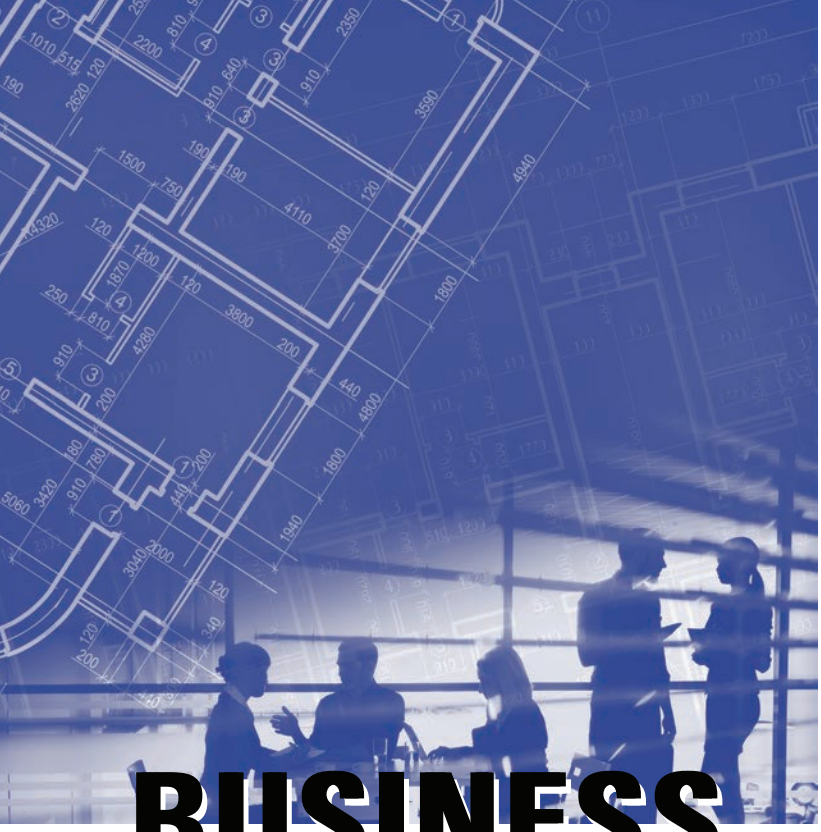
DIVISION 1: PRACTICE MANAGEMENT

Chapter

1. Business Operations
2. Financial and Risk Management
3. Delivery of Services

1



BUSINESS OPERATIONS

For architectural firms, the subject of business operations includes

- *business organization:* the legal structure of an architectural firm
- *office organization:* the way the firm organizes to complete its work
- *ethical standards:* the accepted principles of correct professional conduct
- *human resources:* the practices and legal responsibilities pertaining to employing others
- *business development:* the use of marketing and public relations to increase business

These five subjects are discussed in this chapter. In addition, financial management and risk management are discussed in Chap. 2, and methods of service delivery and practice methodologies are discussed in Chap. 3.

BUSINESS ORGANIZATION

There are a number of different ways in which an architectural firm can be structured, and each structure has different legal and financial consequences.

- sole proprietorship
- general or limited partnership
- corporation
- limited liability company or limited liability partnership
- joint venture

Each has advantages and disadvantages and may be more or less appropriate depending on the number of people in the firm, the type of practice, the size of the business, the level of risk the owner or owners want to take, the laws of the state or states where the firm is doing business, and the requirements of the state licensing board or boards in regard to the participation of licensed architects in firm management.

Sole Proprietorship

The simplest business type is the *sole proprietorship*. In this structure, the business is owned by an individual. The business may operate under the owner's name or under a company name.

Setting up a sole proprietorship requires only a name and location for the business, company stationery, whatever electronic communications systems are needed, and the business licenses required by the local jurisdiction. If employees are hired, state and local requirements must also be met.

