DAVID J. WILLIAMS

Preparing for Project Management

A GUIDE FOR THE NEW ARCHITECTURAL OR ENGINEERING PROJECT MANAGER IN PRIVATE PRACTICE

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ABSTRACT:

This book is designed for the newly selected project manager, experienced project managers, and those interested in becoming one. This guide encourages project managers to build a basis of under-standing with staff, top management, and owners, as they assume the responsibilities of management and leadership. The two important themes of this guide are (1) quality and (2) productivity, which are both accomplished through good planning. Chapters include Total Quality Management (TQM); Marketing; Project Quality, Planning, Control, and Completion; and Managing Projects for Profit. There is also a helpful Appendix that provides advice on decision making, professional ethics and etiquette, and dealing with the media.

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DEDICATED TO

My beloved parents, my wife, my children and their families

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ACKNOWLEDGMENTS

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CHAPTER 1

PREPARING FOR PROJECT MANAGEMENT

The Theme

This guide is designed for the person who has been selected to be a project manager (PM) for the first time. However, it is also written for the person who has been or is a PM, and for those that want to be a PM. It is written to be read in a brief time and the contents absorbed beyond the 10% usually retained while reading. The goal of this guide is to give the new PM a simple philosophy to consider and build upon.

The PM must build for himself or herself a basis of understanding with staff, top management, and owners. The new PM must undertake management and leadership as never before. He or she must forget the position of *following* and work toward *leading*, as uncomfortable as it may be. This new position will found new relationships while old ones will be lost. The responsibilities of this new leadership position must be paramount and entered upon with good relationships all around. These are satisfying the customer, relating to the staff with utmost respect, and making a profit for the owners of the firm. The client and the staff must have confidence in the PM. Management and owners must already have had confidence; otherwise, the position would have been given to another.

Today's business world finds all types of organizations downsizing, including architects and engineers. This means that middle management will be the first to go, leaving the PM at the forefront of management, just under owners or top management. The PM will probably become more and more important in the days to come.

Two themes are considered important in project management in this guide. They are: (1) quality, and (2) productivity, both accomplished by good planning. This is the basis for the entire guide and is considered to be of utmost importance.

These two themes are carried throughout the guide. First and foremost is quality: quality of the project and quality of the management. Productivity is required to stay in business. Planning is highlighted because so many projects are deficient in planning. Projects seem to be pursued the way they always were—*let us get started and, if it works, or even if it does not, do it the old way*. This attitude must be altered to ensure a good project, on time, and within budget.

Project management can be a highly complex process. Books, seminars, associations, and undergraduate and graduate courses are available for the PM. This guide presents only a basic philosophy for that inexperienced person anxious to make

good and to move into a higher position in the profession. This person should then add to their education, library, and associations as their experience progresses.

Management and leadership are generously used terms in this guide. They are not the same, although you should make it your goal to achieve both. A manager performs and controls the work that is required to be done. He or she makes the workplace run. A leader makes the first move. He or she has the foresight to initiate new activities to the benefit of the firm and the client. He or she maintains the momentum in the workplace. Another definition has been given, that management is doing things right; leadership is doing right things. The new PM should try to be both, learning *first* to be a good manager, and *then* a leader.

Management means more than just getting the job out on time and with quality. Management means good leadership with ethical conduct that will make the PM an example in his or her company and in the profession. It will also make the company one that a client will want to retain again and again. Remember, a client will tell others about good work, but they will tell many more if you did not do a good job, if your ethics were compromised, or if you did not manage the job to their satisfaction.

This guide will offer a philosophy with helpful hints that will not be accepted by all firms. Policy decisions have been made that will not agree with the theme contained herein. You will have to audit your firm, its policies, and perhaps its unwritten guidelines.

The title of PM will be used consistently throughout this guide. We will assume that the definition of a PM herein will be a newly assigned architect or engineer in private practice.

Personal Preparation
Each person newly graduated from a school of architecture or engineering should have a vision for the future and a mission statement on how they will get there. If you do not have a goal, you will probably never get there. New architecture graduates oftentimes dream of starting their own practice. Graduates of schools of engineering do not share that desire quite so much, it seems, but have other goals. Many graduates do not have any goals as they start out in life. If you do not agree with any other part of this guide, please agree that each and every person, no matter what age, should have a vision for the remainder of his or her life. That means the person about to retire as well as the person with a crisp new diploma.

People who have a vision seem to obtain their goals much more often than those who do not. People flounder in life, blame the system, their school, their parents,

and fail for a myriad other reasons. One's vision need not be organized for 40 years. It can be organized for 5 years, and then in 5 years redesigned for another decade, etc. External conditions will modify your goals. The nation's economy, wars, illness, family problems, etc., can waylay your intended plan; but always have in mind a great goal and be reaching for it at all times.

When the vision is established, prepare a mission plan to attain this goal. More education, perhaps a job change, outside volunteering, organizational attendance and participation all may be a part in paving the way to your goal. A new PM can design a plan of attack with milestones. As the milestones are achieved, further steps can be taken. Of course, not all milestones will be achieved; however, others will be achieved in a greater degree. A mission will give you a road map for your life, and you will accelerate your endeavors as a milestone appears. This will keep idling and wrong turns to a minimum.

As noted above, this guide is also written for those that just want to be a PM and have not yet been selected for such. In this case, you too should have a vision and a mission to be a PM. Learn to be a leader. Join a group that teaches public speaking, volunteer to chair a church committee, read books on project management, or take a night course. Be sure your supervisor is aware that you want to handle a job and can see your efforts to attain that post.

There are many avenues for personal improvement. How many of your colleagues were trained in project management? How many were trained in marketing? Did you ever believe that marketing would be a job requirement? Marketing is required by every architect and engineer, whether in private practice, teaching, or government. You will need to sell yourself, the project, the grant; or sell the commission, city council, etc. Extra studies in these fields can quickly accelerate your vision in life.

The vision of your first project and the mission that it takes to successfully complete it works in the same manner as your life's vision and mission. You will want to make a goal of having a quality project completed on time and within budget, and you will need to develop a mission to attain that goal. Planning before and during a project will be required along with good leadership.

Total Quality Management (TQM)

TQM is a tool used by some organizations as a process to improve various facets of quality. Good project management needs some type of a quality process to be successful. Three factors that most consultants perceive to be a definition of project quality are:

- that the project be completed on time
- that the project be completed within budget
- that the expectations of the customer are met or exceeded

Many quality consultants find that these three factors can be accomplished if the following actions are taken by the PM:

- constant striving for excellence in meeting the customer's needs
- focusing on the process and how to improve it
- assuring total participation of all employees
- practicing good managerial leadership

Discussion of TQM and related emphasis on the process will come later in this guide. Although TQM may not be threaded throughout your entire organization, many aspects of the process can be important even if the PM's firm does not advocate its use. If you have not been introduced to TQM, it may be worthwhile to acquaint yourself with the concept.

Additional Data

This brief discussion on project management is a catalyst. You are encouraged to add notes, articles, and discussions from other sources. Also, add some of the findings you obtain from actual experience. After all, this is a process. The text in the following sections will explain the importance of having a process to produce major and minor designs, tests, reports, etc. The Appendix will also give some insight into tools that can be used to enhance your management and leadership skills.

The Curve of Project Management

This guide will explore various concerns that affect project management: ethics, leadership, TQM, plus those items that are actually a part of the project manage-

Project Closeout

Design Management

Project Start-up

Project Planning

Project Agreements

Marketing

PREPROJECT WORK   CREATIVE DESIGN WORK

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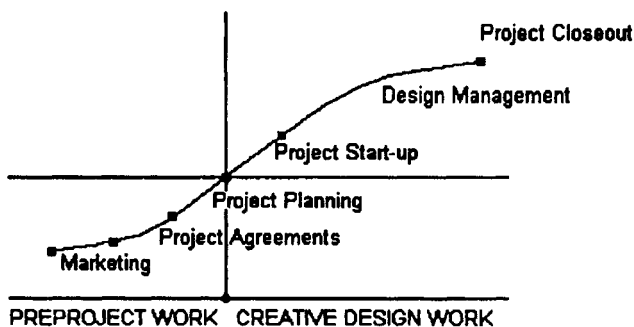
ment. A curve of project management is illustrated above. Those items to the left of the vertical line are activities before creative work begins. The work to the right of the line are activities that architects and engineers relish most—that is, the creative design work. However, the PM must manage his or her project the entire length of the curve.

You *will* see repetition in this guide. There are certain points that are important and they will be repeated for emphasis as needed.

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CHAPTER 2

THE PROJECT MANAGER

General

No matter how the PMs are selected, they must report to management and act in management's best interests. In addition, they must report to the client and work in the client's best interests also. With the demands of the two masters, the PM must herd a number of people into an organized group to provide a product. This product, for the purposes of this guide, is plans and specifications for a certain facility.

First, the PM is given the task to manage a job. Do not forget this assignment. You are not to let others manage or intimidate you. The buck stops with you and your management must take on the job description of a mother, father, coach, cheerleader, teacher, chaplain, warden, waiter, and a few other professions, but finally as a leader. All of these must be done with class, juggling many balls while acting pleasantly and with complete calmness. Your client will be in the wings watching all of your activities. In any event, you must realize that you are in charge.

Client Relationship

Every project starts with an understanding that you want to do a good job and make money too, and, equally important, you want the next job. Therefore, the consultant/client relationship is one that must be fostered from beginning to end. The PM will be the person that the client will depend upon for a quality project. The marketer and past-project reputation has little to do with your project.

The one word to keep the client/consultant relationship strong is *communication*. No one likes surprises, especially clients. The PM has the responsibility to keep clients informed. This means both good and bad news. After all, it is the client that pays, plus he or she will have to live in/operate that wonderful edifice or monster, whichever occurs.

The client will no doubt dictate various meetings and those appointments must be met. They will also appreciate the opportunity to answer questions. You may be the most noted authority on a particular expertise, but the client has a part in the process also. Asking his or her opinions will not diminish your importance.

Problems arise in the best-managed projects. When these become evident, it is usually best to inform the client. He or she may be able to give guidance or alter the project direction for the benefit of you both. The problem may cost money and the client needs to know this as soon as possible. The client is your customer, but he or she also has customers that must be informed. The "customer's customer" goes on and on. Communication on all levels is important and required for good project completion.

Leadership

A PM is selected in many cases for his or her expertise, experience, or age. Top management may look beyond those parameters and look for management abilities and leadership. Leadership is discussed further in the Appendix.

You might be a young PM and have doubts about your knowledge of a specific task. Your biggest worry should be the ability to lead. If you have that ability, then you are better prepared to bring in and direct those who have the technical ability. Every person in a leadership capacity should have the number-one goal of surrounding himself or herself with knowledgeable people. Technical expertise is usually easy to obtain. Leaders are not so readily available.

The architectural/engineering (A/E) business is a service, and that service is provided by people. Without question, that is the A/E community's most valuable resource. A PM must have the ability to address their needs; otherwise, the project will suffer, and so will the firm. We no longer live in a society that is driven totally by management; your staff needs to be led. It must be led with proper management.

The effective leader must know how to delegate. Too often the PM takes on the role of designer. This may be needed on small projects, but on larger projects it is necessary for the PM to be a delegator so the project will not go awry. Many architects and engineers relish the design task and fail to let go. After determination of the broad design, the finer points of design should be left to the delegated.

The PM must learn the art of decision making. He or she will have the benefit of major decisions from the principal or owner in charge. However, the myriad of project questions cannot be passed on. The staff will not tolerate a PM that does not make decisions. They will either make their own decisions, bypass the PM, or expend precious time in extra checking or discussions with their colleagues. As a leader, you will need
- to be trusted,
- to listen,
- to give feedback,

- to praise,
- to be available, and
- to communicate.

A discussion on decision making is also included in the Appendix.

Responsibility, Accountability, and Authority

Employees gain a valuable sense of belonging when they are responsible for operations within designated areas such as control systems, methods, equipment, working conditions, schedules, and receiving evaluations of their achievements. Accountability without appropriate authority has probably caused as many "people problems" as any other area of management. Problems will surely occur when people are expected to produce a product, but do not have whatever it takes to generate that product. People need to know that

- their job belongs to them,
- they are responsible,
- their job counts for something,
- they have some say in how things are done,
- their job is a part of who they are,
- they have some control over their work and how it is performed,
- they will be given adequate resources,
- they have the backing of management, and
- they are needed.

Every person on your team should have authority over something, even if you feel it is incidental. For instance, the young drafter may feel more worthwhile if he or she must maintain the supply inventory and have a say in its content and distribution.

Being Part of a Team

Being part of a team is an important need for most people in our social order. Teamwork has two aspects in this context—for projects and the firm as a whole.

Everyone should have an appropriate level of responsibility, and that responsibility should increase as capabilities increase. Staff members should be aware of the amount of time that has been allocated for all activities they are required to complete. PMs should have short meetings with their staff on a regular basis to discuss new developments and answer questions. Also, PMs should provide direction and keep everyone informed about how much progress is anticipated for the

week on specific projects. PMs should circulate among their team daily to monitor activities and encourage teamwork at all levels. Visiting team members or subconsultants in distant offices can be a problem. This may have to be done by electronic means. Proper communication must be planned with everyone having the same frequency and similar content of supervision.

In the firm context, there needs to be a clear identification. People need a clear understanding of the organization's objectives and how they contribute to those objectives, an understanding of organizational values such as commitment to client service, ethics, clear job responsibilities, ability to measure expected performance, and honest and timely feedback and coaching.

The Appendix contains discussions on ethics, leadership qualities, and etiquette, which are all essential to quality leadership.

CHAPTER 3

HIGHLIGHTS OF PROJECT MANAGEMENT

General

One of the most important persons in an A/E organization is the PM. There may be one or many, but they are the lifeblood of the firm. How are PMs trained, or *are* they? What directions are given to them on their first assignment? Do they even know the basics? Probably not.

