Chapter 1 Management

We live in a time of great change. Nowhere is this more evident than in the workplace. Most facilities and plant managers agree that employer/employee relationships, wants, needs, and expectations have changed more in the past two decades than over the last hundred years, with even more dramatic changes predicted early in the next century. Today's facility and plant managers are faced with greater process and personnel challenges, including a globalized economy and fierce competition. Concepts like workplace diversity, synergy, reengineering, and the now infamous downsizing have all demanded far more interpersonally from today's facility and plant managers.

The field of management is as broad, complex, ambiguous, and diverse as any subject that has ever been presented in an academic format. Management can best be thought of in terms of either a process or people. While the two overlap, they can also be approached as separate skills. Under the rubric of "managing a process" are all of the technical skills a manager must possess, including life-cycle costing, just-in-time logistics, project management, cost estimating and budgeting, evaluating alternatives, computerized maintenance management, and preventive maintenance. The last two topics are addressed in Chapter 4. For in-depth coverage of these and the other process management topics, one should review *The Facilities Manager's Reference* by Harvey Kaiser and *Total Productive Facilities Management* by Richard W. Sievert, Jr. (both published by R.S. Means Company, Inc.).

Managing people includes all of the personal, interpersonal, and group skills. Most facility and plant managers will not dispute the fact that there is never a shortage of good ideas. What there is a shortage of is people with the talent, drive and "people skills" necessary to make these good ideas an integral part of an organization's value system. To reduce the time gap between good ideas and accepted practice in any organization, the exceptional manager must have good communication and problem-solving skills, and be able to manage conflict, motivate employees, delegate properly, and work in groups. He or she must also have enough power within the organization to perform these tasks.

Most facility and plant managers would also agree that it is not the technical problems that consume their time and give them the biggest headaches. The biggest challenge is dealing effectively with their people. Much research has been done that shows personnel problems, and more explicitly, interpersonal problems, cause the greatest concern among managers and are the greatest detriment to employee productivity.

The field of "people skills" is rooted in behavioral psychology. It is a wide field with a long list of texts that grows exponentially each year. For facility and plant managers who want to delve further into the field of people skills, we recommend the fourth edition of *Developing Management Skills* by David Whetten and Kim Cameron (Addison-Wesley Educational Publishers, Inc.). The book addresses issues like personal skills, problem-solving, and motivating employees. The first section of this chapter outlines some of the book's principles that are most relevant to the facility manager.

The remainder of the chapter focuses on the communications and team-building aspects of management. It is excerpted from *Total Productive Facilities Management* by Richard W. Sievert, Jr. (R.S. Means Co., Inc.). This recommended reference also includes information on evaluating and improving facilities performance, value engineering projects and cost management, scheduling, and contracting and procurement methods.

Management Skills

Developing Management Skills is a practical introduction to business and management skills. Using a series of interactive exercises and examples, Whetten and Cameron place a strong emphasis on self-assessment and self-awareness.

Self-awareness is a difficult concept to grasp and an even more difficult state to achieve. With a heightened sense of who you are, however, the task of working with subordinates, peers, and superiors becomes easier and more rewarding. Most researchers agree that self-awareness is a function of four discrete attributes:

- One's values
- One's cognitive style (i.e., how one gathers and processes information)
- One's adaptability and attitude toward change
- One's interpersonal style

Ironically, some of us may not be as aware of our values and style as we think. Self-awareness is a lifelong process. Knowing and understanding yourself should manifest itself in more effective interaction with others. See Figure 1.6 later in this chapter for a form that may be used as a self-awareness exercise.

Managing Yourself

The best managers know that to lead effectively, they must first manage themselves. They start by drawing a realistic picture of their style and their place in their organization, then look for ways to improve their own efficiency.

Assessing Your Managerial Type: As you work to better understand yourself, try to determine your managerial style and how you might improve it. According to Whetten and Cameron, there are essentially four types of managers. The *indulging manager* stresses employee happiness and satisfaction at the expense of employee productivity. The *imposing manager* stresses employee productivity at the expense of employee happiness and satisfaction. The *ignoring manager* stresses neither employee satisfaction nor employee productivity. Finally, the *integrative manager* stresses both employee productivity and employee satisfaction.

Not surprisingly, Whetten and Cameron claim the best managers are integrative ones. This managerial style can only be developed through applied practice, but the important point is understanding that employee productivity and employee satisfaction are not mutually exclusive variables. In fact, it is actually the opposite that is true.

Determining Your Power Level: Another important aspect in increasing self-awareness involves determining your true level of power in your organization. Counterintuitively, one's salary is not a good predictor of his or her power in an organization. The causal independent variables that are the best predictors of power include a person's personal attributes and the characteristics of the position they hold.

Whetten and Cameron emphasize the following personal attributes as the most relevant in influencing others:

- professional expertise
- "likability" and personal attractiveness
- the amount of effort put forth on behalf of the organization
- legitimacy within the organization's value system

The specific characteristics of your position are also strong predictors of your power. The following five areas should help you define your position's power.

- *Criticality*: How critical is your job? If you were missing for a week, what would happen?
- *Centrality*: How central is your job—both horizontally and vertically—to the communication flow in your organization?
- *Flexibility*: How much discretion do you have to make decisions?
- *Visibility*: Managing people will always make you more powerful in an organization than managing tasks. For example, those who write speeches seldom get the same recognition as those who deliver them because they are not as visible.
- *Relevance*: How much does your position affect the bottom line of the company?

An excellent first step to enhance your position in a company is to take on tasks that cross departmental lines. In this way, you increase your visibility and put yourself directly in the flow of information. In addition, those performing cross-departmental tasks are often given more latitude in decision-making and are likely to be critical to the company's bottom line.

Managing Your Time: Efficient time management is essential for managers, as most agree that the one thing they do not have enough of is time. Most people that excel in time management do so by:

- Prioritizing tasks and creating "to do" lists,
- Doing many trivial jobs simultaneously, and
- Using discretion when reading material and skimming for the important points.

Meetings can be the time-conscious manager's worst enemy. To keep them running efficiently, Whetten and Cameron suggest the following:

- Schedule routine meetings near the end of the day. Productivity is highest in the morning and this time should not be wasted on routine meetings.
- Start meetings on time
- Set time limits and stick to them.
- All meetings should have an agenda and clear-cut objectives.
- Whenever possible, hold short meetings standing up. This will help keep the meeting short.
- Minutes of a meeting should be promptly prepared and distributed.

