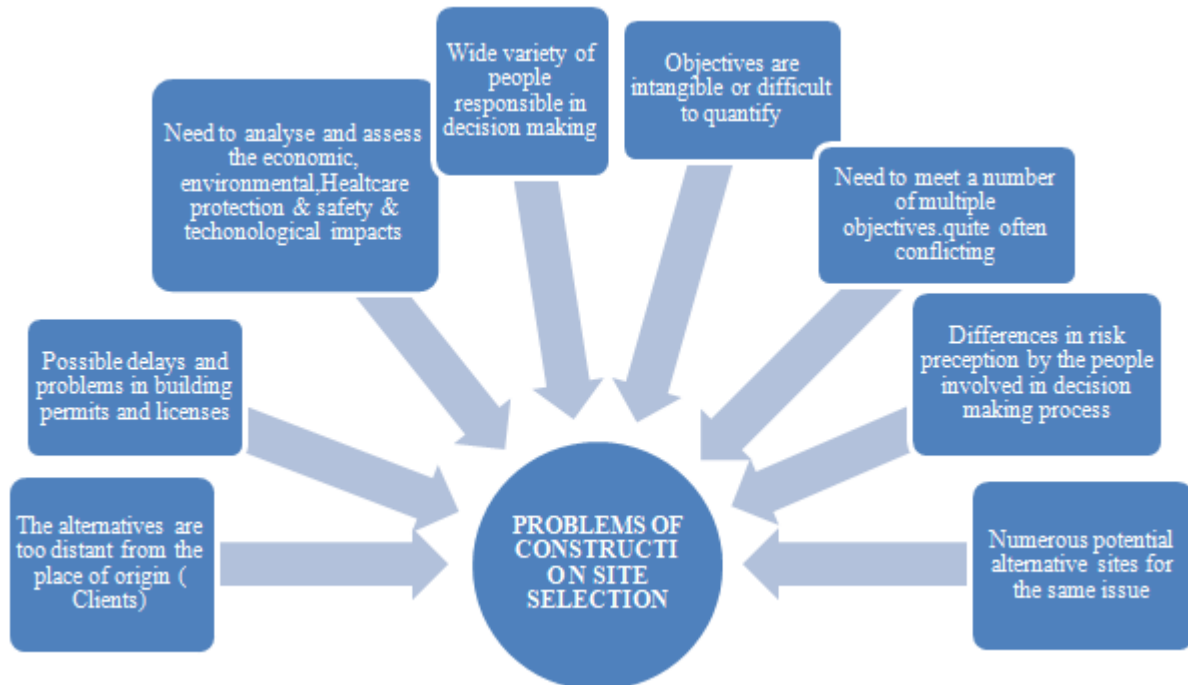
These are the basic important and a crucial factor which definitely needs major re-work in these areas.



2. Suggestive Updation to the Identified Factors

2.1 Location –Fundamental Problems of Construction Site Selection

The below chart explains the Basic general problems and requirements to be considered while planning and deciding on the construction site selection.



Post COVID – additional factors to be considered are:

First and foremost, location of project site post COVID-19 has to be the zones with respect to the growth and count of COVID-19 cases in that particular zone, area, city/urban context and the state.

This could be the approach until we eradicate this situation of COVID-19 and also for future healthy environment and wellbeing of the project workers and the people in and around the locality.

In general, it will be advisable to look into the health-graph of any required project site location, its local medical conditions and ensure to have a proper plan of action in terms of medical emergencies, environmental health and its wellbeing.

So, for any project site location – On site-Medical camp to be set in place with on-site health professional available with periodic checks for all the workers at site location. Also, provision for stand-by Emergency Ambulance available 24 X 7.

Regular change of shifts for the workers in order to mitigate the over-allocation of work. Planning and provide Health Camp sites for their everyday or alternate day health check-ups.

Mobilize local workers more in majority so as to ensure the immunity of workers who can withstand the local site conditions, weather conditions, food and to feel at home. Ensuring living conditions for migrant workers even during such emergency medical conditions to facilitate them to stay where they are till the project is completed. Health and safety management team of the project should take complete responsibility and arrange for the necessary precautionary steps.

2.2 Availability of resources

COVID like situation drives us to resolve this factor with importance and best usage of the local resources. After collecting the data of our project site location’s health-graph and medical history, it is required to predict and prepare the plan specially to ensure the availability of the resources. This helps us to enable our project site fully functional and workable even during such situations.

Every project site should have 50% of cast-in situ provisions, 20% of bulk storage of materials that are essential for the basic civil construction in place. All infrastructural and construction projects have to erect concrete batching plant adjacent to its site location.

Major usage of locally available materials will resolve the problems we will face during such pandemic situations.

2.3 Transportation

Up gradation of transports with sanitized procedures to be implemented with proper social –distancing in place. Uploading and unloading of raw materials have to be taken into serious consideration of sanitized procedures from the source station and inside the project site by Innovating some technology to undergo sanitized packaging of raw materials. Introduce and implement training sessions for the people involved in these processes to be made mandatory. Transportation of raw materials to be restricted within the state of the project site location.