The PM is usually given an assignment because of his or her previous acceptance of responsibility, experience in similar work, and the quest to rise in the company. Training for the framework of project management in many companies is nonexistent. A philosophy on the approach and helpful hints for project management are usually given after the fact or not at all. Young PMs can learn the process from a variety of sources, but hopefully not after an embarrassing situation has arisen.

This guide is designed to assist any PM who is given an assignment without proper instruction, education, or supervision. This occurs daily in a small firm, a recently organized firm, a poorly managed office, or in a variety of other circumstances. The first assignment as a PM usually finds someone else selecting the design team, making the final decision on the budget, hiring subconsultants, and making major predesign decisions. This hampers the PM even more in his or her first effort to do the best job possible. However, with the first project completed, the PM can then be given more responsibility for the setup of the next project. Be patient and accumulate experience and information as time goes on.

This simple guide will give the young PM some elementary insights into his or her responsibility and a few ideas to contemplate as a project progresses.

There are many complex issues that surround project management. These issues include estimating time and expenses, schedules, Critical Path Method (CPM) and other tracking procedures, office organization, etc. These processes are not a part of the first assignment or responsibility; with experience, however, it will be a part of the PM's work requirement. The objective of these paragraphs is to highlight a few pointers on the overall philosophy of project management. Again, there are two words throughout this guide that are considered of utmost importance: quality and productivity, both accomplished by planning.

Much has been said and written about project management in magazines, on tapes, and in seminars. In the A/E field, it is generally believed that many projects

are not well managed, although a quality product is usually produced. Sound project management is a critical need in today's business, and requires continual improvement through learning, training, and change. It is necessary to maintain and improve quality and continue to provide a profit for return on investment and expansion. In many cases, projects seem to be poorly managed or not managed at all. Everybody starts design, then they hope it will be done on time, within budget, and with the blessing of the client. Sometimes that blessing is not realized. Just think what can be done with good project management.

Definitions
Definitions that apply to this discussion of project management are as follows:
> **The Project.** A planned undertaking, design, or scheme.
> **The Process.** A standard procedure for the execution of a project.
> **The Concept.** The general plan for input into the process.
> **The Work Plan.** The written procedure for using a process with a certain concept to complete a project or activity.
> **The Project Manager (PM).** A person delegated to lead a team of persons/sub-consultants in a certain project.

These definitions are not new. They have been used for years in this same sequence and manner. Other names or titles have been utilized, but the meanings are essentially the same.

The Project
A project could be planned for many different activities. These may include preparing plans and specifications, reports, tests, project reviews, etc. This discussion is directed toward successful completion of a quality project, and to the satisfaction of the client, whoever they might be, and whether internal or external. However, good management is needed for all project sizes, complexities, and types of facilities whether for an external or an in-house client.

The Process
A standard process or procedure is necessary to produce a pencil, assemble an automobile, or design a building. It is necessary for architects and engineers to have a process(es) for various specific tasks. Many A/E firms have a manual for project management. This is also a process and could be used by the young PM as a guide. A process is merely a series of events required to take place to create a

product or service. The process description need not be a long, drawn-out procedure that no one will understand or follow, but can be quite simple and periodically upgraded and changed as better methods occur. The events will be briefly described, perhaps with references to other codes, publications, and/or persons.

A firm may have a process for general project management and then have a series of subordinate processes for the work on specific tasks. These subprocesses may be designs for office buildings, wastewater plant designs, academic building designs, and other facilities.

Small firms may have few, if any, guidelines for a process. Young PMs should discuss procedures for the various tasks with others. They can then begin their own documentation and begin to assemble their process for future projects.

When you begin to produce your own format or process, consider the following about processes:

- Everything is accomplished by a process.
- Anything to which you add value through your input is a process.
- Before you control the process, you must understand it.
- A standard process helps eliminate major and minor mistakes.
- Your process should have a written description.
- Monitor your process after each use.
- Change or correct your process as needed.

The Concept

The general framework of a project should be thought out before the contract is signed. This concept might be a few sentences for a report or a totally prepared preliminary plan. However, this concept is a central theme of the project and should be carried through unless authorized changes are made. A basis for the concept must always be available to guide the work.

A project should not be started until the concept is formulated and the contract is signed. A work plan, which is organized for a specific concept and process, can then be prepared.

The concept may be furnished by the client. In some cases, the concept preparation will be paid for by them.

The Work Plan

Many sources indicate that 75 to 80% of project problems belong to management and not the technical ability of their staff. It is extremely difficult to manage a poorly planned project. Although the beginning of productive work does not start

in the proposal stage, there is a need to plan projects well in advance. Project planning can start in the proposal stage.

It is also necessary to plan early and outline as much of the project as possible. This outline is a written procedure defined as a work plan. The input and time required to prepare a work plan is usually only a small fraction of the stated time to complete the work. On a small project, perhaps you will be solely responsible for the outline preparation.

Broad tasks can be formulated from this framework. A work plan should be developed to outline tasks, determine the expertise required, and distribute the time budgeted to those tasks. Some organizations are reported to plan projects in one-quarter day increments (budgets); others are not so detailed, if at all. Planning should be at a level of detail that informs all project participants what is expected of them in each key period during the project. If this is not done, there is no basis for control.

A discussion of a work plan will be given in later sections.

Predesign Meetings
One of the PM's first tasks is to lead the predesign meeting with his or her client. This meeting should detail the various responsibilities of all parties, finalize deadlines, and resolve any problems. This meeting will also provide a platform for defining all terms provided by the contract and what will be produced. If there are any special agreements, they should be discussed at this time. This is the time to resolve all questions. Do not leave a meeting with inadequate answers. It is well to ask a subordinate to attend the meeting with you, so that all instructions are documented and understood.

The PM's second task is to lead the predesign meeting with his or her staff. Because the quality of the first meeting sets the tone for later activity, an agenda should be carefully prepared to accomplish two major objectives: (1) reaching a common understanding of the team task, and (2) defining working procedures and relationships. Since the most important function of this meeting is to define the problem and management's expectations for group output, all section heads involved in the project should attend the meeting. Be certain to review everything learned about the problem and work to ensure that the group begins with a positive, productive experience. The first meeting is important, not only because it may be the first time all members are together for a particular job, but also because cooperation experienced here will influence later activities. The two objectives above are clearly the most important items on the agenda.

Each person should come to this meeting feeling a responsibility to present his or her own section's interest but with teamwork as the major goal. Each will interpret the problem in terms of their interests and each will possess a combination of ideas and information about the problem. There should be a joint resolution for the plan of attack at this meeting. This same plan should be held throughout the project unless circumstances dictate a change of course later.

Another essential topic for the first meeting is the question of how the group will work on its tasks, i.e., the process. Among the issues that require attention are the following:

- frequency and nature of meetings
- schedules and deadlines
- procedures for monitoring and reporting progress
- procedures for reviewing and modifying processes
- procedures for checking
- ground rules for decision making and conflict resolution
- procedures for modifying scope, cost, and deadline
- procedures for invoicing and billing
- other ground rules

Spending time on these procedural issues serves the primary purpose of providing clear expectations concerning anticipated activities. See the Appendix for other data on meetings.

Schedule

The importance of being timely is sometimes ignored when the thrill of obtaining a new job is experienced. At that point, meeting the client's schedule is sometimes overlooked. Timeliness is a part of quality and cannot be ignored. Clients want their product at a certain time and their wishes should be of primary concern. This cannot be separated from the goal of producing a quality design or report. If you cannot accommodate his or her schedule, then you should never have taken the commission in the first place. If you can do the work in the indicated time, proceed with a prepared schedule as a part of the process. The schedule should show the relationships between various disciplines and their tasks.

Budget

Time and budget are important to the consultant *and* the clients. From the consultant's perspective, people are committed for a certain period of time and then are

expected to be available for other projects. If you do not complete projects on time, the "ripple effect" causes major schedule problems. The adverse effect on profit is obvious if you are not compensated for the additional time required to complete a project.

For the client, similar problems occur when project management is not what it should be. Serious problems occur if a client is expecting occupancy or completion on a given date and the project is late. Unexpected cost overruns can cause havoc with a client's formal budget process if it requires a change. Little needs to be said about their opinion of you if the project is late or not up to par.

Most projects have contracts with fees that are reasonable, with adequate profit and contingency. Rarely are contracts signed for projects where anticipated costs will exceed the fee. PMs must allocate hours and costs for jobs in a proper manner and then monitor constantly. Likewise, subconsultants must constantly monitor their part of a project to ensure that their budget is not exceeded. There is no better way to alienate your client than to exceed costs and request extra fees. Remember, the client can be internal as well as external.

Monitoring

With a concept in mind, work plan in place, and predesign meetings completed, progress on the project can begin. In the early phases of the project, it is wise to closely monitor the work related to the process and the concept. This means watching over and advising. The staff should be following the process and concept completely. A review of the project process and concept at a 10 to 15% milestone is important. If the staff is not following the concept and process, their work efforts should be redirected. Monitoring the concept and the process should continue as the project progresses, but with lesser effort at later stages. After the early concept review is completed, it is time to increase the monitoring of the actual design work.

Checking

Checking includes two areas. The first is checking the process. The second is review of the actual design. The importance of checking both must be impressed upon the PM.

The concept of checking should be discussed with the project team early in the project. As discussed above, the process should be monitored and then reviewed and checked early to see if the project is going smoothly. If all is well, then process

monitoring can be reduced. Design checks should then become important. The checking procedure to be used and the level of detail will vary from firm to firm.

Checking of the design should be conducted by an experienced person. A checker should have a broad understanding of the project. Just checking math, layout, etc., by an inexperienced person is not enough. An even more definitive check should be made when several people have worked on the project and no longer participate or have not remained with the firm. The *total* checking of a design has been found to be unreasonable. Studies have found that when every item in a project is totally checked, typically the originator does a half-hearted job. Consultants have found that this often occurs in design when staff thinks that construction services people will catch an omission or error. This requires a change order and extra costs, which are an embarrassment to the firm.

Subconsultants

All of the directions for proper project management apply to subconsultants, whether internal or external. Subconsultants also need to plan, budget, monitor, and work toward control of time and all other things that will lead to a profitable and quality job.

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CHAPTER 4

TOTAL QUALITY MANAGEMENT (TQM)

General

The PM's first responsibility is quality. This means quality of the final product along with quality and management throughout the project. The PM may belong to an organization that does not embrace TQM. The PM may belong to a firm that does not even know what TQM is all about. However, the process that propels TQM must be used by all A/E firms that intend to grow and prosper, whether they use the title of TQM or not. The process of TQM is merely those things that an organization should have been doing in years past as well as the present.

The PM can still utilize TQM or other quality processes in his or her daily program. Again, the three factors that will define whether the project is successful are:

- that the project be completed on time
- that the project be completed within budget
- that the expectations of the customer are met or exceeded

These three factors must be considered throughout all of the work that is involved with any project.

The PM needs to employ all the tools that define TQM to ensure a successful project. This means treating associates with professionalism as well as firmness, satisfying the customer's needs, and keeping management appraised at all times.

What Is TQM?

TQM is quality of management and not managing quality. This is one of the many definitions of TQM; however, it also means placing all the required processes in operation, providing the product that satisfies the customer's needs, and constantly improving under proper leadership. A/E consultants can no longer feel that quality improvement is for the manufacturing sector only. It must take place in the designer's office as well.

TQM is somewhat new. Many people have not heard of the process. Some feel that it is abstract and mysterious; however, it will work for different types and sizes of organizations, both manufacturing and service related. It will not work the same for every organization. It must be tailored to fit each and every organization. An executive summary of the principles of TQM are as follows:

- Focus all the organization's energy in achieving total customer satisfaction.
- Organize all work as a process.
- Seek continuous improvement for individuals and the organization.

You must remember that a customer will be the person you work for, plus his or her customer, and on and on. You will have many customers, including your staff at times. To achieve the three goals above, you do not do things the way you have always done. You now face a customer and try to understand his or her needs. Once you understand what customers want, try to accept what internal changes may be necessary in order to meet their needs.

Key Concepts for a Total Quality Operation
Four key concepts cited by many consultants are judged to be the guiding principles for a TQM operation as noted earlier. They are
- constant striving for excellence in meeting the customer's needs,
- focus on the process,
- total participation of all employees, and
- practicing managerial leadership.

The first concept must be directed toward, and become a priority for, each employee. They must learn that their task is to satisfy their customer and the customer's customer. They must know who the customer is and what they need. They must also be made to feel that they are an important part of the organization.

The second key concept requires focusing on the process. This will be discussed in detail later; however, a process is a pattern of activities that is used a number of times in the same manner. A project should not just be started; it should be started with a plan or process. That plan or process should be used, corrected when needed, and approved with each use. A standard process will help eliminate mistakes; before you control or use a process, however, you must understand and know how to use it.

The third key concept requires total participation of all staff at all levels. Employee participation is very much misunderstood. Some believe it is a democracy where all decisions are made by voting. Nothing could be farther from the truth. The goal of employee participation is to harness the most valuable resources the firm has, that is, the knowledge of the staff.

The responsibility given the employee must be equal to his or her experience and training. It is not possible to give an employee a job without proper training and tools. Also, it means that the firm must allow each employee to pursue a job for which he or she was trained. Management must be in accord with such a

philosophy. They must agree to let employees work, make designs, etc., without interference. TQM cannot be experienced today and not tomorrow. Neither can management *not* practice TQM while the remainder of the staff does.

Managerial leadership is the last concept that must be practiced. The task of a manager is to conduct affairs and keep the workplace running. A leader must precede and keep the momentum going. You are a leader if people want to follow in your footsteps. A leader must have a vision and know where he or she wants to go. Then they must concentrate and attain that goal.

Leadership will be accomplished by a good example. Leadership requires planning, monitoring, and directing. It also requires providing for a proper environment for the staff. This environment may be physical, emotional, and/or psychological.