Managing Others

The effective manager has the ability to react appropriately to an employee's strengths and weaknesses while bolstering the employee's confidence and commitment to the organization.

Diagnosing Poor Performance: One of the greatest mistakes a manager can make is misdiagnosing an employee's poor performance.

Coaching and Counseling:

When an employee's productivity suffers because of a lack of information or technical skills, there exists a coaching problem. A manager should assess it as such, explain to the employee that the company requires more from him or her, and take steps to eliminate the gap in knowledge. When an employee's productivity drops due to emotional problems or friction with other employees, however, a manager must recognize it as a counseling problem and respond accordingly. A skilled manager will always approach this kind of situation by first convincing the subordinate that, in fact, there *is* a problem.

Ability and Motivation:

A manager may also be called on to determine whether an employee's unsatisfactory performance is due to a limited ability or to a lack of motivation. Motivation can be thought of as the product of an employee's desire to complete a task multiplied by his or her commitment to the task. The variable ability can be further broken down into a person's knowledge, how much specific training he or she has had, and how much access he or she has to certain resources. According to Whetten and Cameron, the best predictor of work performance is the product of an employee's ability multiplied by his or her motivation.

Delegating: The ability to skillfully delegate tasks is vital to a successful manager. When properly implemented, a delegated task can give an employee confidence and a sense of importance. It tells the employee that you trust and believe in him or her. The result is an employee who is more committed to the organization and a manager with more time to focus on the big picture. Whetten and Cameron offer the following tips on delegating.

- Managers must avoid the practice of delegating only when they are completely overloaded. Likewise, they should be careful not to delegate just the unpleasant tasks.
- Whenever possible, managers should delegate a task completely. A sure formula for an unhappy subordinate is to give them all the responsibility and then limit their authority.
- Tasks should be delegated to the lowest hierarchic level possible.
- Subordinates should be involved in the delegating process. People are far more likely to "buy into" something they helped create.
- A good manager also knows how to avoid the infamous "upward delegation," a phenomenon that occurs when managers allow subordinates to dictate tasks to them. The classic example is when a subordinate comes to a manager with a problem and asks the manager to "get back to me" with the solution. In this case, the worker has shifted the responsibility for the task to the manager. The best managers avoid "upward delegation" by insisting that, when subordinates come to them with problems, they bring along some possible solutions to the problems as well.

The following section is reprinted from *Total Productive Facilities Management,* by Richard W. Sievert, Jr., R.S. Means Co., Inc.

Communication is a basic skill that is needed to establish and maintain productive relationships. A high percentage of the friction, confusion, frustration, disputes, and inefficiencies in our working relationships are traceable to poor communication. Facility management work is especially susceptible to communication problems because of the broad and overlapping areas of responsibility, and the multidisciplinary and sometimes complex nature of facility-related projects. Facility managers and facility engineers must be aware of the importance of communication in a building services environment to ensure people are working together effectively to meet organizational objectives. And, of course, facility managers need to develop better oral and written communication skills themselves.

Communication problems are an enormous threat to profitability. In almost every case, the misinterpretation of a customer's requirements, failure to execute a plan or carry out instructions, or a missed delivery date is a result of a breakdown in communications. Applying some fundamental principles and techniques to this area will lead to more effective use of available time, improved cooperation and coordination of efforts, fewer disputes, and a reduction in associated costs.

Why do communication breakdowns exist in our Age of Information Technology? Messages and images can be transmitted instantaneously almost anywhere in the world. Through use of the Internet combined with high-speed computers and reproduction equipment, we can distribute reports and other information, in real time, almost anywhere at any time.

Communication is a process. The key is that you have to receive and transmit the *right* information on a *timely* basis in order to maintain control. The fax and the computer sometimes overload us with information, and we have to make judgments about what is truly useful. Effective communication, versus mere sending of data, means the person receiving the message must *understand* the message and be *motivated* to take the action recommended by the sender. The cycle must be completed for communication to be successful. Transmitting information is the easy part. The problem is reception—more precisely, intelligent reception—of the information.

Also, the receiver must be able to secure clarification and additional information. The sender, in turn, must have feedback enabling him to assess the degree of understanding and compliance. Through feedback, the sender determines requirements for new or follow-up communication. Successful communication, therefore, lies in making it a two-way process: downward (from sender to receiver) and upward (from receiver to sender). Distributing established schedules and status reports are examples of one-way communication, while project team planning meetings, status review meetings, value engineering workshops, and post-project review meetings are examples of interactive two-way communication.

The only way to have feedback is to include an aspect of communication often overlooked—listening. Communication cannot be two-way unless we listen actively and with sensitivity. In the best working environments, people feel free to express their views, knowing that their opinions will be considered, and their suggestions and ideas recognized.

There is an old maxim: "If you talk too much, you can't hear what others are saying!" Experience demonstrates that by listening long enough, one starts to get answers. One hears others define the problems and suggest answers. This is considerably more helpful than evaluating only what one person thinks from a vantage point that may be far removed from the problem. It is also important to try to understand the other person's point of view.

Listening can be disturbing because it sometimes forces you to recognize unexpected problems. Often it is more comfortable not to listen, and to ignore warning signs that will require involvement in solving a problem. Another obstacle to effective listening is ego, which prevents one from hearing another point of view. For example, an architect's mission is not to design a "trophy" building for his or her own accolades, but rather to fulfill the customer's needs. The grand entrance or spiral staircase may not always be cost-justifiable. The focus should not be on "me," but on the customer's perspective.

Often people will withhold communication of information (such as a potential problem) if they fear somebody will not respond favorably to it. Remember the old maxim, "Don't kill the messenger." The fact is that major problems can often be avoided if warning signs are recognized and reported while there are still opportunities for corrective actions. Many problems can be minimized or avoided if somebody has the courage to communicate bad news. Facility managers should instruct their staff to listen carefully, be succinct, and follow through by taking the appropriate action after communicating with the right individuals in a timely fashion.