2.4 Services and facilities available at the site

Entry/ Exit Tunnel for sanitization of the workers during their work shift to be implemented with screening facility at every entry/ exit points.

PPEs-with upgraded COVID-19 kits such as Hood Cap, Mask, Sterile gloves, Construction gloves, Shoe leggings, Boots, PPE glasses, helmet, Safety jacket to be made mandatory to all workers at project site.

Hygienic Food facility for all workers, Proper drinking water provisions, Availability water filter at various locations, Proper hygienic sanitation for all. Washing Facilities should be regularly sanitized, cleaned properly. Separate team should be assigned like hospitality and hygiene team for the smooth and proper working of all of these activities without any problems and mandatory checks.

Changing rooms and lockers are to be completely isolates, sterile, cleaned and sanitized every few hours per day. Facilities for rest with supervised person available always.

Site offices, Meeting rooms, Training and Induction facilities are to be constructed outside the site premises, which will ensure all workers to enter and exit through the sanitized tunnel and screening points.

Other basic site service facilities:

- Wheel washing facilities, Site canteen, Off-loading facilities, Laydown, Temporary storage and storage areas, Sub-contractor facilities, Car parking, Waste management and recycling facilities.
- Fabrication facilities, Facilities for the construction of mock-ups for testing.
- In order that the site can operate efficiently and safely, it is important that these facilities are laid out properly on the site. Site layout planning involves four basic processes:
- Identifying the site facilities that will be required.

- Determining the sizes, and other constraints of those facilities.
- Establishing the inter-relationships between the facilities.
- Optimizing the layout of the facilities on the site

Most importantly all of these facilities are adjacent to site area and not within the site boundaries to be followed as a norm post COVID times.

2.5 Availability of skilled and non-skilled labour

Major important role for success of any Project to be completed as per schedule, safety and systematic method will depend upon the labor involvement, their workmanship with respect to skilled and non-skilled human resources in that particular Project site.

Many infrastructure construction project sites will have 70-80 % labor from another state or districts and the rest will be local population especially for non-skilled roles and administrative roles. This scenario should be reversed or the ratio should be 50 – 50 % so that during pandemic situations Construction work is not affected completely and all the stakeholders are at win-win situation.

This will require a research-oriented approach to be done at the initiation of the project, as and when site location is finalized and before budgetary estimate is prepared. By this way we can ensure cost reduction with laborer's accommodation, transportation and food facilities.

Skilled labor at that particular region of the project site will be very essential, along with considering locally available raw material for construction.

2.6 Development around the site during the project

We cannot achieve to have major resources at project site's proximity itself, but prior thought has to be considered for the same at the very initial stage of the project. When we start any project, it's important to study and consider the development that the project site can bring about to that particular area, region or state with economic and social development. It's very important for any construction project is to develop in and around site vegetation, land usage, road network system, transportation facilities and public approach to the site made very organic and efficient.

2.7 Socio-Cultural Impacts due to the Project

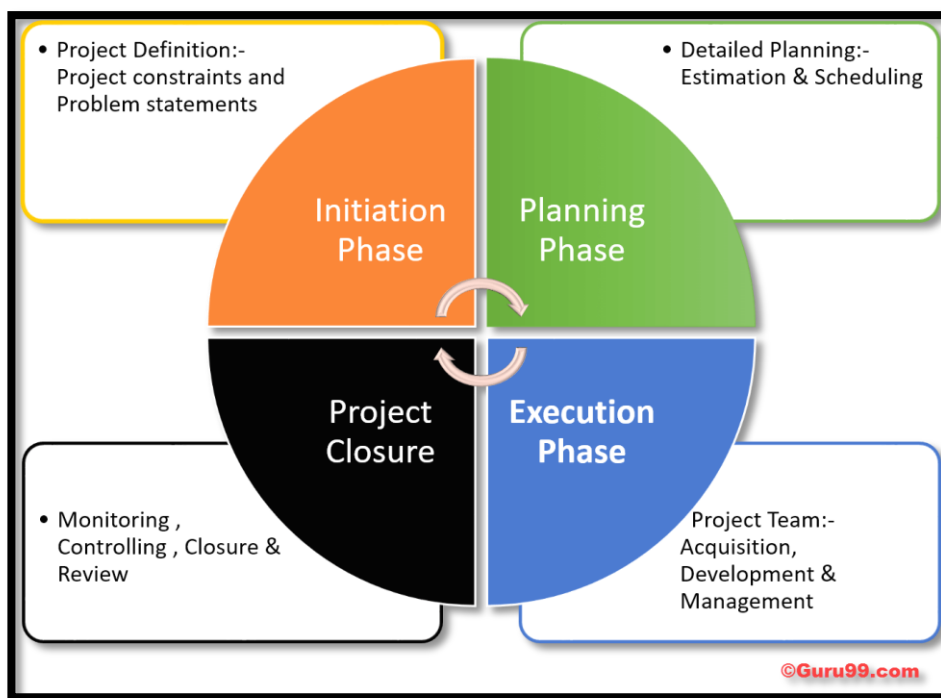
Socio-cultural impacts due to any project, which in turn facilitate the economic development in the urban context of the locality. Many villages into towns, towns into cities, cities into smart cities are the development upliftment approach a state or district follows with their socio-cultural aspects.