The advantages of a sole proprietorship include ease of setup, total management control by the owner, and possible tax advantages to the owner because business expenses and losses may be deducted from the gross income of the business. The main disadvantage is that the owner is personally liable for the company's debts and losses. If a client sues the company, the owner's personal income, personal property (possibly including property co-owned with a spouse), and other assets can be seized to pay any judgments.

Another possible disadvantage is that raising capital and establishing credit will depend entirely on the owner's personal credit rating and assets. Similarly, because success or failure depends mainly on the work and personal reputation of its owner, it may be difficult to sell even a successful sole proprietorship to others. When the owner stops practicing, the firm will usually cease to exist.

Partnerships

In a *general partnership*, two or more people, called *general partners*, share in the management, profits, and risks of the business. Income is shared among the general partners and is reported on personal tax forms. Each general partner is also personally liable for business debts and liabilities.

A *limited partnership* is similar, but has at least one general partner and at least one *limited partner*. As with a general partnership, the general partners invest in the business, manage it, and are financially responsible for it. The limited partners are investors who receive a portion of the profits, but who have no say in the management of the company and are liable only to the extent of their investment. The limited partnership has largely been superseded by the limited liability company, described later in this section.

A partnership is relatively easy to form. A partnership agreement is usually advisable. The additional requirements are similar to those of a sole proprietorship. Where a sole proprietorship depends mainly on a single person, a partnership brings together the skills of several people. Most partnerships are formed because each partner brings to the business a particular talent, such as business development, design ability, or technical knowledge.

The primary disadvantage of a partnership is that all the partners are responsible and liable for the actions of the others. As with a sole proprietorship, the personal assets of any of the partners are vulnerable to lawsuits and other claims. Income is taxed at individual rates, another disadvantage of the partnership form. On a personal level, the partners may eventually disagree on how to run the business. If one partner wants to withdraw, the partnership is usually dissolved.

Corporations

A *corporation*, sometimes called a *C corporation*, is an association of individuals that exists as a legal entity apart from its members. A corporation can be created only in accordance with statutory requirements. To form a corporation, formal articles of incorporation must be drawn up by an attorney and filed with the appropriate state office. The specific regulations and requirements are governed by state law.

Corporations have three levels of participants. Stockholders are owners of the corporation in proportion to the number of shares they own. They elect the directors. The directors have the fiduciary duty to act in the best interest of the stockholders and are responsible for broad policy decisions. The directors, in turn, elect the officers who carry out the day-to-day management of the corporation.

A corporation is financially and legally independent from its shareholders. Each shareholder is financially liable only for the amount of money he or she has invested in the corporation. If the corporation is sued, the personal assets of the shareholders are not at risk. This is the greatest advantage of the corporation. Additionally, a corporation has a continuity that is independent of any changes in shareholders, directors, and principals. It is also relatively easy to raise capital for corporations through the sale of stock.

Corporations are generally taxed at lower rates than individuals, which can result in considerable savings over a partnership or sole proprietorship. As the corporation and the shareholders are separate legal entities, however, they are also taxed separately, the corporation on its profits and the shareholders on their dividends. In this way, corporate income is, in effect, taxed twice.

The primary disadvantages of a corporation are the initial cost to establish the business and the continuing paperwork and formal requirements necessary to maintain it. These, however, are usually outweighed by the reduced liability and tax benefits.

Stockholders are owners of the corporation. Directors are responsible for broad policy decisions. Officers carry out the day-to-day management of the corporation.

An *S corporation* does not retain profits and pay out dividends in the usual manner. Instead, an S corporation chooses to allocate its income and losses directly to shareholders in proportion to their holdings. Shareholders report their shares of the business's income and losses on their personal federal tax returns and are assessed tax at their individual rates. This avoids the tax on corporate income, and can also be advantageous when the business loses money or when tax rates favor the individual over the corporation; in addition, an S corporation offers all the advantages of a standard corporation. S corporation status, however, is limited to *small business corporations* as defined in Chap. 1, Subsection S, of the *Internal Revenue Code*. To qualify for S corporation status, a corporation must be a domestic company with no more than 100 shareholders; there are other restrictions as well.