Project Communications

Early warning signs that a project could be heading for trouble include:

- Delays (schedule slippage, request for time extensions)
- Breakdown in communications (Common causes include incomplete, inaccurate, or untimely transmittal of shop drawings, and cost and schedule reports.)
- Slow payments to consultants, equipment vendors, and contractors.
- Substantial increase in change order requests and claims
- Inefficient crew sizes
- Complaints from consultants, contractors, and vendors
- Quality defects
- Abnormal number of contractor requests for substitutions
- Increasing number of contractor requests for information
- Deteriorating supervision

Part of good communication is learning your customers' culture and what they need. Be a counselor to your customers and support them constantly throughout your working relationship. Emphasize the two-way communication process: They need to be informed, and you need to request their feedback constantly in the form of suggestions and advice. You can keep them informed through vehicles such as regularly scheduled briefing sessions and routine reports and written plans.

At times, facility managers may get involved with a project only to discover that team members are reluctant to share information that may be crucial to successful completion. This is a normal protective human trait. Managers who sensitively convince their staff that they are not trying to assign blame will be more apt to obtain information about conditions that may impede progress. Perhaps a safety hazard needs to be removed or more efficient equipment installed. When people are preoccupied with personal defensiveness rather than organizational objectives, they are not working together effectively to complete their assignments.

To gain cooperation, managers should share their own experiences with similar situations to create an open environment where people can freely share their ideas. Staff members, consultants, or contractors who are continually criticized for sharing their ideas will stop sharing them. Despite your time constraints, it is important to demonstrate consideration for new ideas. Sometimes what appears at first glance to be the most ridiculous idea, turns out to be the best one.

Competent executives, managers, and staff specialists often diminish their effectiveness by maintaining only one-way interpersonal contact. They issue hurried or unclear instructions. They initiate change orders, but fail to ask whether important points are grasped. They assume that others use and understand precisely the same terminology, and often ignore suggestions. With one-way directives, they are actually talking without listening. Managers must take time to communicate thoughtfully—both orally and in writing.

"Communication" is a term seldom found written into contract provisions. Nevertheless, you can write better contracts with a complete statement of the work to be done, and a definition of the roles and relationships between the parties to the contract, lines of communication, frequency of team meetings, and relevant reporting and report formats. Everyone involved in a project should be provided with a project directory containing a list of important telephone numbers. The project manager should have the home as well as the work and pager or cell phone numbers for key project players. The home phone number is important to permit quick answers or exchange of information that cannot wait until the next day.

Written Communications

Communication is at its best when it is clear and to the point, particularly when customers are not experienced or familiar with industry jargon. Moreover, complicated quantitative data is often more understandable to readers when presented in graphic form. Much of the material included in reports is more easily understood when the written information is accompanied by graphic aids such as tables, bar charts, pie charts, and graphs.

Important messages delivered orally must be followed up in writing. Meeting minutes and memoranda must be given to project team members to ensure documentation of important information. Keep project team members informed by regularly sending copies of correspondence, progress reports, calculations, and other significant project documentation.

Shop Drawings

Construction drawings and specifications communicate in graphic and written form the designers' expectations for the work to be performed by the contractor(s). The construction documents prepared by the design professionals do not show all details that affect the constructed product to be put in place. Also, design professionals typically do not communicate means, methods, sequence of construction, or related job safety procedures which are typically the contractors' responsibility. The contract between the owner and contractor(s) should state that the contractor(s) submit more detailed drawings, diagrams, and schedules for review and approval by the design professional (architect and/or engineer) prior to beginning construction. These shop drawings or submittals serve as important feedback from the construction or installation contractors, signifying that they understand the design intent and the contract documents.

Meetings, Meetings, Meetings

Meetings are required to complete—on-time and on-budget—projects that require the involvement of a multi-disciplined team. Meetings offer a sure and fast way to share information among a group of individuals because they provide instant two-way communication. Every participant obtains an immediate response to a question, or clarification of unclear points. Properly run, meetings also save considerable time that otherwise would be spent sending memos, waiting for responses to the memos, or answering letters.

Successful meetings must be planned. Many meetings are too long or attempt to accomplish too much. Meetings should be conducted only when necessary and planned with a clear objective in mind. To properly plan, conduct and control productive meetings, you need to define the objectives and prepare an agenda. Preparing an agenda not only provides you with a tool to control the meeting, but also demonstrates that you have done your research and are prepared to make the most productive use of other people's time.

Project orientation meetings enable management to review the project requirements and obtain the cooperation of consultants and contractors. Project orientation and "kick-off" sessions should be designed to establish a "we" attitude, rather than the "me" outlook that might be prevalent with the involvement of numerous independent consultants and contractors. A "we" attitude transforms a group of people working on a job into a working team doing a job. Regular meetings for clients and contractors, for instance, could include a complete, but brief, report of job progress. Decision-making meetings may solve specific problems such as a productivity issue, pointing out the required corrective action.

Project Record Filing System

Documentation is an essential aspect of communication. Records of design criteria and scope of work serve as a basis for identifying, documenting, and reporting changes. A record file containing sketches, charts, telephone conversations, notes, proposals, estimates, schedules, and other important communications should be maintained for a complete record of the project's evolution. Each item should be dated, and minutes included so that meetings and agreements can be recorded. Not only does careful documentation protect your interests for the current project, but it also provides a storehouse of knowledge for application to future projects.

A structured project record filing system should be maintained in a central location. Duplicates of contracts should be kept in several locations for protection in the event of fire or other losses and as a defense against claims, project overruns, and delays. Incoming and outgoing correspondence should be differentiated. Responsibility for the maintenance and security of files should be delegated to one person who can help prevent their disappearance

by controlling file removal and access. Figure 1.1 is a sample procedural outline for a project record filing system.

- Project Description
- Budget
- Equipment List
- Contracts
- Meeting Minutes and Telephone Memorandums
- Correspondence and Transmittals
- Engineering Information
- Estimates
- Specifications
- Request for Bid Packages
- Bid Analysis Documents
- Contractor Proposals
- Insurance Certificates
- Submittals
- Schedules
- Permits
- Reports
- Change Orders
- Utility Agreements
- Notes

Photographs provide excellent records and should be taken (and dated) of site conditions, including the conditions of nearby buildings and site characteristics, prior to the start of construction projects. Foundations, wall systems, parking lots, and roads should be included. Photographs serve as important records in disputes.

A transmittal letter (see Figure 1.2) should accompany all important documents and submittals so that the sender has a record of what was sent. Owners should ensure that minutes are kept, and validate their understanding of what occurred at meetings based on the recorded minutes. If owners receive minutes with which they disagree, they should issue written clarifications. Minutes are also used to communicate the team's understanding of the project requirements.

