B. ARCHITECTURE

CONSTRUCTION TECHNOLOGY (AR6013)

CONTRUCTION MANAGEMENT

Lecture – 7

Construction Management & Planning:

- As the name suggest two words: Construction Planning and Construction Management, which co-related with each other
- In common it meant that we have to execute the plan of construction by means of various management techniques

Now as we can understand by the name itself the construction management and construction planning is to sequence all the activities of construction together in a efficient way with efficient allocation of resources with efficient supervisions to complete all the construction activities and time to manage all the resources and to manage all the activities and to manage all the construction schedules and to complete the construction activity and to deliver a building with required quality with at most quality and precision at the agreed time. So this entire process is called Construction Management and Construction Planning.

What are the Objectives of Construction Management at the end of the day

- The first objective is to complete the work within the specified time and budget
- To evolve a reputation for high quality workmanship
- To provide safe working conditions for staff and workers
- Taking sound decisions at lowest practical management level through delegation of authority
- Motivating people to give their best
- Creating an organization that works as a team

To through construction management what we do is to deliberate more on this the objective of this entire construction management to complete work

within the specified time and budget. Many a time what a happens when construction is going on we spend too much time by energy, too much time and money on completing designing on planning on completing a particular construction that puts a lot of pressure that derails the entire construction schedule and extends the timeline for other construction activities. So it is a platform in which we manage all the activities within the specified time and we make sure that the building is completed that any construction activity or input the building is completed with at most standards and on the agreed timeline. It also provides as through construction management we demonstrate workmanship of high quality.

The role of any construction manager is also to do quality analysis and quality checks at various intervals during the occurrence of an activity that ensures that the ultimate product is flawless, so it is also improves the quality of workmanship. It provides the safe working condition because the important task on the construction manager had is to ensure the every work force is safe and they heard the health and safety conditions at site, it is the construction managers role to ensure the every workman is provided good sanitation standards is provided good hygienic living condition and because health is wealth if the workman not well then he or she won't be able to achieve the required quality of workmanship at the construction site and also any task that he or she will be doing will not be completed on time. Taking sound decisions at lowers practical management this is the very important point because there are many activities that are micromanaged on the site the decisions have to come really quick otherwise these activities, this problems have the potential to derail or to delay the entire schedule of the building construction.

So sound decision has to be taken in terms of how particular problem has to be sort, so the construction manager has a strong problem solving ability in process and with this problem solving ability what a construction manager has to achieve is to delicate this particular amount of work to the proper authorities so the decision is prompt and the decision is accurate and quality work can be achieved at site. Another major role of the construction manager is to motivate people to give their best and it is also an important role of the construction manager to create the teams spirit with in all the workers to create the teams spirit among all the stack holders including architects, engineers, contractors, sub-contractors, vendors it's the quality

it’s a duty, it’s a important role of the construction manager to bind the entire construction team together

What are the functions of Construction Management?

- It involves the Crystallizing Objectives
- Collecting and synthesizing information
- Developing alternatives within specified constraints
- Comparing alternatives in terms of objective feasibility and consequences
- Selecting optimum course of action
- Establishing policies, methods, systems, standards and budgets for objectives

Crystallizing Objectives

So crystallizing objectives what we achieve through construction management is we get a clear cut objective of what needs to be done, what is the need of the R, what is the objective at the end of the day, we get a focus without any doubt what is the end product so that is what we achieve the construction management.

Collecting and synthesizing information

When the construction activity happening there are lot of information there are lot of correspondence that are happens within vendors that happens with various stack holders that happens with various architects another architects engineer and site supervisors another resourceful persons.

Collecting and synthesizing information

So through construction management we channel those information and synthesize the information such a way that everything put on record for references and in this e way we ensure that whatever communication as to be carried through workspace side is carried out properly and the work happens on site as per the documents on record like drawings etc., developing alternatives with specified constraints so for any activity there always constraints like shortage of manpower, nature fury and so all this constraints we can work with optimum timeline with all this constraints by construction management.

Comparing alternatives in terms of objective feasibility and consequences

So every decision has its feasibility factors and some consequences attached to it, so every decision at the construction site and every activity as a construction site can be achieved through various alternative ways. So through the construction management we can compare all this alternative ways and what is the ultimate and what is the best possible alternative way through which we can through which a particular objective is feasible and the consequences and there are negative consequences on the construction activity

Selecting Optimum course of action

As I suggest there are various alternatives through construction management we get to choose a proper and optimum course of action means an action can be completed within the optimum time frame and with optimum allocation of resources like man, machinery and money establishing policies, methods, systems, standards and budgets for objectives through construction management we always have an idea about the resources that I lived with us to complete the entire construction that the various system that are in place that the various system that we have to put in place so for that we have through construction management and through construction mangers we establish various policies at various intervals at various period of constructions so that we ensure the quality products is delivered with at most clients at his fraction.