These aspects can give such developments both in negative and positive scenarios for that particular region. Also, socio-cultural impacts bring in major economic development in the locality for betterment of the people and society.

Detailed research and consideration will be required for better involvement and co-operation of the locals for smooth running of the project. During pandemic situations, these considered approach will save the scheduled concession period of the project and its success.

To establish all of the above factors in Project Management system, we have to understand the basics of Project management i.e. PROJECT MANAGEMENT LIFECYCLE

Project Management Lifecycle



Project Management “LIFECYCLE” includes four important stages:

5.1 Initiation Phase

In this Initiation phase – Project definition is the main step to finalize the thrust area of the project, deliverables to be attained, timelines to be achieved.

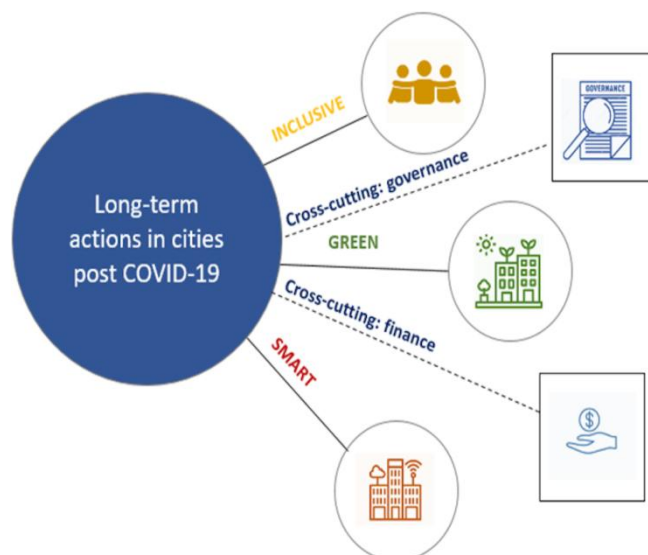
Also, all the desirable project constraints, problem statements, mitigation measures to be undertaken have to be detailed out. Detailed project report will ensure the above factors are explained. Now the COVID-19 situation will have to be included at this first stage for the rest of the stages to fall into place without any disarray in the project management process. Important consideration of the various factors with necessary updating, involvement and innovation in the Project management methodologies and strategies are key for proper management.

5.2 Planning Phase:

The second stage of project management is very crucial, Planning Phase which includes detailed planning, Estimation and Budgeting process.

Project planning and management phase currently requires varies changes, guidelines, self – imposed restrictions on some construction projects. Guidelines are changing and impacting projects in different ways based on their Project status, scope and location. Basic Planning steps to consider include:

Proactively develop a mitigation plan for Project slowdowns, delays, shutdowns and restarts, Assess what works can be done offsite to limit scheduled delays, Focus on design and updating the contracts to limit risks associated with uncertain schedules and be positioned for efficient remobilization once restrictions are eased, Develop your project start-up plan before you slow or shut down, documenting work that has been completed and remains to be completed, Take the opportunity to compile lessons learned so they can be applied to the project going forward.



Representation of long-term actions in cities construction project management approach-Post COVID:

Project Management requires meticulous planning, as the planning stage in the COVID-19 environment the risk factors have to be take care of:

- Requirement of protective equipment
- Arrangement for keeping laborers in safe distancing
- SOPs involved to be strictly adhered
- Sufficient quantity of safety kits in the COVID like situations has to be ensured
- Provision for stacking the safety kits
- Inventory of items and provision for distribution, by way of staff provisioning, accountable, auditing, recoument protocol.
- Budget provision for acquiring the safety kits
- Ensuring emergency medical assistance-on call doctors, medical workers, ambulance etc.
- Standard protocols to be followed in COVID like situations have to be circulated, kept in notice board; proper supervision has to be ensured.

5.3 Execution Phase

All of the above same procedures have to be incorporated in all the stages of the project, especially in the execution phase so that the interruption of COVID situation should not affect the execution safety, quality and health measures which are basically followed also for smooth and successful process of the execution at construction site.



Steps to monitor and adapt during execution phase:

5.4 Project Closure

Project closure is the final stage in any construction project management process which includes formal customer signoff, closure of contract documents, final product scope analysis, release of the resources, Indexing of project files and documentation and backups. As in case of COVID situations digitalized formats of all the activities must be circulated, adhered and incorporated.



Representation of BIM technology method to work in a construction project management system:

3. Conclusion

Many aspects of project management require a new set of norms, standards, measures, backup plans before the start of definition of any project in the construction infrastructure industry. Economic development of these industries and for people welfare to co-exist in this situation with their day-to-day life activities with many new inventories, construction innovations for sustainable working raw materials, technological implementations like BIM, Robotics, unmanned construction equipment has to be researched, tested and incorporated for successful growth, adaptation and for future working strategies and fundamentals.

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