Following these guidelines for an organized documentation system will improve productivity, as it saves project personnel from wasting time trying to locate reference material or duplicate previous efforts.

Procedures for Project Record Filing

A job information sheet is filled out by the Project Manager and given to the Accounting Department, listing:

A. Client
B. Job Name
C. Location
D. Client Contact
E. Type of Contract
F. Contract Price if Applicable
G. Estimate if Applicable
H. Large or Small Job

The Accounting Department will complete the Contract Data Sheet, issue a job number, fill out an estimate/contract sheet, and enter necessary information to the "Jobs in Process" binder.

Accounting Department will collect all new jobs and enter them into the cost system the following week.

Files are prepared as follows:

Job Files contain:

1. Green pendaflex indicating job number and identity.
2. Manila folders will be made up with the following tabs:
   a. Contracts and Approved Change Orders
   b. Quotations, Estimates and Proposals
   c. Correspondence
   d. Engineering
   e. Purchase Orders
   f. Job Information
   g. A separate file is made up for the Accounts Payable/Billing in Process drawer for bookkeeping and billing procedures.
   h. Invoices
3. Extra work order (a field-generated change in contract amount due to unanticipated work).
   a. Rough draft is prepared by Project Manager and given to Accounting Department listing the following:
      1. Description of work
      2. Estimated hours worked on job
      3. Materials
      4. Equipment
   b. The Accounting Department will compile labor dollars and extend figures into final cost.
   c. Finished rough draft is reviewed with Project Manager and, when approved, is initialed.
   d. Extra work is then prepared in final form.
   e. Contract data sheet is updated by Accounting.
4. Change Order—An office-generated change order in contract amount due to change in job. (Processing is the same as noted above for the extra work order.)
5. Sections providing information on the overall project generally contain the following files:

R.S. Means Co., Inc., *Total Productive Facilities Management*

Figure 1.1

a. Specifications
b. Architects/Engineers
c. Contractors
d. Contracts/Approved Change Orders
e. Correspondence
f. Transmittals ("Incoming" and "Outgoing" arranged chronologically)
g. Design Criteria
h. Estimates
i. Field Notes
j. General
k. Insurance
l. Job Information
m. Memoranda
n. Meeting Minutes, Telephone Logs, Field Observation Reports
o. Permits
p. Project Criteria
q. Purchase Orders
r. Change Orders
s. Schedules
t. Pertinent Documentation
u. Shop Drawings
v. Transmittal Copies (Alphabetical)
w. Vendor Quotations and Proposal Evaluations
x. Zoning
y. Contract Close-out Documents

6. For large projects, files may be set up by contractor work packages or classified by CSI MasterFormat Divisions:
   Div. 1 - General Requirements
   Div. 2 - Site Work
   Div. 3 - Concrete
   Div. 4 - Masonry
   Div. 5 - Metals
   Div. 6 - Wood and Plastics
   Div. 7 - Thermal and Moisture Protection
   Div. 8 - Doors and Windows
   Div. 9 - Finishes
   Div. 10 - Specialties
   Div. 11 - Equipment
   Div. 12 - Furnishings
   Div. 13 - Special Construction
   Div. 14 - Conveying Systems
   Div. 15 - Mechanical
   Div. 16 - Electrical

R.S. Means Co., Inc., *Total Productive Facilities Management*

Figure 1.1 cont.

LETTER
OF TRANSMITTAL

FROM

DATE

PROJECT

LOCATION

ATTENTION

RE:

Gentlemen:

WE ARE SENDING YOU ☐ HEREWITH ☐ DELIVERED BY HAND ☐ UNDER SEPARATE COVER

VIA _____ THE FOLLOWING ITEMS:

☐ PLANS ☐ PRINTS ☐ SHOP DRAWINGS ☐ SAMPLES ☐ SPECIFICATIONS

☐ ESTIMATES ☐ COPY OF LETTER ☐ _____

COPIES	DATE OR NO.	DESCRIPTION

THESE ARE TRANSMITTED AS INDICATED BELOW:

☐ FOR YOUR USE ☐ APPROVED AS NOTED ☐ RETURN _____ CORRECTED PRINTS

☐ FOR APPROVAL ☐ APPROVED FOR CONSTRUCTION ☐ SUBMIT _____ COPIES FOR _____

☐ AS REQUESTED ☐ RETURNED FOR CORRECTIONS ☐ RESUBMIT _____ COPIES FOR _____

☐ FOR REVIEW AND COMMENT ☐ RETURNED AFTER LOAN TO US ☐ FOR BIDS DUE _____

REMARKS

IF ENCLOSURES ARE NOT AS INDICATED,
PLEASE NOTIFY US AT ONCE.

SIGNED

R.S. Means Co., Inc., *Total Productive Facilities Management*

Figure 1.2

Handling Change Order Communications

Change orders that occur during the life cycle of a construction project also demand timely and accurate communication. They represent a change in the cost and time, from that originally planned and budgeted. Depending on the scope of the change, these situations can be of considerable concern to a project owner.

When changes occur, the project manager must move quickly to provide the customer with adequate documentation concerning the cause of the change. Changes can be the result of a design omission, an unexpected occurrence, or a change in the customer's preference. Cost estimates should be provided in a timely fashion, and the necessary work to implement the change should be scheduled. Regular progress meetings and update reports will help prevent time and budget surprises, and will enhance the owner/project manager relationship.

Time is of the essence not only for change orders, but for other project communications. With fax, email, and voice mail systems readily available, customers not only expect, but demand, timely communications. Reporting must be prompt. They identify potential problems, thereby making it possible to take corrective measures to prevent small problems from turning into big ones. Modern project management software systems allow for relatively easy updates.Variance analysis can also be used to identify problems and to determine the reasons for the variance.

On-Site Communication

The owner's site representative or contractor's field superintendent plays a special communication role. This is a leadership position that goes far beyond policing contractors to make sure they are working and that construction materials are delivered on time. The owner's site representative's most important task is to serve as the company's liaison with the "workers in the trenches." A variety of craftsmen skillfully make the designer's drawings and specifications come to life with their building skills. The site representative has to deal with a wide range of personalities and situations daily. Each worker comes to the job with his own unique worries, long-standing attitudes, prejudices, possible health and other issues. Each person working on the project draws conclusions, expresses emotions, and is often influenced by inaccurate reports from the "grapevine." It is important to work with the whole individual, not just that person's engineering, carpentry, or administrative competencies.