Again, the PM may not be able to place a TQM process in operation due to management's decision; however, the key concepts of TQM can be practiced to some degree within the framework of a PM's realm.

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CHAPTER 5

MARKETING

General

For the purpose of this guide, let's assume that the PM will not be an active marketing person. However, he or she *will* need to be involved in a number of activities that relate to marketing and project acquisition. A firm that does not allow the PM to have some part in the marketing program may lose valuable assistance. The young PM may not have all the talent necessary to assist in major marketing efforts, but he or she should assist in some manner. If possible, the firm should go after a project with the PM tentatively selected and the framework for the design in place. This does not mean the calculations must be made and/or layout and elevations be planned. It does mean, however, that some effort should be expended to plan ahead. Marketing staff should not obtain a job, then place the contract on the designer's table and run.

PREPROJECT WORK   CREATIVE DESIGN WORK
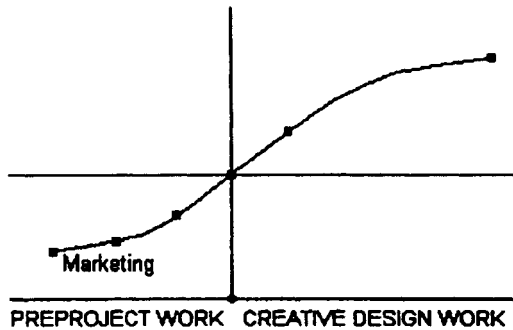
The potential client may want to see the PM as soon as possible. This may be a very important step in obtaining a project. They do not want to hear from the marketer and how well past projects were performed totally. They want to know: What can you do for *me*? The new PM may not be asked to enter the acquisition phase due to inexperience. However, he or she may be more valuable there than not having been invited. Most clients want to see and hear the PM and how he or she will perform. You may want to suggest to be in attendance at the interview and meetings.

The PM or project staff can be an important asset to the marketing staff. This is especially true when applying for new projects with past clients. The project staff will be familiar with the needs and preferences of the client involved, and they should not be timid in conveying this information to marketing. Also, clients like to see familiar faces and familiar communications. If problems occurred in the past, however, this may be the time to indicate a new PM will be involved.

No matter how learned the marketing staff, the person(s) that does the work often can communicate better and estimate the cost of the projects more precisely. Therefore, the young PM or one that is aspiring to be a PM should study marketing, costing, and communication on their own.

Proposals and Interviews
Of course, the PM is often asked for assistance in preparing and/or reviewing proposals and a scope of services for a particular project. The PM is in the best position to see the pros and cons of a potential project. Past experience with a client/project would be a definite advantage for a candid appraisal of the work. The PM should evaluate all potential risks and conflicts and not seek a contract just to get a project. A young PM must learn that not all jobs are great jobs. It is hard to turn down work, but sometimes it is best to do so. The excuses to attempt all proposals range from "they will not ask us again" to "it will make them angry." A conservative approach to evaluating the pros and cons of presenting a questionable proposal should be taken. It may be the PM's decision to recommend to attempt or not to attempt a proposal. Many firms have a process for "go" or "no go" on projects, and this process should be followed diligently. If you have a problem with a possible project now, it probably will not cure itself during design. It will be a rare occasion when a potential client is angered over a refusal to submit a proposal.

When a project is definitely taken on, the PM should assemble all the possible tasks required. The American Institute of Architects (AIA) Form 860 can be used as a starting point for this activity. This is a good tool for outlining a project and finding all the broad tasks necessary to complete many projects. Although this is directed toward architectural projects, it can be modified for engineering projects as well. This broad outline can assist marketing in its evaluation, writing, and interview process.

Many times the PM will be required to write a description of the work or the scope of services and help in the interview. A PM may be required to write descriptions of past projects or services and should remember to mention the positives, such as:

- projects completed under budget (design and construction)
- quality work
- ease in obtaining approvals
- projects completed within the schedule
- meeting clients' needs
- design aesthetics and community approval
- awards
- economy of operation

There are a multitude of books and seminars on technical marketing and proposals. The young PM should take advantage of a few of these whenever possible.

Marketing staff may handle proposal preparation exclusively with input from the PM. In many cases, however, the PM will have to prepare the proposal or statement of qualifications with only minimal help from them. In this case, it is imperative that the PM expedite the proposal preparation to ensure a steady flow of work into the firm. This is a very important task that must be continually improved upon. Each proposal must be prepared as if the survival of the firm depends upon that one proposal. It cannot be successful by throwing together some data from previous proposals and then hoping to get the job.

Another case may be the reluctance of the marketing staff to work on a certain proposal. This could be due to a number of circumstances, but again the PM is required to use leadership and bring all the persons together in an effort to get the proposal completed on time. Proposals have a way of getting done at the last minute. This is unwise. Proposals should be carefully thought out, reviewed, and re-reviewed for clarity, understanding, and completeness. The PM may have to prod in this case. In fact, he or she may have to take over the proposal preparation and complete the document. Do not be surprised if this necessity occurs.

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CHAPTER 6

PROJECT AGREEMENTS

General

Project agreements and early project planning should be accomplished at the same time. However, it seems that project agreements are often developed prior to any definitive project work plan. Some of the time, there is no work plan. Sometimes there is little more than a brief concept. The preparation of a work plan will be addressed in the next section. Again, this part of the work is not paid for but is included in overhead. However, it is a very important activity. A successful project may hinge on a well written agreement in tandem with a good work plan.

PREPROJECT WORK   CREATIVE DESIGN WORK
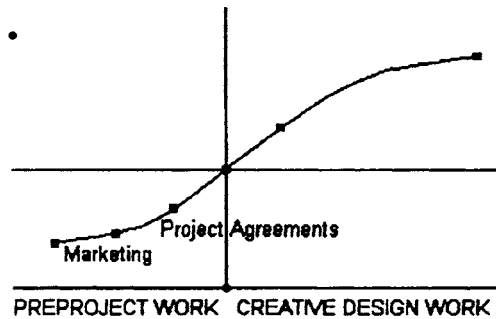
There are numerous project agreement forms. Each agency and community seems to have its own. However, forms can be modified, and in many cases, consultants can submit their own. The Engineers Joint Council Document Committee (EJCDC) has an Owner-Engineer standard agreement, and the AIA has its own Owner-Architect agreement. These are standards and must be tailored to each job. Do not be intimidated by standard agreements from your client. Make changes now or go to court later.

The young PM may not be experienced in the work of contract preparation, and the firm may have their own standard agreement, but this is one of the most important parts of the project. The descriptions of the work to be done, the dollars to be spent, etc., should not be taken lightly and should be set down with clarity. The young PM should be thoroughly knowledgeable of all the aspects of the

contract before starting his or her work. Before starting work, it is necessary to fashion a set of contractual relationships to properly bind the client, A/E, subconsultants, and possibly others. These agreements must be based upon information developed in some sort of project work plan.

The PM should always be consulted for his or her input into the agreement. Agreements are usually requested with a short timetable and must be expedited. One shortcoming that applies to many agreements lies in the fact that they do not sufficiently describe the specific project. AIA and EJCDC sample agreements cover most general issues. AIA Form F860 can be used to cover these general issues, and this is an excellent tool to ensure that all bases are covered. However, sample agreements do not cover all aspects of what should be done. A list of owner-provided services should be detailed, as well as the consultant-provided services. A detailed list of both parties' services will cause many problems to be avoided. A brief scope of services may allow the owner to request a service which later will be hard to ignore. The PM should make his or her concerns known, for they will have to perform the work required.

Responsibility for various services should be spelled out early. Whatever services are required by the client must be noted and described, and they should pay for the work so described. Some of these services are:

1. line, grade, topographic easements and rights-of-way, field surveys, and related office plotting of notes, computations, descriptions, and drafting
2. field surveys of existing structures, utilities, and services
3. calculation of special assessments and other financial activities
4. preparation of utility rate studies or rental rates
5. procuring permits, easements, and/or rights-of-way
6. preparation of applications, supporting documents, and sketches for government grants or advances for public works projects
7. performing an energy audit and providing recommendations for energy conservation
8. analysis, layout, and evaluation of alternate designs and sketches authorized by the owner
9. additional services resulting from significant changes in the general scope or design of the project
10. furnishing services necessitated by delays beyond the control of the A/E
11. preparation of operation and maintenance manuals
12. environmental assessments/impact statements and other governmental permits
13. preparation of record drawings

14. testing of shop, mill, field, or laboratory materials
15. subsurface borings or underground investigations or exploration
16. evaluations of the underground investigations or review of the evaluations
17. acquisition of existing utility locations and data
18. discussion with utilities companies for future needs
19. planning review fees
20. calculating the cost of printing plans and specifications for bidding
21. calculating the cost of visits to facilities for evaluation of processes and materials
22. preparation of probable cost by an outside consultant
23. client's review:
    a. Intermediate (30%-60%-90%)?
    b. Final?
    c. Review by owner only?
    d. Review by others only?
    e. Require meetings for all or none?
    f. How many sets of plans and specifications for (a) to (d)?
    g. Where will the meetings be held?
    h. Who will have to attend?
24. value engineering (VE) services
25. preparation of models
26. drawing of public relations sketches, site plans, and renderings
27. arranging archeological consulting

Whatever you include, do not let a guarantee or an indemnification clause sneak into your agreement. Your liability insurance probably does not include such coverage.

There are services to be furnished by the owner that generally are considered their responsibility. It is good to list these plus any services undertaken from the previous list. Some of the owner responsibilities that are usually furnished are:

1. providing all available information, including previous A/E reports; as-built drawings of existing facilities; existing, proposed, or pending subdivision of land; elements of planning reports, such as population studies, land use studies, and zoning regulations; topographic maps; tax maps; soils information; grade profiles of existing state, county, and local roads; and financing data shall be secured by the owner
2. providing all legal services, land title research, land surveying, and other services to assure title as required for all property, land and water rights, easements and rights-of-way, and responsibility for clearance of such titles
3. providing subsurface borings or underground investigations

4. paying fees charged by governmental regulatory agencies as part of their approval of detailed construction plans and specifications
5. paying for the cost of land, easements, and rights-of-way
6. paying for any cost of equipment that will be incorporated into the work, such as piezometers

Do not feel that you cannot list the things clients must furnish, provide, or execute. If it is not in the contract, it probably will never get done. Note the time period they have to provide their input. Their procrastination will cost you money. Also, never forget to include a section on how you will be paid for extra work.

Clients usually require a construction cost estimate. The architect or engineer is not in a position to give exact cost estimates and must state this in the agreement. Estimates tend to become sacred and disputes can result. You must make sure that your contract states "probable construction cost" or similar wording.

Costing

The PM might be required to estimate the time/cost of various services he or she will furnish. The PM should know firsthand what is required and must live up to the budget that is finally developed.

The details of costing a consultant's fee will not be covered in this guide. Most organizations have their own methods and guard them jealously. Many have computer programs with extensive and detailed data. Others only take a percentage of the proposed construction cost.

The PM must be wary of federal projects. Federal regulations set maximums for A/E design. These maximums are difficult to change due to cost-sensitive legislation. The new PM will need to discuss cost strategy with others before preparing a fee for such projects. Also, many state and local agencies limit fees primarily by limiting the overhead that can be charged. Do not be caught short with such caps. Find out what is included in the caps and whatever else can be added in various other categories of expense to calculate an equitable fee.

Fee Strategy

Fees versus quality are described later under "Managing Projects for Profit." This section describes quality in the mind of the client and the amount they want to pay, which also depends upon their needs.

The consultant must be wary of the fees they charge. Today's services are highly competitive as new organizations are started and existing firms open branch of-

fices. Consultant fees must be set within an amount that is fair and what the market will bear. Fees constantly over the norm will find the architect or engineer without work if they continually charge more than the competition. Poorly worded requests for a proposal, misguided clients, large overhead, and other excuses will not work. New and better methods of design will have to be worked out if your fees continue to be greater than the competitors. Cost cutting measures must be used, but high-quality work must be maintained.

Consultants that have fees continually above the competition's must look long and hard at their processes. This is a disservice to the customer as well as the employee who may be laid off due to lack of work.

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CHAPTER 7

PROJECT PLANNING

General

Good project management is based on good project planning. A project work plan, structured from a good process, is a statement of what is to be done, who is responsible for each task, when it will be done, and how many dollars will be allocated to the effort. It causes the architect or engineer, consultants, clients, and other key participants to think the project through before starting work. It provides guidance for directing the work and sets up yardsticks for measuring project progress. Working within the guidelines in this discussion, the PM designs and coordinates a planning activity that involves the full team in producing a written work plan. This work plan can be small or it can be large.

Project Planning

Project Agreements

Marketing

PREPROJECT WORK   CREATIVE DESIGN WORK
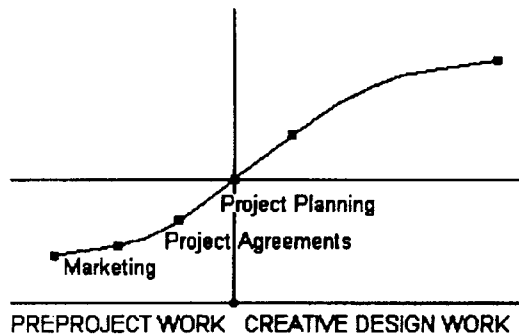
Many projects are just started after the contract is signed. The fee is determined from past projects and it is hoped that the budget will take care of the new commission. Everyone is happy about getting the new project, and in the beginning, all projects look rosy. Then, the work and, perhaps, trouble begins. If a new PM is assigned this job, then he or she may pay the price for a successful or unsuccessful completion.

