



INSTITUTE OF DESTINATION ARCHITECTS AND DESIGNERS
PROJECT MANAGEMENT IN DESTINATION ARCHITECTURE

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OVERVIEW

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INTRODUCTION

Project management in Destination architecture has its origins rooted in antiquity. The Egyptian landscape, the Great Wall of China, the Panama Canal, Roman roads and coastal buildings are but a few of the examples where construction project management was used (Cleland 1994). The management of architecture projects requires knowledge of modern management as well as an understanding of the design and construction process. Land/coastal construction projects have a specific set of objectives and constraints such as a required time frame for completion. While the relevant technology, institutional arrangements or processes will differ, the management of such projects has much in common with management of similar types of projects in other specialty or technology domains such as aerospace, defense, pharmaceutical and automotive manufacturing (Hendrickson 1989).

Generally, construction project management is different from the general management of corporations by the mission-oriented nature of a project. A project organization will generally be terminated when the plan is accomplished and the construction project is complete. According to the Project Management Institute, the discipline of project management can be defined as follows:

Project management is the art of directing and coordinating human and material resources throughout the lifecycle of a project by using modern management techniques to achieve predetermined objectives of scope, cost, time, quality and participation satisfaction.

By contrast, the general management of business or industrial corporation assumes a broader outlook with greater continuity of operations. Nevertheless, sufficient similarities as well as differences exist between the two so that modern management techniques developed for general management can be adapted for architectural project management.

DISCUSSION

Management definitions are as varied as the authors that write books about the subject. The most effective definition states that management is “the process of getting things done through people” (Cushman 1983). Construction project management may be defined more specifically as “the process of coordinating the skill and labor of personnel using machines and materials to form the materials into a desired structure.” Construction operations involve planning, designing facilities, and supervising construction. Related items are the procurement of materials and equipment and the use of personnel.

Project management in architecture and construction encompasses a set of goals which may be accomplished by implementing a series of operations subject to resource constraints. There are potential conflicts and management challenges between the goals with regard to scope, cost, time, and quality, and the constraints imposed by workers, materials and financial resources. These conflicts should be resolved at the beginning of a project or as soon as identified by making the appropriate trade-offs or creating new alternatives.

The functions of a manager are universal although they may differ in details from one activity to another. These functions should not be confused with the operating tasks such as accounting, engineering or procurement. Subsequently, the functions of project management for construction generally include the following functions (Thomsett 1990):

- Planning
- Organizing
- Staffing
- Directing
- Controlling

Each of these is aimed toward accomplishing the objective of the project. To implement these functions the project manager must understand the objectives, plans and policies of the owner, designer and constructor or general contractor.

The Planning Function

Planning means laying out something in advance. Planning creates an orderly sequence and defines the principles to be followed in carrying out the project, and defines the ultimate disposition of the results. It serves the manager by pointing out the things to be done, their sequence, how long each and all shall take, and who is responsible for what. The goal of planning is to minimize the resource expenditures for a given task. Planning aims at producing an even flow of equipment, materials, and labor and ensuring coordinated effort. Effective

planning involves continual checking on events and forecasts, and redrawing of plans to maintain the proper course toward the objective. Much of the construction manager's job will be characterized by the plans to be constructed. If they are detailed, if they are workable, if the project manager has the authority to undertake them and understands what is expected, then the construction manager will require little of anything else from either the owner or constructor. The core of the construction project manager's job in planning is decision-making, based on investigation rather than on snap judgment.

The key to successful planning is establishing the construction objectives of what to do, where to place emphasis, and how to accomplish project goals. It is critical when planning to make assumptions based on facts. For example: weather predictions are based on past weather data; or policies for observing national holidays are expected to continue. These are forecast data and basic policies that apply to the future.

The US government uses a procedure called the "estimate of the situation" to develop an overall conceptualization of the task environment. It can be used in project management with the appropriate translation of terms, and takes into consideration:

1. Alternative courses of action
2. Advantages of each course of action
3. The cost or disadvantages of each course of action

Planning permits discovery and examination of alternative courses of action. Various courses of action are compared in terms of personnel, material, equipment and time. This is often difficult because the typical planning problem is filled with uncertainties and indefinable or intangible factors. The desire to control or plan is a reflection of the assumption that current understanding of the nature of future events can be successfully used to direct future changes. In addition, planning presumes to place limitations on future events without the advantage of intervening time to better judge the effects of today's actions in light of the unforeseen. Therefore, planning can be said to be designing the future based on the inadequacy of our present knowledge.