Regardless of whether the worker is a corporate employee, an on-site laborer or a consultant, that individual's freedom to contribute opinions on the project allows him or her to feel involved and important. Whether the work is new construction or ongoing maintenance, managers benefit from the suggestions of workers closest to the project. Managers must learn to hear the unspoken, or that which may not be explicitly stated. For example, when asked, "How many times will we have to repair this broken-down equipment?" the response should not be merely a number. The manager should ask if they are trying to say that the equipment has become worn to a point that it is interfering with productivity. It is important to listen for the meaning behind certain communications.

A Word About Advanced Communications Technology

Owners and facility managers can utilize proven new communication technologies to reengineer facility management practices. Communicating via fax and e-mail reduces the time period for delivering a project. Collaborative work technologies are producing major changes in the way construction projects are procured and facilities are designed, built, and managed.

In the past, long distance business relationships were relatively scarce and costly. It was not productive for designers and engineers, who were geographically separated, to collaborate on projects. Much time was wasted waiting for information that was sent via U.S. mail (snail mail), and it was difficult to process or decipher information sent on a piecemeal basis. Today, communications technologies enable organizations that may be geographically remote to work together on projects simultaneously.

Video conferencing enables face-to-face teamwork over distances. Internet access and groupware programs provide instantaneous electronic access to complex information from remote locations. Portions of a project can be assigned to businesses located across the globe in order to work on a project 24 hours a day. The services of lower-cost design and technical consultants from any locale can be retained to minimize design costs without compromising quality and performance. When consultants are required to travel by air, it is much more convenient and affordable than in prior years.

Capitalizing on developments in communication technologies provides a way to get more use out of less space. It is now a generally accepted practice for sales and consulting personnel who frequently work outside the main office to telecommute. By working primarily out of their homes, they reduce office space needs and the associated cost. When necessary they can reserve space at the main office. Facility managers who need to avoid unnecessary costs can take advantage of these same arrangements.

Computer-Aided Facility Management (CAFM) programs can be used to store, organize, and process large amounts of facilities data in a variety of ways. Computerizing facility management functions enables companies to systematize their operations, handle more inquiries, and establish uniform standards for maximum efficiency.

Computer-aided building management systems can be installed to monitor and control the condition of systems and equipment from remote locations. For example, in 1987, the resident operating engineer was required to be on the premises to monitor operation of the physical plant. Now the computer can perform many of these functions, and it will summon the mechanic when needed. When equipment is operating outside a control set point, the system automatically contacts the mechanic and other designated personnel via beeper or a communication alternative. Remote adjustments can be made through a laptop or other computer. Automating facility management functions can simultaneously improve performance and reduce overhead. Fewer personnel are required to operate and maintain an automated facility than are needed for a plant that is not automated.

The merging of computer and communication technology enables facility managers to maximize productivity of the work environment. This increase in automation is costly at first. It would be unreasonable to expect an immediate payback from an investment in automation, as the new systems must operate alongside the old ones for a period of time. However, the long-run benefits from productivity improvement may far outweigh the initial cost. Careful analysis is required before investing substantial funds in automating a facility management operation.

Team Building

Effective communication is the backbone of a productive, team-based work environment. Communication clearly plays an important role in team building and facility management. Make a rule of encouraging team members to participate in the planning and implementation of work or events that will affect them. There are three benefits to this approach: you may get some valuable ideas, team members will better understand the reasons for the decisions and actions taken, and they will see you are sensitive to their needs and motivations.

Assembling Contractors and Consultants for the Project Team

The way in which the team is formed is important if you want to optimize a team approach throughout a project. Consultants, contractors, and suppliers should be carefully selected and managed under the terms and conditions of well-defined contracts. When you retain these services, you are engaging in a partnership. You and they are partners working together to accomplish the common goals of the project.

Select the best qualified consultants, rather than emphasizing only low cost. By recognizing the value of qualified designers, engineers, construction managers, contractors, and suppliers, the owner reinforces the team approach, which serves the project's objectives.

Selection of consultants or contractors should be based on professional and technical qualifications. You may want to consider forming a committee to help you develop qualification requirements, and to prepare written requests for proposal forms. If there is any question about why the consultant was selected, you will have a basis for justifying your decision.

Owners should prequalify contractors and consultants, and require them to fill out standard questionnaires that request technical and financial information. References from their previous projects are invaluable. AIA Document A305, "Contractor's Qualification Statement," is a good form to pre-qualify bidders. It can be obtained from The American Institute of Architects' headquarters in Washington, D.C. Careful evaluation of consultants and construction firms prior to entering into a contract is a major factor in ensuring quality and performance, and can determine the owner's ability to obtain the best facility for the money.

In evaluating consultants, contractors, and suppliers, keep in mind that it is time-consuming and expensive for them to prepare proposals. You should not subject a consultant, contractor, or supplier to the hassle of preparing a

proposal if they have little chance of getting the job. Some criteria for selecting consultants include:

- Experience
- Education
- References
- Subconsultants
- Project approach/new ideas
- Chemistry or fit with staff
- Financial health
- Insurance
- Familiarity with applicable facility systems and equipment
- Size of staff
- Years in business

Techniques for Team Decision-Making and Problem-Solving

Once the team is assembled and the project under way, there is an ongoing need for decisions, and for solutions to the problems that inevitably arise. Consensus decision-making is one of the most powerful tools at your disposal. Team decisions can minimize mistakes and disputes, and vastly increase productivity. It is a good idea to keep a few simple rules you can follow to diffuse conflicts between team members. For example:

- Affirm the opinions of the conflicting team members before expressing your perspective.
- Attack the problem or process, not the person's character.
- Speak the truth in a kind and respectful way.
- Separate facts from emotions.

The Function Analysis System Technique

The Function Analysis System Technique (FAST) applied in the value engineering process is a great example of team problem-solving. It gets a multi-disciplinary group of people together as a team to solve problems based on the analysis of functions. Function Analysis System Technique helps build a consensus among team members on what the problem is, how the problem will be solved, and why the selected corrective actions are being taken. This technique answers not only *how* something is being done, but *why.* Function Analysis System Technique is also a powerful tool to determine and rank priorities.

When this technique is applied in the value engineering process, customers can understand where their funds are being spent and can therefore decide which areas are most important when it comes to planning future uses for available funds. When an owner participates in the value engineering process, he or she will often seek trade-offs and set priorities that comply with budget parameters. This up-front communication helps avoid criticism when the project is under way or upon project completion, when "I wish I had done this or that" hindsight is common.