Planning is a team effort. The PM should assemble his or her group and begin to plan the various efforts. It is important that team members cooperatively work on required tasks, responsibilities, and schedules. This allows the team to work out conflicts, understand the project requirements, and agree on priorities, schedules,

and budgets. A level of detail should be described for all project participants to understand what is expected of them in each phase and time period during the project; otherwise, there is no basis for control. The desired results are

- to complete the project on time,
- to complete the project within budget,
- to meet the needs of the customer,
- to reduce the amount of rework,
- to run the project with proactive management,
- to make sure staff has a clear understanding of who does what, when, and how much,
- to make sure staff is happy, and
- to create a process that can be used again.

This recommended planning sequence consists of

1. having a general process to accomplish the work
2. having a concept or general plan that outlines the work to be done
3. having a work plan documented on how to accomplish the work

This planning sequence can be highly detailed for a complete project or a handwritten sheet of paper for a small job. As described in a previous chapter, definitions that apply to the planning effort are: (1) the process, a standard procedure for the preparation of a report, detailed plans, determination of a test or any other project or activity; (2) the concept, a general plan and parameters for input into the process; and (3) the work plan, a written procedure for using a process with a certain concept to complete a project or activity.

Need for a Process
It has been learned that four concepts need to be addressed when building a TQM system. The first and most important concept is to recognize the customer. The second concept of the four is to focus on the process(es). A process is needed to begin a task, whether it be writing a letter or designing 25 miles of interstate highway. A process is essential for good project management and, in turn, a good work plan. Processes should be documented by every A/E firm for most major types of projects. When the process is a known commodity, then a work plan can be written much more easily. Also, a process can be altered to correct errors or to make it even better.

A process is described as a progressive course or a series of measures or changes. It is also defined as anything that produces output, products, or services to a customer. Everything is accomplished by a process, no matter how small or how

large; before you can control a process, however, you must understand it. It is necessary for architects and engineers to have a process(es) for their various projects and to understand it. A process is then merely a series of events taking place to create a product of some type.

The ultimate aim of a process is to standardize the sequence of events. This series is best used over and over again, for practice makes perfect. During the various series, new and better methods will be found and inserted into the process; therefore, the overall process is to plan, do the work, check the work and process, then make changes for the next project.

A person plans a process, places it into action, and checks or monitors all along the chain of events. When errors are found or changes are required to better the process, they can then act and put the change into operation. The cycle then continues with planning, doing, checking again, and acting again if required. Quality is a constant cycle. It should be the mission of the PM to maintain the momentum.

Process Planning and Preparation

Every action needs some planning. A person must think about each activity he or she is about to start. A worthwhile process needs to have adequate planning. Many projects are subject to poor quality and performance due to poor planning.

A process can only be started by planning. The makeup of the planning process and A/E work should be fairly repetitious. Every project is different, but the planning and the process should be somewhat alike.

The preparation of a process has a cycle of events that is described above. Again, those are *plan, do, check,* and *act.* The preparation of a process for the first time may be practiced with a project already undertaken. The steps are known and procedures found to be in error could be improved. Also, it may be found that a particular project has been obtained or is in the proposal stage. It is necessary to prepare a process to complete the service for this particular project and similar projects in the future. Whichever is the case, the process will be used over and over again. Once the process is prepared, the PM can prepare a work plan for that specific job or project.

The preparation of the process may be given to one person; however, it is advisable for two or more persons to meet and brainstorm the process, especially for the young PM. The same procedure can be used for longstanding activities as well.

The first step would be to outline all of the principal tasks required to complete the project. Care must be taken to eliminate minor tasks that may make the process

so cumbersome it outweighs the original purpose of streamlining the activity. Also, the process should be concise and to the point so that people will use it. If the process is too complex, it will be shunned by everyone.

The second step in the process preparation is to assess your organization, unit, or section. What can you do? How well can you do it? What expertise is lacking? What were some of the problems in the past? Can you manage normal operations? What skills are available? What training is necessary?

After all the tasks are assembled, the flow can be charted. This can be done on a series of cards or by other means. Of course, the inventory and analysis, code review, utility determination, program kickoff meetings, and other early tasks will be the initial thrust of the process.

Approach to Developing the Work Plan
Planning is first and foremost a "people" process. While it may entail many words and numbers, the success of the planning effort rests on the people who propose, argue, and ultimately commit to those numbers and words. The PM should take the lead in assembling the work plan, but he/she should involve people in key roles and avoid the temptation to do it all himself/herself. Also, the PM should consider using the team approach for the key members so that they can work out jointly the tasks and responsibilities. This not only allows the group to work out conflicts on the spot, but it can go a long way to ensure that each team member sees the same requirements and priorities.

A PM should use the planning process as a mechanism for getting commitment from the team. Individuals making commitments then own them, and will help to ensure that they will be carried out. Also, the PM should resist the temptation to overplan. They should match the sophistication and details of the planning effort to the needs of the process. They also should resist the temptation to underplan. If there is too little detail, control becomes an impossibility once the process is underway.

A start-up or kickoff meeting is one of the major functions in any work plan and finally the design. This meeting outlines each person's task and when it is to be completed. It also obtains the commitment of each party in the process. This will be described later. The work plan should recommend that an early meeting be held to find whether the concept of the process is being followed. It is then the responsibility of the PM to observe the progress at the time: to see that everyone is on the right track and, if not, to indicate any changes necessary. With a process prepared, a project can be undertaken and a work plan prepared.

Project Work Plan

A written work plan, based upon a reliable process, is well worth the effort needed to develop it. It provides assurance that expectations are clear and reflected in the approach the firm will take to the project. It identifies the specific people and other resources needed to do the work. It also provides information for the proposal and the Owner-A/E agreement.

Given the wide variation in project types and circumstances, some work plans are terse and straightforward; others are more complicated and emerge only after several rounds of discussion and negotiation. Some work plans may be on a handwritten page; others may be of many pages.

The work plan is developed as soon as practical and preferably before agreements are negotiated or at least before substantial work begins. A work plan should be structured and formatted in standard ways. This ensures that critical project information is presented in both comprehensive and consistent ways from one project to the next—an asset for the project staff, subconsultants, and clients, as well as the PM. The plan should include, as a minimum, the following:

- a brief description of the project
- a description of how the project differs from similar projects
- a summary of the project goals along with the client's input
- any approval requirements
- a discussion of how the project is to be handled
- a discussion of the process
- a few sketches, rough plans, and/or elevations

The work plan will also include a budget and schedules. The use of CPM or other management tools may also be employed and discussed. Many such tools are available, ranging from the simple to the complex.

A work plan can be simple, perhaps one page written in longhand, or a comprehensive plan. The latter activity will cost money, and dollars will have to be built into the project fee to pay for its preparation.

A few suggestions for preparing work plans are:

- Involve the other people that will be working on the project.
- Resist the temptation to overplan.
- Resist the temptation to underplan.
- Use a work plan to gain commitments.
- Involve the owner.
- Involve subconsultants.
- Outline essential tasks needed to complete the project, and designate who will be responsible for completing each task.

- Document the concept of the project (if it has not already been done).
- Document subtle aspects of the project that may become a problem.

Scheduling can begin when all tasks have been identified and time established for their completion.

Steps toward a work plan:

1. Start by defining a logical sequence of project tasks including revisions and approvals.
2. Diagram the sequence of tasks, using bar charts or cards, so that participants can clearly see each activity.
3. Assign reasonable durations for each task. (You cannot expect miracles.)
4. Combine individual tasks to develop major phases.

CHAPTER 8

STARTING A PROJECT

General

The fun begins when the agreement is signed and actual design can begin. Actual dollars can be gained and creative design can begin.

PREPROJECT WORK   CREATIVE DESIGN WORK
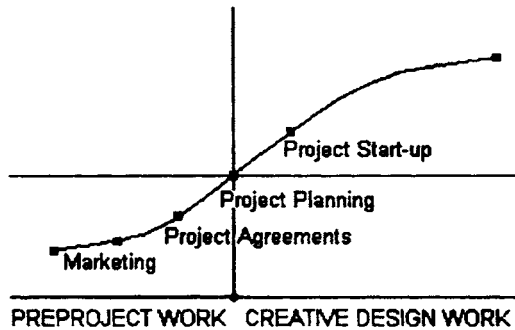
Project start-up marks the end of the planning activities and the beginning of the project. The PM must take the steps necessary to set up job numbers, job data sheets, assemble data needed by the project team, set up the project record, and brief the project team. A considerable volume of specific project information should be available at the start of the project. This includes:

- client organization, description, goals, plans, etc.
- planning and feasibility studies
- programming data
- site studies, surveys, and previous plans
- technical data
- technical and construction standards
- codes, standards, and regulations

It is the PM's responsibility to collect this information and make it available to the project team.

A predesign meeting with the client should have already occurred but, in some cases, it may have been overlooked. If the meeting has not been held, time is running out for its completion. A standard predesign meeting form can be devel-

oped and can also be contained in a simple memo. After this form or memo is completed, it should be returned to the client for his or her review and concurrence.

Standard Project Book

The PM should set up a standard project book and collect the various data needed to start the project. This book will give the project team the essentials for the project. It should be placed in a central location for everyone's use. Some firms have their own standard, and they become a worthwhile source for current and future information. These books can contain contracts, work plans, client's input, subsurface information, design notes, specification data, schedules, and correspondence. These are especially valuable should problems occur after design and during construction. Centralized shelving of the standard project book during design allows the team to use the material and be familiar with a project during and after design. The PM that holds project data in his or her possession may cause errors and omissions due to poor team communication and coordination. Suggested contents of a standard project book are given in the Appendix.

Kickoff Meeting

The initial project team briefing (kickoff meeting) makes sure the project team is fully briefed on the project status, requirements, and work plan before time is charged to it. This briefing ensures that the project team is fully aware of project goals, requirements, arrangements, work to date, and sources of data before work begins. It also continues the climate of participation and commitment-building established in the planning phases. On a small project, the only person there might be is yourself.

Prior to the kickoff meeting, the PM reviews all backup material that has been prepared by the marketing group and the client. He or she then uses the work plan to indicate what, when, and how much work will be provided. The PM develops milestone schedules to identify required completion dates for key parts of the project. This schedule should be in compliance with the required scope of the project and should match the work. He or she will also carefully review the project budget.

A meeting such as this requires an agenda, as do all other meetings. The agenda should list all members of the project team and items to be covered. This agenda should include a copy of minutes from the client's predesign meeting, although some team members may have already been in attendance.

Suggested in-house predesign meeting items are included in the Appendix. These items are a companion to the client's predesign meeting. The form or memo should be completed and copies distributed.

The work plan should be explained and the following steps taken:

- establish the scope of work, guidelines, limitations, problems, etc.
- review construction cost estimates
- review the schedule for design
- review the consultant's fee (budget)
- present an action plan on how the project will be handled
- discuss each team member's assignment, schedule, and budget responsibility
- discuss quality level
- discuss the next meeting date and who and what is to be presented. Ask each member to come prepared to discuss their own schedule and cost.

Each person should leave this meeting with an understanding of his or her responsibility, budget, and schedule, and the PM should have the commitment of those persons to do the job expected of them.

Code Review

One of the most important parts of a project start-up is code review. Today's world of design includes a multitude of codes of various nature. The PM must ensure good design for the client and adequate protection for the architect or engineer and owner by providing a code review early. The proliferation of new codes is beyond control of the consultants, and they have to abide by the demands of the various governmental agencies.

Code review must be undertaken early and must be complete. All codes should be examined. Each PM should have a list of codes that apply to his or her area of expertise and be able to give that list to his or her staff.

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CHAPTER 9

MANAGEMENT

General

"Project team" is a broad term. In general, it encompasses all the people and organizations working on the project—architect, engineer, consultants, client, client's consultants, and perhaps contractors. As a practical matter, the full project team is rarely assembled in one place or for one purpose. However, design management must be pursued wherever the people reside. This must be done throughout the life of the project.

PREPROJECT WORK   CREATIVE DESIGN WORK
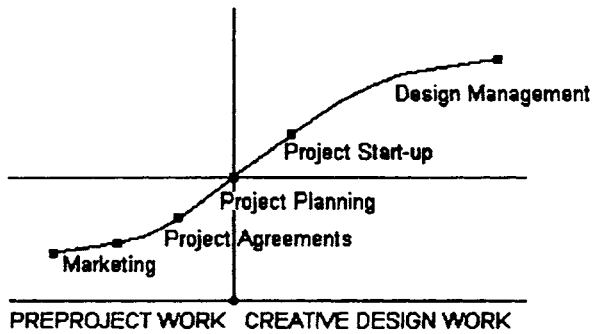
Whatever its definition, the responsibility for maintaining the project team lies in the hands of the PM. The PM plays a major role in structuring the team, includes it in project planning and start-up, and directs its work throughout the project. The PM's directing responsibility is a complex one. It is the PM's responsibility to be sure that assigned work is being done on time and within scope, quality, scheduling, and budget objectives. The PM manages the schedule and budget objectives. The PM manages the flow of information and communication within the project team and is charged with looking after the health and vitality of the team effort.

Project management is both a science and an art. On the one hand, the PM sets up careful lines of communication and participation, assuring staff a full place on the team and access to project information and decisions. On the other, PMs walk a very fine line in their efforts to assure that project objectives are met while assuring their members that the autonomy needed to do their work is approved.

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Projects can be mismanaged very easily without proper planning and monitoring. If mismanagement happens, no one knows what is supposed to be done, rework will be required, staff morale will suffer, productivity will diminish, and project costs will escalate. The worst case scenario will find legal problems in addition to cost overruns.

If everyone knows what to do, the reverse will be true. Morale should be high and errors and rework held to a minimum.

This chapter is the smallest in the guide, but it has to do with the largest part of a project. Managing the implementation of a project is the meat of the work. Most of the fees are paid for this work. The actual success of the project is found in the completion of this phase. This does not mean that the PM can just glide through this phase. The opposite is true. Much effort needs to be expended. With the advice of the previous chapters and those following, a great and wonderful project will be realized.