An excellent planning tool is the graphical representation of the construction work sequence versus time with the use of a "Gantt chart," which is a simple bar graph or chart developed by Henry L. Gantt in the early 1900's (O'brien 1984). A better planning system for large multiple task construction projects is the Performance Evaluation and Review Technique (PERT) developed by the Navy in 1958 (O'brien 1984). Of course, the most important aspect of the planning phase is to be able to produce a construction schedule, and this is accomplished using the Critical Path Method (CPM) to identify the network and precedent relationship of every task in the construction process for a project. The modern construction project manager must be able to use computerized planning tools that will produce a PERT chart that has the critical path identified.

A simple universal list of steps in the planning function include (Cleland 1994):

- Develop project objectives, goals and strategies
- Develop project work breakdown structure
- Develop precedence diagrams to establish logical relationship of project activities and milestones (PERT or CPM)
- Develop time-based schedule for the project based on the time precedence diagram
- Plan for resource support of the project

Organizing Function

The organizing function determines and enumerates the activities required to complete the project, groups these activities, assigns the groups, and delegates authority to carry them out. Sometimes this is called organization structure (O'brien 1984). The organization structure is a tool for accomplishing the project's objectives. It establishes authority relationships and provides for structural coordination. Therefore, organizing is the establishment of structural relationships by which an enterprise is bound together and the framework in which individual efforts are coordinated. The power of decision granted to or assumed by the project manager is authority. When the number of people involved in a project exceeds the span of control, the manager must delegate authority. The delegation of authority is the key to an effective organization. Wherever authority is created, responsibility is created. Although authority may

be delegated and divided, responsibility cannot be delegated or divided. No responsible project manager can afford to delegate authority without designing a system of control to safeguard the responsibilities. A manager may delegate the authority to accomplish a service, and a subordinate in turn may delegate a portion of the authority received, but these superiors do not delegate any of their responsibility. No manager or supervisor loses responsibility by assigning a task to another. However, it is only when those with responsibilities in a project are free to move outside the logic of accepted processes that vast amounts of unnecessary time, energy and money are saved from being drained away during the normal process of construction. Elimination of complex management structure also serves to substantially reduce the cost of coastal and destination architecture projects. A simple universal list of steps in the organizing function include (Cleland 1994):

- Establish organizational structure for the team
- Identify and assign project roles to members of the project team
- Define project management policies, procedures and techniques
- Prepare project management charter and other delegation instruments
- Establish standards for the authority, responsibility and accountability of the project team

Staffing Function

Staffing is finding the right person for the job. Good project management in construction must vigorously pursue the efficient utilization of labor. Although the modern construction industry places much emphasis on the use of mechanized equipment, the staffing function and effort depends on the training, assigning and supervising of people who use this equipment. Improvement of labor productivity should be a major and continual concern of those who are responsible for control of constructed infrastructure. Productivity in construction is broadly defined as output per labor hour (Hendrickson & Tung 1989). Labor productivity is a measure of the overall effectiveness of an operating system in utilizing labor, equipment and capital to convert labor efforts into useful output and is not a measure of labor capabilities alone. Solutions to these problems require coordination of personnel assignments. However, people are unique individuals, each made up from biological and experience events. Their human knowledge fades and can only be expected to last when the individual is actively in search of knowledge as a stimulant to their thought processes. Discipline as a staff concern also fades except when people feel they are doing good, or their efforts are leading them to do something better. The effort is not seen as work, rather – fun; and the manager need not manipulate or force the labor when workers are both mentally and emotionally gratified by their work environment.

A simple universal list of steps in the staffing function include (Cleland 1994):

- Determine project team member needs
- Assess factors that motivate people to do their best work
- Provide appropriate counseling and mentoring as required
- Establish rewards program for project team members
- Conduct initial study of impact of motivation on productivity