Cause and Effect Diagram

A practical tool for generating ideas and making decisions by consensus about a problem or issue is a Cause and Effect diagram, created by the project team.

This is often called a "fishbone" diagram because its lines resemble the skeleton of a fish. The basic problem, issue, or desired effect becomes the "head" of the fish. Then the team identifies *causes* behind the basic problem or issue. Frequently the major causes are grouped into four categories: *manpower, methods, materials*, and *machinery*. However, teams may choose their own categories to identify and classify the major causes. During the process of creating the fishbone diagram, the team uses creativity techniques such as brainstorming to identify causes within each of the four categories, using a minimum number of words, which then become additional "bones" in each category. Sometimes teams include words that describe the environment; these become the "tail" of the fish. Use of the fishbone diagram can help organizations find new ways to improve and fine-tune their operations. An example is shown in Figure 1.3.

Affinity Diagram

An Affinity Diagram is another useful tool for team members to gather and classify shared ideas. An Affinity Diagram is effective in collecting information on a specific problem, as shown in Figure 1.4. This format can also be used with larger groups or when the topic offers a wide variety of choices that require grouping. Follow these steps to create an Affinity Diagram:

1. Define the issues the team is to consider.
2. Generate ideas individually, writing clearly on slips of paper or special sticky-back note paper.
3. Use a brief description for each idea.
4. Sort recorded ideas (silently) into related groupings by spreading them out on a table or posting them on a wall.
5. Create new categories using new or existing ideas.
6. Look for patterns and reach a team consensus on the highest ranking ideas.

Positive/Negative Forces Analysis

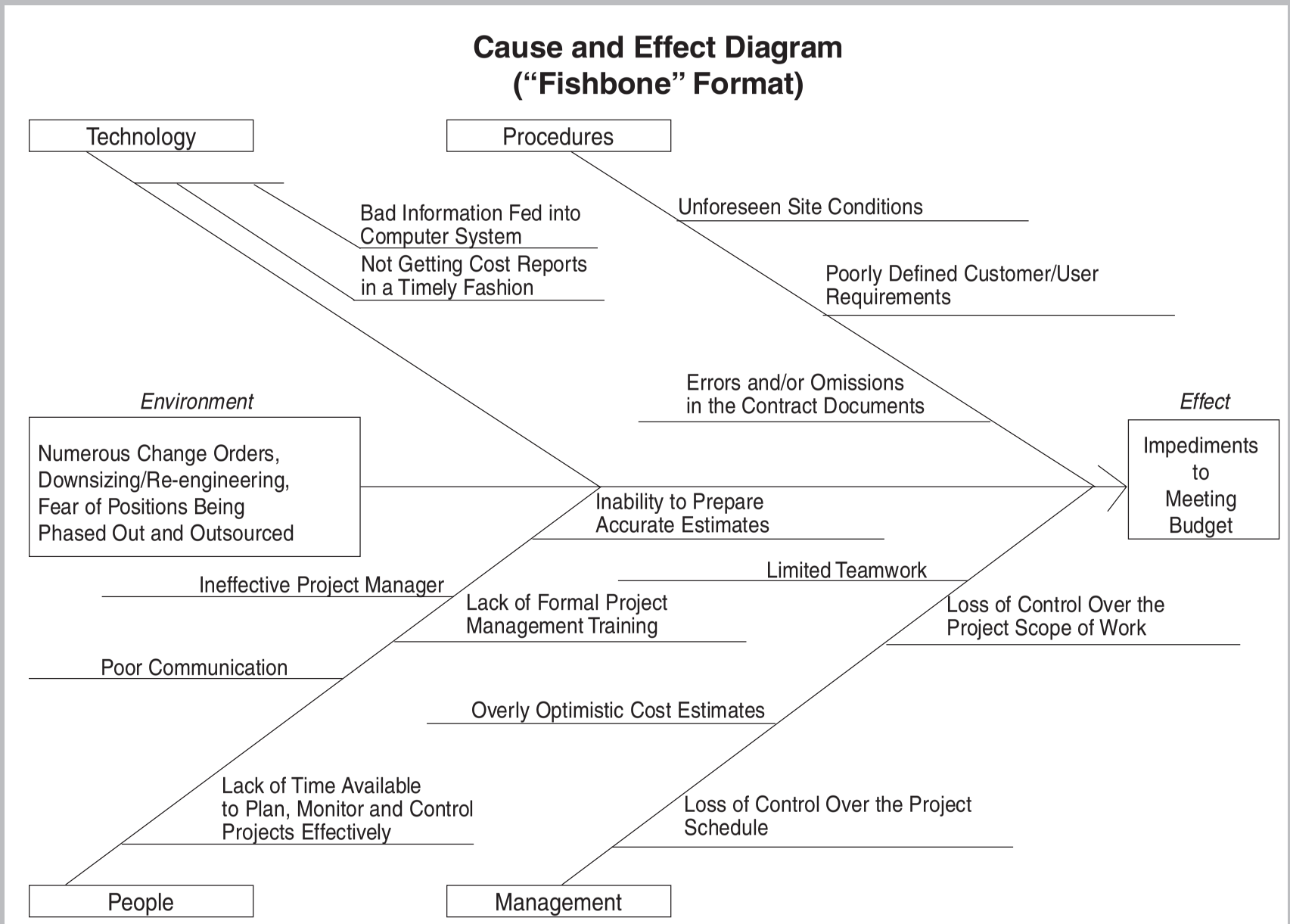
A two-column Positive/Negative Forces Analysis can also be used to stimulate thinking. For example, the format may be used to receive the team's input regarding the positive and negative aspects (or costs and benefits) of proposed alternative solutions. Other uses for this technique include analyzing the positive and negative aspects of a meeting at its conclusion, or to communicate what team members want, and do not want, to occur on a project. Figure 1.5 is an example of a positive/negative forces analysis used to determine the feasibility of various site locations for a new facility.

Post-Mortem Team Review

At the end of every significant project, it is helpful to assemble project team members to conduct a post-project evaluation. Ask yourselves "Knowing what we know now about the project, if we had to do it over again, what would we do differently?" The Positive/Negative Forces Analysis is a useful tool for collecting this information.