Scheduling

The principles of scheduling and cost analysis will find that a work plan must be in place to guide the entire project. Three ingredients of a project—scope, budget, and schedule—must be linked together and followed. A project must be broken down into definable and measurable units of work that are manageable by various members of the team. Also, the project schedule must clearly define individual responsibilities, schedules, budgets, and anticipated problems. If there is a change in any of these items, the PM should communicate with appropriate parties whenever the case exists. There should be equal concern with schedule and budget, and they must be linked together.

Planning, scheduling, and cost control begin at the inception of the project and are continuous throughout the project until final completion. Therefore, throughout the process there are four fundamental questions that must be answered at each step: Who?—Does what?—When?—How much?

Design Materials Safety

The PM should take precautions to insure the safety of plans, tracings, tapes, discs, and other materials of design. Fires, windstorms, and floods are considered more of a problem than theft.

A large organization will have security measures such as vaults, safes, off-site storage and, of course, insurance. The small firm may not. In that case, the PM

should take it upon himself or herself to suggest some off-site location to store duplicates after various milestones have been reached. This could be at a branch office or at the client's office. They might even take a duplicate home, if approved, or to an owner's home. If disaster occurs, then partial recovery is possible.

Invoicing
A PM believes that the first and most important task is to get the work out. All other tasks must take a lesser role. Invoicing may *not* take a lesser role.

A PM should invoice the work as soon as possible as called for in a contract. He or she should not be hesitant in invoicing at the proper time and for the full and proper amount. An invoice indicates what has been completed. If you invoice less than what you have performed, the client will fear that you are not progressing properly. Do not attempt to over-invoice, however.

Payment of invoices also can indicate how well you are doing. If the invoices are not paid, perhaps you are not satisfying your client. It is their opportunity to get your attention. You should check on your payments and if a problem is indicated, meet with them. Remember, communication is good management.

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CHAPTER 10

PROJECT QUALITY

Quality and Costs

Quality means that you must listen to the client. You are not the last word, especially when it comes to the budget, the design fee, and the parameters of the project on which you are working.

The client almost always has a budget, or what he or she believes to be a budget. Perhaps the facility is one that must be built regardless of the cost. Whatever the budget, you must keep costs to a minimum, yet be concerned with the safety and usefulness of the facility. The happy client is one that has just received a contract for design services which is less than his or her estimate. The very happy client is one that has just taken bids and the low bidder is below the estimate.

Fees must be kept competitive at all times, else clients will not return. This is true in good times as well as bad. Work must be productive at all times. The process for which "we have always done it our way" is no longer appropriate. New methods, doing it right the first time, and expeditious use of time will keep consultants in business.

The bottom line is still quality. The product must be of high quality. The construction supervision staff cannot solve all the problems in the field. It is not their job to keep the designer out of trouble. Quality does not cost, it pays.

Service

Quality has two essential products. The first is technical quality—plans, specifications, etc. The second is quality of service—timeliness, neatness, cooperation, etc. This discussion considers technical quality principally. The contract documents and other services provided must be superior to those of the competition for you to keep in business.

Quality means that:
- documents are complete
- no omissions are committed
- calculations are correct
- documents are clear and understandable
- codes and standards are adhered to

- the design is constructable
- the facility meets the needs of the client

These quality parameters are met by:

- reviews by individuals
- project review meetings
- use of checklists
- third party reviews
- checking

Two thoughts occur regarding checking. The first dictates that *everything* will be checked and all will be well. The second allows *spot* checking with only critical phases being checked. Analysis by quality consultants finds that designers will leave errors and omissions for checkers to find if the work is *totally checked*. In reality, checkers will not catch all of the errors in most cases. People who are given the responsibility of design with *random* checking take many more precautions and learn to do quality work initially.

The PM must decide the level of checking and review and communicate this to his or her staff at the beginning of the work. From then on, it is his or her responsibility to hand out checklists, standards, and other materials that will increase and ensure quality. Review meetings are generally dictated by the contract. These reviews might identify some errors and omissions but on a broad basis only.

The PM can designate various reviews by individuals on certain aspects of the work, or he or she can ask for an outside third party to look over the work that may be unique. However, it is the responsibility of the PM to have a correct set of documents for his or her seal to be affixed.

Checklists

Checklists have been offered as a cure for many design and management problems. This is probably overrated, as checklists can be burdensome with staff reluctantly and inefficiently using such tools. Checklists can be a help, however, for entry-level staff, and, if not too lengthy, they can be useful as a reminder for major activities.

Logical Approach Review

A review by logical approach methods can be employed. This approach may be considered a "broad brush" attack on the project. However, it can be used to catch major flaws in plans, specifications, and costs.

Judgment of past projects can evaluate sizes of areas, ducts, pipes, and loads for various proposed facilities. Rough estimating of carrying capacity or loading might turn up a possible problem. For instance, a rough estimate for discharge from a drainage area with a certain runoff rate might be used to check a storm sewer capacity.

Quantities can also be reviewed in this manner. Areas, earthwork, pavement, and conduits are often advertised in error. Conduit can be rapidly checked by adding the number of sheets of plans and multiplying by a representative sheet length. If staff gets engrossed in details, math, and tallying, then problems occur.

A rough but rapid review for finding mistakes may keep a job progressing satisfactorily and, if correct, may lead to the award of another project.

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CHAPTER 11

PROJECT CONTROL

General

The project work plan, as originally written and modified during the course of projects, sets up specific schedule and budget yardsticks; each project task is to be completed in a specific time frame and within a budget.

During the course of a project, your accounting group might accumulate information on actual expenditures of time and funds to accomplish the project tasks. The PM may have to do this in some organizations, especially if the information comes too late. It is the PM's responsibility to measure progress against yardsticks and to take or propose any needed corrective action—either to keep the project on track or, in some cases, to revise the yardsticks.

The critical ingredient in successful project control is discipline. Accurate information must be collected and presented in a timely way, and the PM must be willing and able to make mid-course corrections, also in a timely way. This approach is based on the understanding that projects can go out of control in just a matter of a few days, and that most problems do not become large problems if they are addressed correctly. Management has given the responsibility for the project to the PM; therefore, he or she is required to take charge and direct. If management does not give the PM such responsibility, then the project is in trouble from the start. This does occur in some firms and their quality reflects the problem. Management must learn to give the PM project control, and provide the resources for the PM to work. Management must also train the PM, tell him or her what is to be done, and not allow the project to flounder in a sea of indecision.

You as a young PM must feel free to ask questions, request training, be assigned a mentor, and study outside the office. This is the time to be proactive and not waste time in putting out brush fires.

Contingency

No matter how effectively and efficiently a project may be controlled, there are unforeseen problems that might occur. A contingency should be allowed in each project. The amount of contingency might vary from project to project. An amount of 5 to 10% of each phase might be suggested.

Projects are sometimes accepted where fees are minimal. As discussed previously, fees should be based upon the needs of the customer. This should be discussed with the customer and contained in the proposal. You cannot promise something that cannot be estimated and quoted; therefore, your contingency should not be a portion of the profit. Fees should include the various costs, the contingency, and the profit. Those that take a project, without profit or contingency, to gain a foothold or for other reasons are asking for trouble. The PM may not be informed of this condition in some cases. In other cases where the PM is part of the fee negotiation, the knowledge of fee reduction is known and the PM must wrestle with the problem throughout the project.

If you are a young PM in a young firm, it is your responsibility to suggest that such contingencies might be appropriate. Most clients know what it costs to complete a project. A young/new firm providing a low cost spells trouble. The deletion of a contingency is not recommended. Last minute work is always necessary; and it can range from a minor to a major extent.

Final Period Control

The previous paragraphs discuss contingency fees to be built into the schedule. These can be built in in various ways, at the discretion of the PM or management. However, there is one pitfall that must be reckoned with—that pitfall is the amount of work expended in the last period.

A final work period generally will be a period of 4 weeks; however, it could be a week for small jobs. The optimism of your staff will report work in a greater amount than actually experienced. This is due to naivete, fear, lack of understanding, and/or inability to estimate; but let us call it optimism. Therefore, as a project enters the last period, the work to be done may be more than the budget allows. This is compounded by the need to work overtime, to accommodate the time needed for completion and the need to correct errors and omissions.

The PM must constantly monitor the staff and subconsultants to ensure that the time expended is equal to the work required. In any event, the PM must be ready to accept the large expenditure of time and money during this last period. A series of meetings with those at work on the project is appropriate at the beginning of the last period. Items to be covered can be:

- ensuring that the final coordination is correct, with no assumptions
- eliminating any redesign for personal reasons
- making sure the client has all of his or her needs met

- checking by the PM or a third party for omissions and errors
- checking by the PM or a third party to observe excessive design over and above the contract

All of these items should have been resolved earlier, but are oftentimes disregarded.

Changes

Every project has changes. Some are due to errors, client changes, better processes or design, poor communication, etc. Changes are the cause of significant losses for most A/E firms. The policy of doing it right the first time must be emphasized, as discussed in the TQM process.

Changes can be minimized by stopping the person that cannot make up his or her mind and redesigns until the last possible minute. Also, the client who always changes his or her mind must be told early on that he or she must pay for changes after a certain point. A PM cannot be timid about requesting extra fees for a client's inability to make a final decision. Likewise, a PM cannot be bashful in discussing redesign excesses with procrastinating or indecisive designers. These persons, in many cases, may be older than the new PM. These persons tend to intimidate the new PM, because they tend to be cynics and cynics have history in their favor. The PM must take control as directed by management and lead the designer into completion. The process of TQM will help in this venture and help make the relationship one of courtesy and respect for both parties.

Sequencing

A PM must make out the initial budget for his or her project with the input of several people and/or subconsultants. Did they make the correct prediction of time for the work they have to do? Most PMs do not have the time or experience to check all time and costs. However, the PM must set up a timetable with sequencing of events and directions of work for individual staff.

This timetable and the actual direction of when a person(s) is starting his or her part of the work is of utmost importance. The PM will be plagued with comments from the designers as to when they can start. These conditions may include requests for

- an early start-up to ensure that they are a part of all activities,
- an early start-up because of little work, or
- a late start-up because of too much work.

Any of these conditions can cause the budget to be depleted. The first condition can be taken care of by good communication tools. Having unneeded persons at meetings and in activities that are not warranted is a waste of time and money. The same is true for early start-up for persons going out on their own, only to find revision is necessary to get back on the main track. The third condition can slow the entire team down to zero productivity while waiting for action on one person's part. A case in point would be the mechanical design group starting late with structural people using assumed floor loads and electrical loads unknown or having to be assumed by electrical staff. Both groups would have to come back later for refinement in their design with duplication of effort.

Therefore, the duration of each sequence of events and when to start various tasks is important. This is especially true for fast-track jobs where CPM or other tracking methods may be used.

The time elements to do certain tasks must be adequate, logical, and reasonable. New staff may need more time, etc. When determining the total time and a time to start, do not assume a continuous flow of work will occur. Other work, reviews, equipment loss, vacation, and a multitude of other factors will undermine the sequence and must be considered.

CPM and Other Control
Scheduling and budget control can be made simpler and more effective by the use of several tools. One of these is the CPM. The CPM can be changed, updated, and modified to fit various conditions and will show the team the actual and proposed activities required. There are many other programs available for the scheduling of A/E work on the market today, and some of these programs could be utilized to expedite the process design.

A person who is familiar with one of the various management programs can readily determine when services are to be started, ended, etc. However, it is not the intent of this guide to discuss the many management tools that are available for today's use. Many kinds of software are available and suitable for various types of projects.

Cost and Performance Curves
As mentioned previously, systems to monitor cost will not be discussed herein. However, the PM needs some basic data if his or her firm does not provide such information. The PM can employ a very basic cost curve with his or her purchase of a simple starter program or simply use raw data and manual methods.

The key to a project's success lies in providing effective controls for cost, time, and performance. It is important to track time, cost, and accomplishment during the entire life of a project and to provide, in a simple and understandable form, measured variations from the planned values. When the PM distributes the form, it should be as simple as possible and include the basis as described below.

Graphics can be prepared for such control and are readily understood. A graph would indicate the curve of a projected cumulative cost throughout the life of the project. The PM would predict the amount of cost per each period and plot this on a curve at the beginning of the project. During the life of the project, the PM would plot the actual cost, and the graph would illustrate the progress or lack thereof. Most firms have accounting methods that will give the total cost for a period, but a periodic guide comparison to a baseline is usually not available. This will have to be prepared by the PM.

Another curve would illustrate actual performance in relation to the scheduled performance. If, for example, the graph shows cost exceeding the budget at the report date, with the performance behind schedule, a problem exists. This is a worst-case scenario. In this case, it might not be possible to get back on track unless design can be completed immediately by some miracle. If costs are high, the performance should also be high.

Graphs are good indicators of the budget and performance and can be distributed and interpreted by staff in a short time; however, they need to be simple. Many PMs will plot the curves so that their staff may see the results. An analysis of the curves needs to be described early in the design process so that all will be familiar with the input needed and the output expected.

A PM who neglects to monitor his or her project throughout its life is open to total failure of both quality and productivity. The PM must visit the individuals involved (including subconsultants) as often as possible and perhaps discuss costs. The "desk bound" PM is very vulnerable.

The cost and performance curves are only good if they are seriously used. The schedule and budget must be tied to measurable tasks or accomplishments set up in the curve plan or other document. The PM and his or her team and subconsultants must learn to determine their work to date and work remaining. Vague estimates, or using the actual costs to date, will not suffice if a project is to be profitable and one of quality.

With an effective way of estimating performance, it is then possible to take corrective action. The PM can direct his or her team as to how they should proceed. A periodic display and discussion of the process should be done at each period,

with discussion of how the PM can help if the project is in trouble, and recognition for a job well done if the work is ahead of schedule and under budget.

Budgets for Individual Staff
At one time, it was considered poor judgment to tell individual staff how much time was allocated for A/E tasks. Design was supposed to be done correctly, no matter how much time was spent. Today's competitive market has made that idea obsolete.