Organizing Construction Management

- Dividing the work into component activities
- Designing job structures
- Defining targets and responsibilities
- Allocating resources
- Delegating specific tasks to individuals
- Establishing organizational chart for better coordination

So we will go through in more detail the following slides

Procuring

- Providing the right quality resources at right time
- Preparing resource procurement schedules
- Developing specifications for required resources
- Deciding appropriate source of procurement

- Budgeting resources and arranging approvals and purchases
- Preventing wastage at site

So through construction management we make sure that we provide right quality of resources at the right time and also there is always a schedule that indicates how much of resources have been procured and how much of resources that needs to be procured to complete the list of activities that are pending for the future

Developing specifications for required resources

So the resources that are required completing the future course of action through construction management we provide required documents for specifications of materials that needs to be procured,

Deciding the appropriate source of procurement

Now it is also through construction management and also through construction managers that we select an appropriate source from which we procured the materials that are required for completing the future activities

Budgeting resources and arranging approvals and purchases

It is also the role of Construction Manager and through construction management that we sequence approvals that may be approves for the samples, approval for the materials that have been used in the constructions, approvals for timelines and also getting approval for more resources, approvals for getting more money for the purchasers, so all this can be done in the systematic way through construction management. It also through construction management that we can prevent wastage that is happening at site we can reduce reuse and recycle the materials that are used in the construction

Directing or Leading

It’s an important aspect of construction management

- Providing effective Leadership
- Motivating participants behavior
- Communicating instructions and orders
- Providing suitable climate for subordinate’s development

What happens is in a construction site the work force is not motivated the construction will always the lag in quality, the construction activities will take lot of time and it will be very difficult to optimize the time required for concluding the construction activity and also there will be no coordination between various stack holders.

So through construction management it is possible to provide effective leadership because it is possible to provide various stack holders in to action and make sure that particular activity is happening through vision of a particular leader. It is also an important aspect of construction management and the construction managers that the behavior of that is the important role of construction manager to make sure all the stack holders are motivated into the successful completion of the construction on time and also to provide the right quality.

It is also important, it is also imperative value of that the construction management adds to any construction is that the channelizes the instruction and orders as I discussed earlier that the right instructions achieve the right point of time so that we do not have any rework happening that because rework always leads for lengthening the schedule because rework leads when a work has to be done again in a side it has to be it consumes more time than it should have consumed.

So providing suitable climate for subordinate's development. It's also important the subordinate should be motivated and right quality climate that is helpful for learning and nurturing subordinates is obtained on the construction site.

Constructional Resources:

So the constructional resources as it is elaborated in this table are men, material, machinery and money these constructional resources considered four M men, material, machinery and money. Money provides power, water, space and also communication means.

So we will see that how the men part of the effect of the construction schedule, Men are work force, the work force can be termed as man power and the technical and managerial personnel can be termed as organization so what happens is when we have man power, when we have work force every construction activity is done by work force on man power. Man power is required to dry the machinery to complete the construction activity on

time and also technical and managerial persons the man power include the organization who is going to work on a particular activity, the technical people who are knowledgeable to complete the activities and to guide the activities and to conclude on time and the managerial people to make sure everything that all the information and all the activities and all the manpower required for completing the activity is available at site.

Workforce Planning

Workforce planning is an important aspect of construction management

- Workforce can be of two types that is skilled labor and unskilled labor
- Timely employment of just required numbers of workmen of right trade and skill is important for workforce planning

First we will learn about for skilled and unskilled labor. Any construction program involves two kinds of workforce.

A skilled labor somebody who is skilled to complete who skill to do particular construction activity on site. For example a lot of printing is imparted to various labors to do various construction activities like bar-bending for example

An unskilled labor is a person who knew to a particular job who has not been trained to do a construction activity

A skilled labor always provides efficiency to the construction timeline than the unskilled labor because the amount of factor of time wasted due to rework is reduced and walk that the skilled labor provides is of top class quality. Timely employment of just required number of workmen afraid trade and skill. Now it is also important to allocate the just required number of workmen for particular activity to be completed. Over manning and under manning both are bad, see if there are many people doing the activity that is also bad and if there are less people who are doing an activity that is also not preferred to stick to the timelines. It has to be just optimum amount of workforce that has to work on a particular activity .

Sudden fluctuations in labor strength should be avoided. Through construction management we make sure that the labor strength is always maintained it always optimum and it always planned as per the activities in

the future. So there are no sudden fluctuations in the strength of the workforce can be avoided

Describe work elements

Each work element can be described, can be divided and explained in such a way that every person or general person and every stack holder understanding the sequence of the activity and understands all the aspects that related to a particular activity.