In addition to significant planned projects, the post-mortem team review should also be applied to any project that requires emergency response from a contractor or in-house personnel. Taking a proactive stance and avoiding the

Figure 1.3



R.S. Means Co., Inc., *Total Productive Facilities Management*

Figure 1.4

Affinity Diagram for Machine Downtime Causes

Product Design	Material	Machine	Programming	Procedures
Panel width varies, requiring the rails to be set	Lack of sufficient part spec	Feeders broken	Lack of standard component library consistent over all lines	Lack of escalation policy
Large variation in board design	Purchasing looks at cost only	Method difficult to understand/complex	Inability to quickly convert programs	Lack of feeder procedure
Different part numbers for same hardware	No process to elevate design issues to engineering	Equipment out of calibration	Accountability issues on program changes	
Same part/different part	No incoming inspection	Power failures	Inconsistent CAD Files	
0 ohm resistors used	Material unavailable to run	Feeder maintenance		
No DFM	High rejection rates of parts	Non-standard equipment		
Extensive use of cutting edge				
Top/bottom side components				

R.S. Means Co., Inc., *Total Productive Facilities Management*

necessity for work done under these circumstances represents a clear opportunity for savings because this kind of work often involves premium labor and equipment cost, and possible disruption of productivity.

Characteristics of Team Leaders

Decision-making and problem-solving skills are essential for productive facility management. Beyond this, managers need to make a lifelong commitment to cultivating teamwork and developing their own leadership abilities. In the pursuit of their profession, facility managers affect the quality of other people's lives. Conducting their work in an ethical manner is one of the fundamental ways they earn and maintain the confidence of team members, supervisors, peers, subordinates, suppliers, customers, and the general public.

The facility manager or project manager must not hide problems, acknowledging errors promptly, so that progress can be made toward a solution. Feeding bad information or withholding important information to try to control the situation is a good way to destroy credibility for the manager and his organization. Customers are entitled to accurate and timely facts so informed decisions can be made. Leaving out relevant information in status reports or misrepresenting potential costs to get a project approved can reduce the manager's credibility and effectiveness.

Positive/Negative Forces Analysis for New Facility

	+	−
Alternate 1	**Pole Building Site** Ease of truck access Distant from utilities "Flat" site	Requires extensive demolition Visibility No expansion capability Eliminates expansion capability for adjacent building Distance to parking Requires new storage space
Alternate 2	**Parking Lot Site** Ease of truck access Adjacent parking Visibility Allows space for future expansion "Flat" site	Consumes existing parking space Distant from utilities
Alternate 3	**Addition to Existing Building Site** Part of campus Proximity to utilities Interconnects buildings More aesthetically pleasing	Distance to parking More difficult truck access More difficult construction access Expansion limited by setback requirements Relocation of high voltage feeders may be required Eliminates planned expansion for other operations

R.S. Means Co., Inc., *Total Productive Facilities Management*

Figure 1.5

It is important to remember that the purpose of a team is to achieve an organization's objectives. A group of people might be inclined to choose someone with a dominant personality to become their team leader, with the idea that a take-charge type will get the job done. On the other hand, a domineering, authoritarian leader may lead the team down the wrong path. The best leaders want to serve and equip others.

Leaders who possess character value the people they lead and serve. Leaders of character think of themselves as servants, setting aside their own egos and self interests and inspiring other team members to act on behalf of the organization's greater goals. They demonstrate an appreciation for other team members' perspectives. They find ways to protect the interests of their followers and still achieve the collective goals of the organization.

Leaders should foster open, two-way communication. Commitment from team members is elicited by enabling them to participate jointly in analyzing problems and offering solutions. When a leader gives directions, he or she should provide opportunities for team members to ask questions in order to clarify what is expected of them. An effective leader also asks questions to uncover and resolve problems. He or she also reads body language to recognize signs of impatience, approval or disapproval, hesitance, confusion, or understanding.

Leaders must stay ahead of the game, including the competition. They strive to learn as much as they can from each personal and business situation. They understand the ultimate goal in learning is the application of that knowledge to overcome obstacles that will confront them in the future.

Effective leaders work to develop their own skill repertoire and empower others to expand theirs. One way to empower team members is by noticing their efforts and potential and encouraging them to persevere. Acknowledge each individual's accomplishments with a reward appropriate for his or her unique needs. Everyone needs to know that the work they do is appreciated and has merit.

To be an effective leader, one must have a vision of what needs to be accomplished. Leaders are goal-oriented. They plan their work and work their plan. Team members are often required to undertake projects that are unpleasant or difficult. They like to know what steps need to be taken to reach the objectives and how they will be rewarded for their efforts. Leaders motivate people to work toward a common goal.

Leaders must be good facilitators and use every meeting as an opportunity for team building. Sharing of experiences should be encouraged so team members can learn from and build on the knowledge of others. Leaders can tap into the knowledge and skills available through other people, empowering those individuals by initiating and facilitating team building workshops. Workshops may include group problem-solving activities such as Cause and Effect Analysis exercises, brainstorming, FAST Diagramming, Affinity Diagramming, and Positive/Negative Forces Analyses.

Effective leaders are aware of their own strengths and weaknesses, as well as those of other team members. Even if every person on a team should possess similar skills, the differences in timing, behavioral patterns, communication preferences, and motivation affect each person's ability to work productively in various environments.

Complete the form in Figure 1.6 to become more aware of your unique passions, work preferences, skills, and habits. Share the completed form with key members of your team, for their impressions. Repeat this process with all team members periodically. By looking closely at yourself and others, you will take a leadership role in developing a more productive team. Each team member needs to understand how he or she helps or hinders the team as a whole. The process enables each team member to understand individual differences and to identify and set dates for making changes that will encourage the effectiveness of the individual and the work team.

Power is not necessarily bestowed upon those with the most money, brains, or academic degrees. Rather it abides in the individual or organization people turn to for competent advice and help. Facility managers will achieve power and recognition by helping others do their jobs better and faster—and by facilitating the teamwork necessary for productive and safe working environments.

The first step is to commit to a process of ongoing learning and improvement. To provide the basis for development of strategies that will benefit both the facility manager and his or her organization, it is necessary to clarify the greater goals of the company on a continuing basis. Assess facilities performance from the perspectives of internal and external customers and compare your performance against your competition and industry best practices.