It is the PM's duty to indicate the approximate time and due date for various tasks. This not only means tasks for major elements such as mechanical, electrical, and structural, but smaller tasks for the individual drafters. Staff should be apprised of the time allotted and work toward that end. Various levels of quality are required and this factor must also be given to the various staff and subconsultants. Discussion concerning the level of quality is made elsewhere in this guide.

Changed Staff
One of the most frustrating things that can happen to a PM is a staff change after the start of a project. This can happen by a number of ways—illness, relocation, resignation, project start/stop, priority needs, etc. The PM should, whenever possible, insist upon continued use of an individual until a project is complete. Changed staff evokes extra start-up, differing ideas, differing experiences, differences in quality, and all can lead to extra cost and poor quality.

CHAPTER 12

PROJECT COMPLETION

General

The project closeout or completion period is one of extreme importance. This is the time for final review of the plans and specifications and probable construction cost. All last-minute changes should be thoroughly considered in respect to their effect on the project.
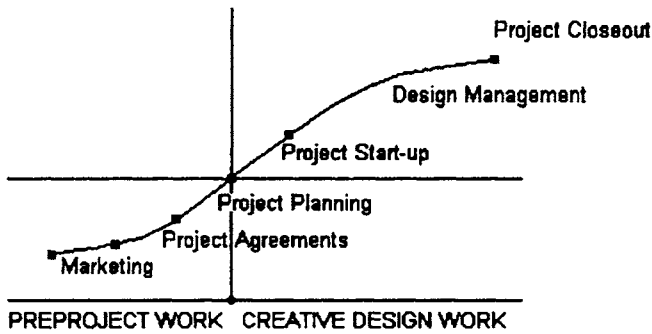
The preparation of contract documents (plans and specifications) seems to continue until the deadline, no matter the length of time allowed. If a project's total fees have been depleted at that time, you may be in trouble. You should have a designated profit plus a small fee remaining when the last line is drawn. The final review will find things to be changed and corrections to be made. The following comparisons have been used by consultants to show changes and comparative costs. They can apply to plans and specifications and to other projects as well. You will have to place a value on the cost.

If changes are made at the percent completion:

Time Period	Cost Amount
5%	1
15%	10
95%	100

57

Designers make changes on account of aesthetics, safety, code requirements, or just for personal satisfaction. Changes may be needed due to a mistake or an omission. There are also many cases when ego, fear, or procrastination takes control. A PM must recognize those traits within his or her team and control them, especially at this point. Budgets and timeliness are critical and must be corralled.

The persons that are working for you have little to fear in terms of budgets and completion dates. In fact, changing the completion date to their satisfaction will allow them to practice a little on your time, produce a better monument to their resume, or relax a little. Work always progresses to the actual project schedule completion date no matter how long it is allowed. The project team should complete the work on time. When their work is complete, then you as the PM will be in the position to finally review and start the road to completion.

The final days of project closeout can be the costliest time of your entire process. No matter how hard you try to keep people on schedule, the idea is to please you. So at the 50% mark (completion not schedule), your staff has told you collectively they are 50% complete. Are they? Probably not. They may be as little as 35% complete. Remember, details and sophisticated design can take time.

Therefore, it is wise to allow a block of time for finalizing work that you find in the closeout period. Last-minute changes are costly and a distinct liability on a project. This part of the process is one that profits by the use of a checklist. Major items can sometimes be forgotten at this stage. A third party reviewer will sometimes catch significant items that other reviewers have overlooked.

Completion Meetings

Most projects will end with several meetings reviewing the plans and specifications and preparing for advertisement of the bids. However, after bids are taken and before all is forgotten, it is wise to assemble the team for a short time to discuss future projects in terms of what was learned in this project. This is a time for recognition, not condemnation. Nothing can be done now, so take the blame and go on from there.

If management says that you have spent too much time to date, schedule a brown-bag meeting for those interested. You will also ferret out those that are interested and who you will want on your team in the future.

You will need to meet with the client also. No doubt, meetings will be held prior to the advertisement for bid; however, it is good to have a separate meeting or luncheon to discuss the work completed. The meeting will give the client an opportunity to discuss his or her problems and evaluate the plans and performed

services for the present as well as for the future. Attendance at this meeting should include one other person who was vitally involved in the project to ensure all the client's needs are recorded.

Services During Construction

This guide deals principally with the work up to and including the design of a project. Services during construction is a study of its own and is not contained herein. However, a PM will almost always be associated, in some manner, with the construction of his or her project. The level of association varies widely. There are a few general guidelines that a PM should try to follow if he or she is involved:

- Be firm but flexible when dealing with the constructor.
- Do not allow the constructor and the owner to start their own deals.
- Pay for extras: you cannot get anything for nothing.

These three simple rules can save untold sleepless nights whenever practiced.

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CHAPTER 13

MANAGING PROJECTS FOR PROFIT

General

The section on Project Quality described the necessary steps that must be taken to ensure quality. Namely, ensuring that the project be completed within budget, on time, and that it meet the needs of the customer. The first two items must be met. However, the third item is elusive with a broad scope of services. The PM must have an understanding of the needs of the customer before the contract is signed. The fee will be determined with the customer's needs in mind. For example, these needs are not fully known, the PM may think the customer wants a simpler design and the fee will be calculated for such. The customer will be happy until the product is submitted, and then trouble begins.

When the quality level is made certain, then the project can truly begin. The PM is required to have all persons working on the project directed in the same path to achieve a project within budget and on time at a certain quality level.

The discussion of problems in the following paragraphs will assume that a reasonable fee has been calculated and there are no built-in pitfalls in the contracts.

Quality Level

Some people believe a quality level is the same for all projects of similar nature. In other words, we have always done it one way, and that is the way it is going to be. This is incorrect. The client sets the quality level. He or she expects a certain degree of quality based upon a certain fee. If you continually calculate a fee higher than the client expects and give him or her more than he or she wants, then there is something wrong with your process. These processes must be examined and efficiencies and flexibilities must be added to bring the fee within industry levels and for your firm to be competitive for that certain level of quality.

Of course, some clients will want something for nothing. They must be educated to feel comfortable with the task involved and the fee required. However, their final needs must be in line with the fee. Some clients want less; therefore, you cannot force them to take what is always provided. "We have always done it this way" is a phrase customers do not want to hear. The next job will be given to a consultant

who will do it the client's way. Remember, most of today's clients are sophisticated in the ways of their industry, so do not try to fool them.

Plans and specifications must abide by the rules and regulations that govern the design. They must also ensure the health, safety, and welfare of the user and show that you will not design problem facilities. However, the level of sophistication of the documents and the facilities themselves depend upon the client's needs and the fee he or she pays.

The Small Project

The small project has to start with an attitude of *get in and get out*. The quality level of the small job must be examined early. The use of past designs, standards, paste-ons, and other cost savers may be pursued. These items will help to ensure time for providing a quality project rather than a fast-paced job. The small job must be as quality based as the large job.

There are many shortcuts that are quality based. These must be used. Some measures that can be taken for small projects are:
- keeping staff to a bare minimum
- prohibiting start/stop design
- making sure everything is evaluated before starting
- evaluating every detail; i.e., is it really required?
- preparing only those alternatives required by the scope of services
- if you are not a small-job PM, giving the job to another
- subconsultants, if any, should heed all of the above
- closely monitoring all persons' time and letting them know the budget

The Big Project

It has been said that a big project leads to a profitable venture. People like to obtain a big project, as it inspires, is highly visible, guarantees a consistent work load for a long period of time, and can be highly profitable. These may or may not be true.

There must be a series of precautionary measures in place on a big project. The first move that may be fatal allows staff to sit back and relax a bit early in the project. Big budgets sometimes give staff a feeling of luxury and marking time until all is in order and letting the time schedule drag. Also, this early period allows procrastination to put off the essential goals early. It allows the indecisive to try a large number of alternatives without settling on any. This last problem can con-

tinue all the way through the project until days before the advertisement for bidding.

Therefore, the worst may come true. That is, a big job might be unprofitable. Having many people involved can make it an even bigger disaster. This will be the case on a big job where the staff is large.

The disaster might be higher costs, timetable exceeded, and quality sacrificed due to last-minute changes, errors, and omissions. The big jobs must be handled carefully, time and tasks monitored continually, reviews and checks made as required, and the project managed in an early and upbeat fashion.

Some thoughts on a large job that should be observed are:
- Do not overstaff just because the job is large.
- Do not understaff the work until the last minute crisis.
- Monitor cost, time, and product continually.
- Produce only what is required in the scope of services. A big job does not have any more luxury of excess time than a small job.
- Do not allow staff to think that a big job has an unlimited budget.
- Subconsultant work (internal or external) should be started only at the correct time.
- Do not let tasks drag so that large segments of people are underproducing and/or waiting for input.

The PM, on a large project, is most valuable in managing rather than designing. Do not let the temptation to design preempt the basic task of managing well.

Project Problems

As discussed previously, many projects seem to proceed on time and on budget until the 80 or 90% completion point. At this point, there is a reevaluation of the project and many changes occur. Omissions are found and corrected. Proper planning has not been used and the project then becomes unprofitable and sometimes quality suffers. Please note that this problem is considered to be great and is discussed several times.

The final period of most jobs finds a flurry of activity in trying to catch up on the project. This activity usually involves higher-paid staff, which compounds the problem. Sometimes people cannot avoid the temptation to fine tune the project until the last minute. The basic design people (the architect and/or process engineer) must complete their design early and then stop work unless the client orders otherwise or a problem is found. Code reviews and basic parameters of design must be laid out before the 5% point in the design. Every added detail, change,

addition, and revision must be reconsidered in the last period of a design. Subconsultants must report their intention to make changes and revisions, just as the architects and engineers must report any modifications, to the PM. This problem leads to excessive design costs, but more importantly, it leads to quality problems that the construction people are forced to remedy. Last minute changes always bring about other changes that are not caught until the contractor finds the problem.

It is necessary that the PM monitor time, cost, and schedule constantly. If at the 80% completion period the project appears to be headed for problems, the PM should begin taking drastic action. This action is a one-on-one talk with persons in charge of various activities, especially those in charge of internal subconsultants. The remaining budget should be reallocated by this person and next-day responses should be asked for concerning methods that will be used to obtain the work on time and within budget. This assumes that no external conflict has caused the problem. The PM cannot be intimidated or ignored at this point. Excuses cannot be tolerated. The project must be completed. Management must give wholehearted support at this time. The contract must be adhered to along with commitments given afterwards. Quality must not be sacrificed, but changes in the process must be made to get the job out.

The Appendix contains a section on major problems and what can follow. A few tips to assist in solving these problems are discussed.

Design Freeze
As discussed previously, many dollars and valuable time are consumed by indecisive staff wanting to redesign their projects. It is certainly commendable to have the client's interests in mind when making revisions. However, the fee probably does not allow continuous evaluation. The design should be frozen at certain points.

Architectural projects have milestones at the schematic design, design development, and construction documents phases. Engineers usually have preliminary design and construction documents phases. The work on these and other phases, leading up to the construction documents, should be frozen at their completion. No other broad changes should occur thereafter. All subconsultants and the owner should concur on the work to that last point. Perhaps written concurrence on this point should be made. The construction documents phase often finds staff wanting to redesign up until the advertisement for bids. The PM is justified in halting any reevaluation, because this starts a long line of changes, additions, errors, and

omissions as it proceeds. This requires refinement of details, as well as major components of the facility.

Entry-level people must be trained for their work, estimates given on the length of time to perform various tasks, and samples given for the work they are required to perform. Their time and quality will be poor at the start but will increase with proper supervision. The PM must realize this and work with them to ensure a quality product.

Exercising Authority

When a person accepts the role of a PM, he or she takes on a responsibility to the team and to their firm. This responsibility should not be taken lightly. Upon acceptance of this position, this person must execute all the requirements contained in his or her duties and responsibilities criteria. The responsibility means that the PM must be firm and fair in his or her dealings with everyone. There are budgets and schedules that must be met, and the person must be sure that he or she can and will exercise the authority to accomplish the quality and productivity necessary. One must not take on the challenge and then fall back on those efforts. When budgets, schedules, and quality parameters are formulated, the PM must act with the degree of authority and firmness necessary, but within the guidelines of proper management techniques.

Standard Details

It is not irresponsible to use standard details or portions of plans from past projects. In fact, the use of tried-and-true standard details is proper, since the detail has probably been field tested. Some architects and engineers base much of their design around standard details or processes. Existing facility details should be used on the modification of a project wherever possible. This will allow the owner to have familiar details with which he or she is acquainted (and perhaps the contractor will also be acquainted) and will readily accept them as cost savers.

Extra Work

What do you do when the client asks you to include an addition to the facility? Do you say okay? Then what? The answer is: "Certainly, we will be glad to add this addition. I will get the design cost together and call you tomorrow." "We can begin immediately after your approval."

These two sentences seem to choke most architects and engineers. They cannot get it out. But most clients are accustomed to this reply, and you must be assured that a construction contractor has no trouble in asking for additional compensation.

Added work must be addressed with an added fee request at the *same time, not later*. Most clients do not resent being asked for extra fees when the fee is due and is reasonable.

Visiting the Site
A visit to the site is elementary. The visit to the potential project site is sometimes dismissed because of time and expense. This is certainly the first mistake. The project site almost always hides some problem, even though it may not be apparent on paper or may be dismissed by the client as minimal.

The visit to the site by your principal designers may help to solve all kinds of problems. This is especially true in the renovation of facilities. The cost to send various staff to a site, say 2,000 miles, must of course be considered carefully. That cost, however, may save many dollars in the future. A project should not be allowed to wallow while the design goes on or while it uses incorrect data or information.

The site should be visited before the design is given to the client. This may be a visit that will find conflicts, errors, and omissions. Changes need to be made and conflicts resolved. As many of your staff should visit the project site when possible. These experiences will help the present project as well as future solutions and designs.