Many states allow the formation of a *professional corporation* for professionals such as architects, lawyers, doctors, accountants, and interior designers. This form of business is similar to other corporations except that liability for malpractice is generally limited to the person responsible for the act. However, each state has its own laws regarding the burden of liability in a professional corporation.

Limited Liability Companies and Limited Liability Partnerships

The *limited liability company* (LLC) and the *limited liability partnership* (LLP) are similar business structures that combine the advantages of a partnership or sole proprietorship with the limited liability of a corporation. Each is formed like a partnership. Those who invest are called members, and those who manage are called managers. Unlike a partnership, however, it is possible for a non-member to be a manager.

The main advantage to these types of organizations is that liability is limited to a member's investment; a member has no personal liability. An LLC is not a separate entity in the eyes of the federal government, so the business itself is not taxed. Accordingly, profits and losses are passed through the business to each member who must report a profit or loss on his or her personal federal tax return. However, some states may tax the LLC. In addition, members of an LLC are considered to be self-employed, so they must report and pay self-employment tax for Social Security and Medicare. In some cases, the members of an LLC can elect to be classified as an S corporation; the organization remains an LLC from a legal standpoint but is taxed as an S corporation. Generally, an LLC is easier to set up and operate than a corporation.

Joint Ventures

A *joint venture* is a temporary association of two or more persons or firms for the purpose of completing a specific project or achieving a specific goal. This business arrangement is typically used by architectural firms when a project is too large or complex to be completed by one firm alone, or when one firm needs the expertise in a particular area that another firm can offer. The joint venture is typically dissolved when the project is completed or the goal is reached.

A joint venture should be based on a formal, written agreement that describes the duties and responsibilities of each firm, how profits and losses will be divided, and how the work will be completed. The joint venture is treated like a partnership; it is not itself a legal entity independent from its members, and it cannot be sued as a corporation can. Depending on the laws in the state in which the joint venture operates, profits may be taxed as a partnership, or the individual members of the joint venture may be taxed separately.

Before a joint venture is formed, a *teaming agreement* (also called a *memorandum of understanding*) should be developed that defines the roles, responsibilities, and contractual relationships that will be established if the firms are awarded the project and the joint venture is formed. A teaming agreement is not a formal business organization, but it can be used to market the team and forms the basis of a joint venture. A teaming agreement can also be used if a firm wants to form a prime-consultant agreement.

Example 1.1

Three colleagues, who have worked together in a large firm serving institutional clients, have made the decision to start their own firm. One is a licensed architect and a great designer. The other two have experience in technical construction issues and are both excellent marketers. Their vision is to serve large institutional clients and grow the firm into providing service for international customers. Another goal of these owners is to protect their personal assets from potential lawsuits. What type of business organization would be best suited for the three firm owners to meet these goals?

(A) C corporation

(B) sole proprietorship

(C) S corporation

(D) general partnership

Solution

A sole proprietorship is a business owned by one person, not multiple owners. An S corporation is limited to small business corporations and would not allow for the growth anticipated by an international practice.

A general partnership requires each partner to be personally responsible for business debts and liabilities. A C corporation best meets the growth demands of the firm, while shielding the owners from personal liability.

The answer is (A).

Standard of Care

Whatever legal structure a firm takes, the architects in the firm must exercise an appropriate standard of care. *Standard of care* is a legal concept, defined as the level of skill and diligence that a reasonably prudent architect would exercise in the same community, in the same time frame, and given the same or similar facts and circumstances.

The law does not require perfection, but it does require the architect to practice with reasonable care. For example, if an architect designing a building in Florida did not incorporate hurricane-resistant detailing, he or she would most likely be found negligent because a reasonably prudent architect designing for the same location would do so. Of course, as with any legal issue, the final determination may be made in a court of law, with both sides arguing their cases and expert witnesses giving their opinions about the particular point of dispute.