Business situation analyses, customer attitude surveys, space utilization studies, flow charts, benchmarking, and value engineering are practical methods for collecting, organizing, and analyzing data; identifying performance requirements; and determining the developmental changes needed to keep the entire organization healthy and vigorous. These methods incorporate multidisciplinary teams, cross-functional systems thinking, and creativity techniques to foster cooperation and consensus decision-making. Remember to evaluate facility management's contribution to corporate goals on a routine basis, because the performance targets and priorities are always changing.

Meticulously apply value engineering to define the functions of facilities, projects, and services. This will help determine lower cost ways to reliably provide the required functions. Customers pay for functions. Value engineering determines which functions and services are the most valuable and how much they are worth from the customers' perspective. Facility management organizations should be prepared to justify the value of their projects and services at all times. If the facility manager does not initiate the value studies, someone else in upper management may.

What do you like? (List work activities or areas that you enjoy doing or have a passion for.)

What do you dislike? (Identify those work activities that are less appealing or that you tend to avoid.)

Solicit input from your team members on the following items. Be fair, honest, and diplomatic in this exchange.

What are you good at? (List special knowledge, talents, and skills.)

What skills do you need to learn, improve, or develop?

Skills	Target Completion Date:

What are your best work habits?

What present work habits do you need to change, or what new habits do you need to develop?

Habits	Target Completion Date:

Team Member Awareness Form

R.S. Means Co., Inc., *Total Productive Facilities Management*

Figure 1.6

What are your working style tendencies? (Use the rating scale below for assistance in clarifying your style. Circle the number on the scale that best describes you.)

Structured									Unstructured
1	2	3	4	5	6	7	8	9	10
Decisive									Indecisive
1	2	3	4	5	6	7	8	9	10
Proactive									Reactive
1	2	3	4	5	6	7	8	9	10
Patient									Impatient
1	2	3	4	5	6	7	8	9	10
Organized									Disorganized
1	2	3	4	5	6	7	8	9	10
Concise									Expansive
1	2	3	4	5	6	7	8	9	10
Reserved									Outspoken
1	2	3	4	5	6	7	8	9	10
Detail-Oriented									Concept-Oriented
1	2	3	4	5	6	7	8	9	10
Impetuous									Deliberate
1	2	3	4	5	6	7	8	9	10
People-Oriented									Technically Oriented
1	2	3	4	5	6	7	8	9	10
Time-Oriented									Results-Oriented
1	2	3	4	5	6	7	8	9	10
Aggressive									Passive
1	2	3	4	5	6	7	8	9	10

Team Member Awareness Form cont.

R.S. Means Co., Inc., *Total Productive Facilities Management*

Figure 1.6 cont.

The next step is to create a project-driven facility management organization and employ a structured project management approach for implementing the desired changes. Business and financial conditions, regulatory requirements, technology developments, and competition influence the type of projects selected. In a competitive, resource-constrained environment, there will always be emphasis on projects that help improve the organization's cost, quality, and cycle-time management.

Matrix organizational structures, decision charts, work breakdown structures, programming and scope documents, cost estimates, CPM schedules, value engineering, responsibility charts, life cycle cost analysis and selection of the appropriate contracting and procurement methods are essential for effective project management. Supervision, use of feedback systems and reports, and visible, easily observable milestones are necessary to measure and control project progress. Some of the benefits of structuring an organization around the management of projects include: efficient allocation and control of limited resources, shorter development times, minimum cost, and improved quality and performance.

The final step is to improve productivity through communications and teamwork. Many organizations can dramatically improve effectiveness and productivity by making improvements in these areas. Management alone cannot keep a company competitive anymore. Everyone needs to share a sense of responsibility for the survival and success of the company.

Today, most organizations are unwilling to empower a single individual to make high risk decisions that impact the competitiveness and return on expensive facility assets. The high stakes, increased number of stakeholders, and the complexity of required tasks, skills, technology and knowledge require the involvement of a diverse mix of people from inside and outside the organization.

The broad task of the facility manager or engineer is to facilitate the creation of flexible teams that can manage projects and respond effectively to new workplace challenges. Managers need to work continuously to improve team effectiveness, share ideas, and develop esprit de corps. Many individuals who have been informed that they are critical components of a team do not feel that they are really working together as a team to solve shared problems in the most efficient and effective manner. Changing current methods of working and organizing company resources takes teamwork, team building, team incentives, and shared information. Conduct team-building workshops using tools such as cause and effect diagrams, affinity diagrams, and positive and negative forces analyses.

A fluid and efficient business organization requires timely and effective communication. Through telephones, pagers, e-mail, facsimiles, and express deliveries, distance is practically eliminated as a barrier to communication. Dissemination of the right information to the right individuals at the right time improves the probability that a project will be successful.

The best facility engineers and managers are equipped with a variety of methods which they continually fine-tune and adapt to fit the specific needs of each situation. They have control over both the cost and productivity of facility resources and foster efficient and effective working environments in which their team will flourish and function well.

Resource Publications

Drucker, Peter F., *Managing for the Future*. New York, NY: Penguin Group, 1992.

Jablonski, Joseph R., *Implementing TQM*. Albuquerque, NM: Technical Management Consortium, Inc., 1994.

Sievert, Richard W., *Total Productive Facilities Management*. Kingston, MA: R.S. Means Co., Inc., 1998.

Stuckenbruck, Linn C., *Team Building for Product Managers*. Drexel Hill, PA: Project Management Institute, 1988.

Whetten, David and Kim Cameron, *Developing Management Skills, Fourth Edition*. Reading, MA: Addison-Wesley Publishing, Inc., 1998.

For Additional Information

American Management Association
1601 Broadway
New York, NY 10019-7420
212-586-8100
www.amanet.org

The American Management Association is a non-profit, membership-based organization that assists individuals and enterprises in the development of organizational effectiveness. It publishes more than 80 business-related books a year, and also issues educational materials in audio, video, and electronic formats.

Association of Higher Education Facilities Officers (APPA)
1643 Prince Street
Alexandria, VA 22314-2818
703-684-1446
www.appa.org

APPA is an international association dedicated to maintaining and promoting the quality of educational facilities. APPA conducts research, presents educational programs, produces publications, and serves as a central information source for its members.

International Facility Management Association
One E. Greenway Plaza, Suite 1100
Houston, TX 77046-0194
713-623-4362
www.ifma.org

IFMA represents and supports facility management as a profession. It forecasts trends in management and provides workplace education through self-study, seminars, and an on-line education program.