Conclusion
So end a few bits of information that may assist a new PM in their efforts. He or she must put on the uniform of a leader and take the consequences, good or bad. There are many things to learn, but first you must learn to lead. The buck stops with you. But there are great rewards for those that lead. There are personal achievement rewards known only to yourself. Then there are rewards paid out by others. In any event, the first assignment as a PM may lead to a great adventure.

APPENDIX

MEETINGS

The need for meetings has been discussed in this document several times. Meetings that may be required are:
- predesign meeting with the client
- predesign meeting in-house (kickoff)
- progress meetings
- closeout meeting with client
- closeout meeting with staff
- others, as required by clients

The first two meetings are required for proper project management. Progress and closeout meetings may or may not be advantageous. Be sure the meeting is needed before you ask people to use their time for such activities.

A PM must determine first why a meeting is called. Also, who needs to be at these sessions and why do you want them? When planning a meeting, one of your first responsibilities is deciding whether the meeting should be held at all. A successful meeting should have a stated goal or purpose. The notion that it is necessary to have a meeting—say every Tuesday—is an example of a useless agenda. Some projects require a meeting at certain periods. This may be determined by contract. These requirements must be met; but, in this case, make them as beneficial as possible. Accelerate the decision-making process as much as possible to hold the meeting time to a minimum. The client or his or her representatives will be at these sessions; make sure that they will participate and take responsibility for what is being said and decided. Time will not usually be specified by contract; therefore, you can control the time of beginning and ending and keep the meetings to a minimum. In fact, all meetings should have a completion time and it should be enforced on all occasions.

How successful your meetings are will hinge on the agenda. By writing out a simple agenda, the time, topics, and participants can be managed. Prepare your agenda and your part of the meeting as fully as possible. Do not go into a meeting as a PM unprepared. Know what you want to emphasize and keep it at the forefront at all times. Tell your audience what the mission of the meeting is and hold to it throughout the entire agenda.

Control of a meeting is an art of its own. Time is money and it will be your responsibility to keep the meeting in control to minimize time. Do not let others

control the session and monopolize the action. *Your* mission must be accomplished, not theirs. You are the PM and you must take the consequences for an unprofitable meeting and an unprofitable job. Beware of people that relish meetings to vent their anger and complaints and just purposely waste time.

The PM wants all the attendees to participate; otherwise, do not invite them. He or she should make out the agenda with priority items included, then submit these to the participants with sufficient time for them to prepare their part of the program. The experienced PM will make sure that there are not too many items and too many participants. If this is so, maybe two meetings should be called.

The outline of an agenda will help in keeping the discussion to the stated schedule. There are persons that like to bring their ideas to the meeting, rather than discuss them with the leader beforehand. Their new idea satisfies their ego and shows how they are outdoing the leader, or PM, and how smart they are. When these new concerns appear, tactfully inform the person that you will discuss their new venture with them after the meeting.

Commitment of the participants is called for, and you should not hesitate to ask/tell each what their part needs to be. Also, the first meeting should address late comers, no shows, and people leaving early. Such interruptions should not be tolerated by anyone, and this should be directed to the client's representative as tactfully as possible.

When the client is involved in a meeting, consider inviting him or her to lunch or breakfast prior to the session. This can accomplish two things: a) it builds a relationship, and b) it gives the PM a chance to tell the client who and what will be involved. Therefore, no surprises will be forced on the client. He or she will have had time to think about various items and consider alternatives, ideas, etc. Keep this time between the two of you. Sometimes a principal of your firm may want to attend, but keep these sessions to yourself, if at all possible, so that small talk and future business will not enter in.

At the completion of the meeting, you should consolidate the results of the discussion. The PM should outline the results of the items discussed, who will do what, when, and where. He or she will need to obtain the commitment of each person required to pursue the various tasks at the completion of the summary. This should be recorded in a simple form that can be distributed later. The entire meeting may be directed at getting a certain major task accelerated, with each person having a mission. This is true for the kickoff meeting. Although the kickoff meeting will usually be held in a spirit of pleasure in getting the job and obtaining cooperation to complete it, progress meetings can be just the opposite. People are behind schedule, over budget, and making changes, errors, etc. This type of meet-

ing can be burdensome and certainly not a pleasure to control. You must set goals for the meeting, inform the client attendees, prepare an agenda, prepare for discussion, anticipate the problems, and plan the attack. For this type of session have persons with the correct level of expertise available. Do not take a drafter to a meeting where major footing modifications will be discussed.

If there are problems between your own team, enlist the aid of an ally, someone who will support your decision in a controversial area. If you are presenting technical information, be sure you have the details and statistics necessary to support your point of view. When big problems occur, assign troubleshooting and problem-solving tasks to an appropriate team when it becomes apparent that the problems raised cannot be answered within the meeting. Always prepare for the unexpected and maintain control.

In summary, begin and end a meeting on time. Define what each participant will do, including recording the notes, if necessary. Keep the meeting focused and hold new topics for another time. Encourage everyone to participate but keep interruptions, conversations, extraneous topics, and arriving late, and leaving early to a minimum. Summarize the discussion. Get commitments. Discuss, follow up, and set the date for future discussion. The PM must maintain control.

It is unnecessary for anyone to be forced to spend precious time at inefficient, ineffective meetings. Purposeful meetings provide an arena in which goals and objectives can be achieved in a reasonable amount of time. By clearly defining the type of meetings to be scheduled and focusing on the planning and controlling phases of the task, the PM can call upon the skills of his or her team. That way, the PM can ensure that each participant will contribute his or her maximum effort to the task to end with a successful project.

PREDESIGN MEETING WITH STAFF

Items to be collected or discussed:
1. Names and phone numbers of attendees
2. Client's authorized representative for the project
3. Consultant's authorized representative for the project
4. Predesign meeting with the client
5. Introduction of any new subconsultants or staff
6. Reason for meeting
   a. Discuss the scope of services, time elements, budgets, manpower, physical property, and requirements of the project
   b. Obtain the commitment of all persons and subconsultants

7. Scope of services
   a. Contract
   b. What is required by the client?
   c. Program or preliminary report
   d. Capacities, areas, dimensions, etc.
   e. Construction budget
   f. Financing
   g. Types of plans and specifications
   h. Quality level
   i. Code review
   j. Subsurface work
   k. Special problems (asbestos, etc.)
   l. Survey work
   m. Existing facilities, utilities, etc.
   n. Reviews by owner and others
   o. Specifications and drafting
   p. Deliverables
   q. Checking
   r. Approvals and permits
8. Time elements
   a. Date for completion
   b. Review dates
   c. Input dates by various subconsultants
   d. CPM or other schedules required?
9. Manpower
   a. All parties sufficiently staffed?
   b. Specialized staff needed?
10. Needs
    a. Survey and existing utilities
    b. As-built drawings and specifications
    c. Owner's specific requirements
    d. Space, software, equipment
    e. Areas, loads, capacities, etc.
    f. Subsurface reports
    g. Future needs of owner
11. Utilities
    a. Gas
    b. Electric

   c. Water

   d. Wastewater

   e. Cable TV

   f. Telephone

12. Budget Requirements

   a. Distribute budget

   b. Discuss budget

   c. Discuss requirements of each subconsultant and responsible person in each expertise

13. Commitment

   a. Internal subconsultants

   b. External subconsultants

14. Future meetings

15. Other details that should be addressed

PREDESIGN MEETING WITH CLIENT

Items to be collected or discussed:

1. Names and phone numbers of attendees
2. Client's authorized representative for the project
3. Consultant's authorized representative for the project
4. Project goals
5. Project size, capacity, etc.
6. Consultant's project team and responsibility of each person
   a. The principal
   b. The PM
   c. The various areas of responsibility
7. Subconsultant's responsibilities and team
8. Project schedules
9. Review dates
10. Presentations
11. Progress meetings and their schedule
12. Secretary for project meetings
13. Contracts delivery dates
14. Funds set aside
15. Invoices to be sent to whom? A special form needed?
16. Purchase order number
17. Insurance requirements

18. Approvals by whom? And send where?
19. Permits by whom? And send where?
20. Who will pay? When?
21. Clients to furnish what data?
22. Utilities, power, telephone, gas, and other requirements
23. Who contacts utilities?
24. Specifications to be used
25. Contract documents to be used
26. Contractor selection process
27. Client's preferences of materials and equipment
28. Types and size of drawings required
29. Property available, survey available?
30. Asbestos present?
31. Hazardous waste present?
32. Special needs for the facility
33. Handicap access
34. Zoning details
35. Federal and/or state requirements
36. Problems with existing facilities
37. Expansion after this project is completed
38. Soils data available?
39. Approval to visit site
40. Construction budget
41. Other

MEETING ON FINANCING (IF REQUIRED)

1. Will this project require loans or grants from:
   a. Federal
   b. State
   c. Other funds
2. How will project be financed:
   a. General obligation, notes, or bonds
   b. Mortgage revenue bonds
   c. Grants or loans
   d. Assessments
   e. Standard mortgage
   f. Other

3. Will consultant's services be required to:
    a. Prepare a feasibility study
    b. Prepare applications
    c. Prepare a rate study
    d. Prepare assessment rolls
    e. Work with financial organizations

STANDARD PROJECT BOOK

General

The following is a list of items that can be included in a standard project book if your firm does not have one already. You can start a series of books as each project is completed and place the completed material in archives. A compilation of important material in one place assists you and your colleagues during the project as well as providing a history of the project after completion. The embarrassment and perhaps cost of not having all critical pieces of data available when the client or his or her attorney calls may thus be alleviated. When data are stored in several files in several persons desks, it can lead to a loss of time, money, clients, and reputation. Use the famous organization's motto—be prepared.

Section	*Content*
Contract	A/E contract, addenda to contract, change orders, project data sheets and updates, letters pertinent to the A/E contract and negotiations, and subconsultant contracts
Correspondence	Correspondence related to client, design, bidding, and subconsultant work, and other pertinent correspondence
Time Schedules & Budgets	Initial and subsequent time schedules along with initial A/E budgets and period costs, the concept, process, and work plan
Meetings	Meeting minutes including times, dates, and lists of those attending the various meetings required, which are predesign with client, predesign with staff, etc.
Utilities	All the correspondence and data related to gas, water, electric, sanitary sewers, storm sewers, television cables, steam, etc., including pipelines, cul-

	verts, and structures that may be affected by this project
Code	Data collected in the code review
Design	All the design work, calculations, alternatives, sketches, and floor plans for considered alternatives
Specifications	Original specifications for this project and collected information used to develop the specifications. This section and the design section may become voluminous and require companion volumes.
Construction Estimate	Preliminary estimates, final estimates, cost quotations, information obtained from other sources, bid tabulations, and estimate-review and check calculations
Soils	Subconsultant soil and foundation reports, maps, the firm's comments, plus any other addenda
Materials	Data concerning materials considered and those used, samples and their locations described
Equipment	Data received from suppliers and any other data relevant to equipment at the site
Survey	The original topography maps, existing easements, easements prepared and their calculations, benchmarks, survey data sheets, and location of field books
Quality Control	Quality control meeting minutes, project checklist and other checking data, and all else filed under the design
Miscellaneous	Any other material pertinent to the project such as agency requirements, highway and railroad needs

ETHICS

General

The architect and engineer finds him or herself in a day of rising costs, fewer projects, intense competition, and many regulatory conditions. Temptations are there to work around some of these items to suit oneself. The A/E profession has been known to be one of high ethical conduct, and remains so today. Therefore, why is a section of *this* guide for the young A/E PM devoted to ethics?

Many young people today are concerned with ethics. This is a refreshing condition that must be nourished. The press is full of stories where ethics (and morals) are completely forgotten. TV produces show after show that indicates that business compromises its positions to make money. The A/E community is sometimes shown doing the same. It is essential that ethics be held in high esteem as the PM associates with the client, staff, and management. This discussion of ethics is patterned for all employees, but it is directed primarily to the new PM.

Ethics and the Young PM

Only one piece of advice can be given to a young PM whether in private practice or industry—employ ethics or suffer. You cannot compromise your position and stay in business. If you are employed by a firm that asks you to push the limits of ethics beyond that which is correct, you had better move on. This will be a rarity, however. If you cannot move on, you may be required to so state your position and you may have to pay dearly to uphold your ethics.

For example, a client or management could ask a PM to falsify test results that may be sent to the Environmental Protection Agency (EPA). The PM signs the report and submits it to the agency. If the report is accepted, business will go on as usual. The PM will gain no respect or compensation. If, however, the results are found to be false, then others may blame the whole mess on the PM and not accept responsibility. That accusation may continue throughout the life of the PM and may have an effect on new positions and promotions. However, it would in any case be the wrong thing to do.

The plight of whistle-blowers is well known. Companies that resort to unethical practices also resort to ruthless tactics when they are reported. Of course, there are a few organizations that seem to think it is necessary to practice illegal methods. These conditions must be evaluated by the employee when they are found—shall I stay? shall I leave? shall I expose? These are hard questions, but life is short. The sleepless nights that can haunt a person for years might answer that question.

Minor problems can always plague a project. The PM may feel, at a given time, that any mistake will jeopardize his or her position. The younger person may feel even more emphatic about being perfect. Although coverup may hide the blemish and will cause no harm, consider the ethics. Will a larger coverup on the next job be appropriate?

There is a need to establish your own personal agenda and stand by it throughout your life. Perhaps family training has not been based on an ethical lifestyle. Perhaps the person's school has been no better. The employee must establish his

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or her own lifestyle. This can be done by discussion with an elder manager, architect, engineer, parent, or friend. It is easy to find those that are respected by their staff and peers. The answer will be "do that which is right and take the consequences if there is a problem." It is not uncommon to find that the consequences are not that life threatening. For instance, management and clients may assist in solving the problem. Regulatory agencies may help find solutions. A new job may open up an opportunity never expected. Problems may result in some small penalty, but unethical acts will bring a bigger penalty.