"In the same time frame" is generally taken to mean at the time the project is designed or built, not at the time of the dispute. For example, a client may claim that the architect should have used a certain material to prevent damage to the building. But, if that material was not yet available or not yet tested at the time the project was designed, the architect is unlikely to be found negligent.

"The same or similar facts and circumstances" includes budget, scheduling, and the complexity of the project, among other matters. For example, a client might want a shorter construction time and agree to a fast-track delivery system using a construction manager. Then, after the project is completed with some increased costs due to the shortened schedule, the client may claim that the architect should have suggested a design-bid-build project delivery method to get a lower price. A court would probably hold that a prudent architect working under the same circumstances would also choose a fast-track delivery method, rendering the client's claim without merit.

An architect should be cautious about raising the standard of care. For example, the architect may agree to the inclusion of a statement in the contract that the architect should deliver the project "with the highest standards" or similar language. The architect may also raise the standard of care by promising or guaranteeing certain results or taking on responsibilities that are not part of the contract. In both cases, the architect's actions create a higher standard of care and can increase the architect's liability or even make the architect's work uninsurable.

Example 1.2

A firm has performed design construction administration services in the building of a new five-story library on the campus of a small college. After the owner moves in the equipment, furniture, and books, the floors of the library begins to deflect. When the books and equipment are removed, the floors return to their original position. A study commissioned by the owner and a careful review of the project documentation finds that the structural engineer included a dead load and a live load for the occupancy of the building in the floor calculations as required by code, but did not include concentrated loads for the shelving and books. Has the architect met the standard of care for this building?

(A) Yes, the owner is responsible for the loads imposed on the building by furniture, equipment, and books.

(B) No, the architect is obligated to meet the standard of care and include elements that meet the requirements for this type of building.

(C) Yes, the structural engineer, not the architect, is responsible for providing the proper calculations and design of the structural components of the building.

(D) No, the architect should have made calculations to check the work of the engineer.

Solution

The architect has not met the standard of care for this building. The firm's contract with the owner holds the architect responsible for the design of the building, including the work of the structural engineer and any structural load requirements.

The answer is (B).

OFFICE ORGANIZATION

Several aspects should be considered in the organization of an architectural office, including

- work organization
- support staff
- regulations governing architectural practice

Work Organization

A firm's staff can be organized in various ways in order to work on and complete projects. The most traditional structure is *departmental organization*, sometimes called *horizontal organization* or *flat organization*. In this structure, the staff is organized into departments, each of which specializes in a different function. There may be a marketing department, a design department, a specifications department, a contract documents department, and a construction administration department. Every department works on every project as needed, and a project moves from one department to another in its route from start to finish.

Departmental organization is very efficient, allowing a firm to standardize and fine-tune its processes, make full use of many types of specialists, and create economies of scale. However, it can also make a business inflexible and resistant to innovation and change. Keeping communication open among departments can be a challenge. It can be difficult for employees gain breadth of experience or to share knowledge outside their specialties.

A *studio organization*, sometimes called a *vertical organization* or *tall organization*, is organized around groups of employees called *studios*. Each studio is responsible for completing an entire project, from initial planning to production and construction administration. Within each studio, members must have among themselves the expertise needed to accomplish all or most of the work required for their project. Studios can be created and dissolved as the need arises, or they can remain intact and be assigned new projects based on their particular strengths and expertise. For example, a firm may have one studio for retail projects, another to do industrial work, and another to provide office planning.

The advantages of studio organization include close and immediate communication among members of the design team and the synergy that comes from sharing ideas and group problem solving. Studios also work well with a strong project manager system, in which the project manager has daily contact with the design and production teams as well as with the client. Sometimes studio organization is combined with one or more departments that provide very specialized work, such as specification writing.