Directing Function

The management function of directing involves guiding and supervising subordinates to improve work methods. Open lines of communication in organizations are maintained in vertical and horizontal directions. While assignment of tasks makes organization possible, directing adds a personal relationship. Directing embraces the practical problems in getting personnel to work as a team to accomplish the objectives. Basically, it concerns managing human behavior and taking action that will improve performance. The project manager must have a thorough knowledge of the organization's structure, the interrelation of activities and personnel, and their capabilities. In addition, the project manager must be able to lead the organization to accomplish its objectives. The terms manager and leader are not synonymous. The manager coordinates activity by executing managerial functions and accomplishes missions through people efficiently. However, efficiency is a false measure of the efficacy of a procedure or process and may offer a false effectiveness as well, it

is a measure of only direct cost and only those costs expressible in purely economic criteria. Therefore, one cannot measure either good or bad solutions by efficiency which is expressible only in dollars. Increased concern for efficiency parallels decreases in quality. To avoid this end, the construction project manager uses leadership:

- a. The successful leader must have a broad perspective of duties and the ability to persuade others to cooperate.
- b. The leader must be mentally mature, that is having the habits of logical methodology and understanding. Emotional balance is even more important.
- c. A leader cannot become panicky, unsure in the face of conflicting forces and adversity, or pliable under influence.
- d. A leader must also possess the ability to produce effective written and oral communications.

A simple universal list of steps in the directing function include (Cleland 1994):

- Establish “limits” of authority for decision making for the allocation of project resources
- Develop leadership style
- Enhance interpersonal skills
- Prepare plan for increasing participative management techniques in managing the project team
- Develop consensus decision-making techniques for the project team

Controlling Function

Control is a continuing process of adjusting the operation to the situation in order to accomplish the desired objective. The manager must measure and correct activities in order to compel events to conform to plans. For effective control, the manager must be in constant touch with operations to be sure they are proceeding on course and on schedule. Most of the construction control problem involves processing large volumes of technical information.

The manager must first be sure that the plans are clear, complete and integrated. Then the necessary authority must be given to the person responsible for the task. Because of the many changes and situations that may arise on different projects, a control system must be broad enough to cope with all possibilities. Regardless of the circumstances, control depends upon the communication of information, both for gathering data and for implementing the desired corrective action. To provide effective control, communication of information must meet the following test (McNulty 1982):

- **Timeliness:** In order to be meaningful, the manager must receive and distribute information used for controlling in a timely manner. Information should be “forward looking.” Focus attention on actions that will cause activities to occur as scheduled instead of adjusting for events in the past.

- Accuracy: Pinpoint and then truthfully report the information necessary for control.
- Validity: Information is valid when its content represents a situation as it actually exists. Present this information in appropriate and useful units of measure.
- Routing: Make information used in controlling directly available to the person who can take or recommend corrective action, by virtue of both authority to do so and technical knowledge of the project.
- Economy: Collect only the information required for effective control, thus minimizing the personnel, time and money needed to perform the control function.

The key to development of a good control process is the preliminary planning, detail planning, and the execution. A simple universal list of steps in the controlling function include (Cleland 1994):

- Establish cost, schedule and technical performance standards for the project
- Prepare plans for the means to evaluate project progress
- Establish a project management information system for the project
- Prepare a project review strategy
- Evaluate project progress

There is much literature describing all of these management functions. However, by dividing the construction project manager's job into functional areas, the management functions can be organized into a hierarchical structure designed to improve operational efficiency.

The project manager is usually from a professional construction management firm or is an in-house member of the architectural firm whose sole purpose is to manage the project, for the owner-entrepreneur or investors, and is the linchpin between the owner, destination architect, engineers, general contractor, subcontractors, and manufacturers of supplies used to construct the project. The construction project manager has responsibility for the what, why, when, and funding of all project requirements, and for the how, who, and where of the project's execution. He will have all of these traits: experience, knowledge, reputation, ability to persuade, ability to resolve conflicts, and above all the ability to get things done. The construction project manager is the "renaissance man" on a project overseeing it from the "cradle to the grave" (Cushman 1988). However, each management tool has its own effect upon the project. All tools are devices which assist the manager in achieving ends he/she desires; but such systems can lead to a debilitating dependence.

SUMMARY

Environmental design organizations responsible for construction efforts must utilize modern management techniques to successfully construct the architectural projects of today. This paper covered a Construction Management Program and the responsibilities of the Construction Manager (CM) in Destination Architecture Project Management. This management responsibility utilizes technologies that guide the project manager in using sound management practices. It contains information for planning, scheduling and controlling a modern construction project. Professional project management consists of a professional construction management team composed of managers and others who carry out the tasks of planning, design or the designer/architect. The team has mutual goal oriented relationships that are non-adversarial which contribute to greater cooperation and response within the management team. The new construction project manager is intimately involved with the application of every current management tool to insure the success of destination architecture projects.

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