Ethics and the Organization
As the PM elevates into management, he or she may find unethical conduct revolves around one thing, and that is greed. A PM will usually not be in a position to gain monetary increases unless a bonus is given for getting the project out ahead of budget. A firm, however, has the temptation to take actions to place itself in an advantageous position above others. A PM may have little control over the firm's policy and such conduct; however, the chance that this will occur is very rare in the A/E community.

Rules of A/E ethical conduct were changed by federal and state laws in the 1960s. Prior to this time, it was unethical for an architect or engineer to supplant another architect or engineer who had been or is working for a client. Also, all firms used similar fees. Bidding on A/E work was definitely out of bounds. When this was all changed, it was then legal to bid, advertise, and promote oneself when desired. Ethics were changed not by the architect or engineer, but by external forces. The effects of these changes are far reaching and beyond the scope of this discussion; however, the new PM should acquaint him or herself with conditions that now exist.

The employee must establish in his or her mind a baseline of conduct for oneself and for the organization. First, attempt to be employed by an ethical organization (of which there are many); second, apply their ethical conduct; and third, establish your own code. Early practice of ethical conduct will produce a lifestyle that will give satisfaction until your retirement and beyond.

Ethical Conduct
A few items of conduct that you must consider when establishing your own rules are:
- Falsifying reports, tests, and data
- Pirating software and information from other sources

- Undermining ongoing negotiations in your favor
- False advertising
- Non- or underperforming services required
- Excessive gifts
- Political donations outside the legal limits

When all the ethical and moral decisions are filtered down, the architect or engineer must abide by the following:

- My solution will assure the health, safety, and welfare of the people using my design.
- My solution will satisfy my client's need to the best of my ability.
- My solution will satisfy the regulatory agencies' rules and regulations.
- My solution will satisfy my employer's need to maintain a good reputation and provide a reasonable profit for the work.

DECISION MAKING

General

A person graduates from "employee" status to one of management with delight. The responsibility of making decisions may be a concern and dampen the delight. These decisions may be technical issues or they may be management and personal issues. Both are just causes for concern and should not be taken lightly.

There are many issues that effect decision making, but the paramount issue is that you must make a decision and live with it. Those that procrastinate are passed over on the next assignment. Also, those that work under you will immediately identify you and will not bother to ask after a series of "waits."

The section on ethics will apply to decision making also. An architect or engineer will need to make an ethically correct decision along with the technically correct decision. He or she will have to make the decision promptly and with confidence.

Technical Decisions

Indecision can be a difficult trait to overcome, but a PM cannot afford the luxury of hanging on to that part of his or her life. Some people have a habit of

- never making a decision promptly,
- passing the decision making on to others,
- making a decision too fast,
- fearing an error and its results, or
- fearing responsibility.

Decisions must be made to satisfy those same rules as noted in the section on ethics; that is, decisions must assure the health, safety, and welfare of the people using a design; decisions must satisfy the client's need to the best of one's ability; decisions must satisfy the regulatory agencies' rules and regulations; and decision making must satisfy the employer's need to maintain a good reputation and provide a reasonable profit for the work.

The first three conditions must be handled for the technical decision making process. You may not be able to make a decision on some technical issues; however, you must be able to reach a decision to ask others for help.

Intuition

Intuition may be a help in decision making in some cases. Certain people have the uncanny ability to decide issues by intuition. It is not recommended to use such a trait for final technical solutions. Intuition can be used to a great extent in setting down and evaluating alternatives; the end solution, however, may require a mathematical or testing activity to gain a complete and final solution.

Intuition comes from experience also. Ranking of solutions may be credited to intuition but, in the end, it is mainly the experience of the individual and his or her training on the subject.

LEADERSHIP QUALITIES

General

The PM has been selected to manage a project and also to act as a leader. Only through one's leadership qualities will a project be successful. Listed below are a few items that the PM should consider as he or she audits their capabilities:

- Always respect the dignity of your staff and do unto others as you would have them do unto you.
- Always make it a point to help people. Tell them what you want done and let them do it. They may flounder in their progress, but do not tell them every move unless requested. Always be ready to train people in the way that you want them to work.
- Be a good teacher and respect inexperience. Do not set up your own standards of right and wrong and do not expect all opinions to be the same as yours. Say you are wrong when you are wrong.
- Set an example yourself. Do not be selfish, self-centered, or egotistical, but show enthusiasm, initiative, and loyalty. Set high standards for your staff to fol-

low. Keep your emotions at a low ebb. Be cheerful, tactful, courteous, and stay mentally and physically in shape. In the end, your word must be your bond.

- Make your staff feel important. Listen when they talk. Ask about their family and concerns. Have everyone in charge of something. Remember their names. Let them know that they are important to you. Give them constructive feedback.
- Give praise when praise is due.
- Communicate.
- Always ask, "What can I do to help you?"

ETIQUETTE

General

In a recent poll, 95% of 1,500 Americans stated that manners or etiquette are no longer important to them. That poll is probably a current indication of today's lifestyle and people's relationships with each other. View that statistic and draw your own conclusions. One might say that persons graduating from a college or university should have good manners and etiquette; therefore, a PM should have better manners than most. Many will say that the discussion of etiquette in project management is silly. Beware.

First impressions mean much to the bottom line. This includes etiquette in respect to clients and new employees, and introduction to new acquaintances in social and business situations. Etiquette must be practiced when dealing with facsimile machines, computers, and many other areas inside or outside the office. In any event, whether they do or whether they do not, what do manners have to do with project management? Manners are an important part of TQM and must be incorporated into the individual's management plan. Being named a PM means a first step into management. Manners are an important part of so many relationships between management, employer, staff, and the manager's client.

Manners seemed to decline after World War II when new fathers had led dangerous and stressful lives. They wanted their children to have everything that they did not, and allowed them free rein. The Vietnam era saw young people living a life that said "if it's okay with me, it's okay." Manners again suffered. So here we are today: manners are not taught early in life, or in school, and must be learned the hard way.

A popular magazine annually describes the nastiest CEO for the year. There are countless stories of managers that make life miserable for their subordinates. Good manners are not important to these people and probably never will be; good manners, however, can lead to a much better management style and the support

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of your subordinates. The 5% of the population that find manners are important will be called wimpy by some and thought to have no place in leading others. This is a misconception. Life in the business world can be pleasant.

Etiquette Situations
Every person, whatever station in life, should have consideration for others. That is what manners are all about. The following is a listing of a few situations in which etiquette or manners must be considered:
- conduct in meetings
- conduct while eating
- conduct while in a social setting
- conduct while in a recreational setting
- association with those under you
- conduct while associating with senior persons
- conduct in the informal office atmosphere
- attire and grooming as it affects others (clients and staff)
- association with strangers
- correspondence and memos

The following is a minute list of elementary situations that might occur. Using these pointers, and others, will help build your stature in life, showing that you have class. Remember, how you act may be observed by someone (perhaps a stranger) that will someday influence a decision pertaining to you. Some few but important points that you may want to check yourself are:

Familiarity. Use Mr., Mrs., or Ms. in your greeting unless they specify otherwise or refer to you by your first name. Also use in a letter greeting. Remember, letters might show up where familiarity is unwanted.

Competition. Play your best when you invite your boss or a client to golf, tennis, etc. They like competition; however, do not humiliate them.

Lunch. Inform your guests to order whatever they like and to tell the host or hostess early that you want the check.

Women in Business. You need not open doors or pull out chairs in a business setting; however, some women still favor the gesture—find out.

Facsimile Messages. Do not send without prior warning.

Cocktail Party. Hold glass in left hand to allow warm handshakes. Have your name tag in a position to be seen; write big if you make your own.

Handshakes. May extend to men and women; use a firm grip and a quick pump.

Telephone. Return messages within 24 hours.

Eating. Do not touch the food until all are served at your table. Avoid hard to eat foods such as spaghetti. Also avoid alcohol if you want control, if you will be making a presentation or proposal, or if others refrain.

Desk Greeting. You should stand for male or female clients, persons of higher rank, and men should rise for women of equal rank. Rise for others as you see fit.

Conference Room Greeting. The only man that rises when a woman enters a conference room is the one that will be seated next to her. Here it is appropriate to pull out the chair.

Office Seating. Vacate your desk chair and sit with your visitor in front of your desk in situations with clients, those that rank above you, and staff situations where you need to show compassion, sympathy, etc.

Military. Be sure to obtain the proper titles and abbreviations when writing. Ask for proper protocol when military persons are meeting with you or in a speaker-audience situation.

These are only a few pointers. There are many books on this subject at your local bookstore. The many points on manners and etiquette should be followed. They will help to build your professional stature and assist to guide you into positions of greater responsibility.

Proper Dress

Many architects and engineers like to dress informally, some to make a statement. Others dress informally just for convenience and comfort. The PM and his or her staff should dress as suggested by management. Without this direction, the PM should dress on an equal basis when together with his or her client, if at all possible. The PM should also dress in accordance with local customs, especially when attending meetings. The attendee is representing the organization for which they work and should exhibit a business-like and professional appearance. If your finances are stressed, one set of good clothes should be purchased and saved for special meetings and events, if at all possible. Also, shine those shoes and visit your barber or beauty salon on a regular basis. In the end, a PM should dress so good that they will almost be unseen.

MAJOR PROBLEMS

General

The A/E community has never been completely free of problems. The situation has not changed. In fact, it has increased with our litigious society. The resolution of

problems between owner-consultant-contractor has been taken from the office or field to the courtroom. Our nation has been led to think that we are all victims and the government or courtroom will be our savior and that we are entitled to restitution for every problem.

The PM, whether for the first time or the fiftieth time, will be confronted with problems. He or she may face a major resolution in such situations. Problems may be minimized by the principles found in TQM. Occasionally, a problem will occur that goes beyond the normal. This discussion addresses those concerns.

A Problem Occurs

You, as a project leader, have completed a facility design. The facility has been built and is occupied. Shortly thereafter, it becomes apparent that the facility does not do what it is supposed to do, or it fails in some manner, or at least in the client's mind.

The client appears unexpectedly at your office, with their attorney, and what do you do? Do you call for help from one of your firm's owners? Plead guilty? Try some explanation or excuse? Panic is probably setting in by now. The first step should be that in no case should you say that the problem is yours. Also, you should not totally deny the charge. This same situation could occur in the glare of camera lights with an aggressive reporter accusing you of negligence and a plethora of other charges.

The problem may point to your design for many reasons. But you do not take responsibility. Your firm's owners and their insurance carriers for professional liability will provide the answers to be made in public. Your answer to the client and the press should be guided by a crisis management procedure set up before any problems occur. In the absence of a crisis management manual, the PM should assure the accuser that all will be done to provide answers. Do not say "no comment" or delay answers. This has been experienced in recent disasters and only tends to increase the problem.

The PM must show firmness, confidence, and cooperation, but no further action should be taken unless so instructed by his or her firm's owners. Just keep your cool as much as possible.

The new PM should consult the firm's owners on actions to be taken in case there is a major problem. Do not be afraid to broach the subject; it may save many dollars, time, and stress in the future. Many problems that are certain to be the designer's are found to be in the possession of others. So do not take any responsibility until those that must undertake the verdict have been consulted and have spoken.

Dealing with the Press

The best way to help your situation is to work with the media. False information must not be given. The media will write material that sells; therefore, news will be slanted to the extreme. Factual information must be presented as much as possible in hope that it will be published. Some guidelines that should be followed are:

1. Answer all questions as promptly as possible.
2. Technical information needs to be transmitted in a clear and simple manner.
3. Keep your cool, do not argue, be calm.
4. Do not guess or falsify, state facts only.
5. Do not give off-the-record remarks or say "no comment."
6. Do not admit guilt.
7. Answer in brief, positive sentences.
8. Try to talk to one reporter at a time.
9. Do not talk too much.

Many reporters will lead you on, hoping that you will get angry and/or aggressive. Also, they might rapid fire questions. Or, they might try the opposite, leaving you a wide opening in an effort to have you continue to talk yourself into a corner.

Of course, your discussion with the media should be made only with the approval of the owner of your firm. You can use the above guidelines if no other direction is available. Perhaps your firm has a crisis management manual. If so, review it thoroughly and abide by its content. If not, perhaps you should suggest such a manual.

SUGGESTED READING

Crosby, P.B. *Leading*. New York: McGraw-Hill Publishing Company, 1990.

Running Things. New York: McGraw-Hill Publishing Company, 1986.

Quality without Tears: The Art of Hassle-free Management. New York: McGraw-Hill Book Company, 1984.

Ryan, Kathleen D. and Daniel K. Oestreich. *Driving Fear out of the Workplace*. San Francisco: Jossey Bass Publishers, 1991.

Peters, Tom and Nancy Austin. *A Passion for Excellence*. New York: Warner Books, 1985.

Deming, W. Edward. *Out of Crisis*. Cambridge, MA: MIT, 1986.

Gidlow, Howard S. and Shelly J. *The Deming Guide to Quality and Competitive Position*. Englewood Cliffs, N.J.: Prentice-Hall, 1987.

Jablonski, Joseph R. *Implementing Total Quality Management*. Albuquerque, N.M.: Technical Management Consortium, Inc., 1991.

Sashkin, Marshall and Kenneth J. Kaiser. *Putting Total Quality Management to Work.* San Francisco: Berrett-Koehler Publishers, 1993.

Kieffer, G.D. *The Strategy of Meetings.* New York: Simon and Schuster, 1988.

Smedes, L.B. *Choices: Making Right Decisions in a Complex World.* San Francisco: Harper, 1991.

Post, E.L. *Business Etiquette.* Row, N.Y.: Harper, 1990.

Baldridge, L. *Guide to Executive Manners.* New York: Rawson and Associates, 1985.

Hensey, Mel. *Continuous Excellence.* New York: ASCE Press, 1995.

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