Assess number of workdays to be put every week/moth it is also important, it is also a part of construction management to assess the number of workdays that a construction site has to function every moth or every week draw a chart of man power through CPM network. The CPM network is a tool that is very useful in construction management because it provides all the alternatives, it provides the description of flowchart all the activities and possibilities, probabilities to complete the entire construction schedule it is important so that select the right schedule and stick to it. Adjust schedule and requirement avoiding sudden fluctuations as I discussed earlier certain fluctuations can be avoided by a sticking to optimum schedule. Maintain a reasonable ratio between supervisor and workmen. It is also very important to make sure that there is the right ratio between the supervisor and workmen. The supervisors are more and the workmen are less, the time taken for the construction activity is bound to increase, is bound to be more the same as vice versa, the workmen are more the supervisor are less the quality of workmanship is bound to suffer.

Functions of Organization

It is always important to be in organization due to the hierarchy we allocate different functions to different people, so that is different responsibilities to different employees or group of employees, so it is very important to do that on in a construction site so that everything happens smoothly and with optimum amount of time. Provides adequate Communication by putting in organization in place we make sure the adequate communication is provided to the workforce at the grass root level and every activity happens on site as on record drawings specifications, documents etc.

Demarcates authority, responsibilities and duties of each group and employee as I discussed earlier when we allocate responsibilities to every individual or group of individuals to make sure that all the activities

happened with the right amount of resources and we make sure the every instruction is carried to the grass root level. Coordinates and controls activities of group and individual to achieve common objective an organization coordinates and controls activities of groups because of an organization we are able to coordinate and control activity of each group to achieve a common objective. The common objective is nothing but the construction to be completed in optimum time and optimum usage of resources.

Materials

The materials are very important in any construction site. Materials are nothing but Brick, stone, timber, cement, water, aggregate, paint, electrical, fittings, lime, sand etc. whatever we used in the construction sites. The material schedule we through construction management we create the material schedule showing quantity, quality and time of delivery should be prepare with reference to work schedule. So the every material schedule has to be divided into with respect to the work schedule so that we ensure that the quantity, quality and the time of delivery of the material of the site to conclude the construction of particular activity is met. Plan the adequate supply of material it is very important for any construction site to perform that adequate supply of material is planned so that if the supply of material is not adequate that can stop the construction process at any point of time.

Machinery

As man, materials and money are important it is also important that we pay attention to the machinery available at the construction site or the machinery required at the construction site. The requirements depend on the type of project. The equipment's can be transferred from one site to another or can be purchased knew on the economic analysis. It all depends on the money we have allocated to the machinery to procure or use the machinery. The equipment's can be transferred from one site to another or it can be purchased new based on the money we have based on the cost machinery that is allocated to as non-availability of right equipment tool into financial loss or can hold up the work. It is very important to choose the right equipment because if we have the fault equipment we can lead to financial loss because the construction activities won't happen. It would lead to as stop the construction activity and also if there is the fault equipment that

can lead to faulty construction that can lead to construction which is not of desired quality

Money

- Money is the most important resource
- All other resources depends on availability of funds
- So financial resources should be planned very carefully

It is very important and only possible through the construction management the right funds the right amount of money is allocated to every division. So that the ensure the construction smoothly with the common objective that the construction should be completed on time and with required quality.

Construction Participants:

This are the construction, these are the participants in any construction activity there is a business promoter or client, then there are construction management consultants, there are architect engineering associates, there are input suppliers and there are contractors.

The role of the Business Promoter or Client

He is the potential owner of the Construction facility

It is the promoter of the client who sponsors the work, finances their construction and utilizes the facility constructed.

The client may be a government body, a public body or private enterprises. A construction work can be executed through clients own organization or through contractors.

Construction Management Consultants

Who have emerging in this days they do

- Project feasibility to study including cost estimates
- They do site survey and soil investigation
- They involved in estimation, initial planning and budgeting
- They are also involve in scrutiny and coordination of design and drawing work
- They are also involved in processing prequalification of construction agencies, tendering and awarding contracts to the successful bidder

- They are also involved in designing project organization for executing works and developing standard operating procedures and systems
- Developing detailed construction plans, project schedules and performance measuring standards
- Supervising works, including administration of contract and controlling of project time, cost and quality objectives

Now architects is all we know architect is an individual to designs the building landscapes another artistic features then the engineer associated with the developed architect structure, electrical mechanical and another specialist systems and designs an architect and engineering associates from involving both architects as well as engineers to provide complete design services under one roof

Input Suppliers
any construction activity also various vendors because we need input from various specialized resources from time to time so the construction input exist in the form of men, materials, machinery and money

Contractors

- The construction contractors form the backbone of the construction business as they execute most of the construction work
- In the competitive construction business, the contractor generally tends to specialize in particular area of construction as an expertise.

Estimating:

So estimating is the process of finding an estimate, or approximation of the construction which is the value that is usable for some purpose even if the input value is uncertain. The estimate that exceeds the value of the actual construction it is called over estimate and the one that is below the value of the actual construction is called underestimate

Productivity as an important term, the contractors and owners are often concern with the labor activity of the job site for this purposes it is convenient to express labor productivity as functional unit per labor or for each type of construction task. The measure of productivity is define as total output as per unit of total input in construction the output is usually expressed in weight, length of volume and the input resource usually in cost of labor or manners.