Smaller firms may work on a very informal basis, where the principal or the partners complete the client contact and design work and then hand off the production and administration other employees.

Many firms, both large and small, outsource some of their work. *Outsourcing* is contracting with another company to do some of the work needed for a project. Among architectural firms, the production of construction documents and renderings is often outsourced. Outsourcing is discussed in greater detail in Chap. 3.

Outsourcing requires careful management and coordination, but it can be a way to manage a fluctuating workload without continually hiring and firing employees. Firms may outsource to either foreign or domestic companies.

Support Staff

Support staff includes employees other than the professional staff and senior management. The types and number of people needed on the support staff will vary with the size of the firm, but may include administrative assistants, receptionists, bookkeepers, marketing people, model builders, and technology assistants.

Regulations Governing Architectural Practice

All architectural businesses must conform to local, state, and federal laws and regulations, regardless of their size and organizational structure. Requirements for licensing and taxation vary widely from one local and state jurisdiction to another, but some of the more common requirements are listed here. Architects should research the particular requirements of their local and state licensing and taxing agencies. The various types of insurance that an architectural office should have are discussed in Chap. 2.

Business Licenses

Most local jurisdictions require every business to have a license, including those offering professional services. This license allows the business to practice, and it usually serves as the basis for taxation.

A corporation must be registered with the state in which it practices. Each corporation is issued a corporate identification number by a state agency, typically the secretary of state's office. In some states, a firm must make a filing with the state registration board and obtain a *certificate of authorization* (COA) in order to offer services to the public. For limited liability corporations and professional limited liability corporations, an LLC certificate or other type of business license may be required.

Taxes

All businesses must pay taxes. If a business has employees, it must withhold taxes for each employee and forward this money to the Internal Revenue Service (IRS). A business with employees must file IRS Form SS-4, Application for Employer Identification Number (EIN). This number is used in tax filings and other correspondence with the IRS. The business must submit a copy of Form W-4, Employee's Withholding Allowance Certificate, for each employee. This form, which is completed by the employee, indicates the number of deductions the employee is claiming.

At the beginning of each year, the business must supply each employee with Form W-2, Wage and Tax Statement, showing all wages paid in the previous year to the employee along with federal, state, city, and FICA taxes withheld.[1] The employer must send Form W-2 to each employee no later than January 31 each year for the employee's use in preparing personal taxes. Most states have similar requirements for filing state income taxes.

For sole proprietors and some partnerships, federal and state income tax must be filed as estimated taxes every quarter. In addition, sole proprietors and some partnerships must pay self-employment tax to cover Social Security and Medicare taxes.

Most local jurisdictions require every business to have a license, including those offering professional services.

Many states also apply a use tax on goods purchased from out of state, either for use by the business or for resale. The architect must file a use tax certificate and pay what amounts to a sales tax. Some states also charge a personal property tax on furniture and equipment that is used by the business.

An architectural firm may be subject to a variety of city taxes. These can include city income taxes, employment taxes, occupational privilege taxes, and use taxes. Property taxes are also assessed if the firm owns property.

[1] FICA is the Federal Insurance Contribution Act, more commonly known as Social Security.

Professional Licensing and Regulation

All states have laws regulating the practice of architecture. An architect must obtain a license to practice and renew it annually or biannually. Most states also require that architects complete a minimum number of continuing education credits to maintain their licenses.

To obtain the initial license, a candidate must pass the Architect Registration Examination (ARE) given by the National Council of Architectural Registration Boards (NCARB). An individual state, such as California, may also require the candidate to take and pass a supplemental exam. The state may require that the applicant for licensure hold a degree from a university that is accredited by the National Architectural Accrediting Board (NAAB). This degree is generally a bachelor of architecture or master of architecture degree. Most states also require candidates to complete the Intern Development Program (IDP), during which the candidate serves an internship under the direct supervision of a registered architect and gains diverse experience. (The IDP is discussed in more detail later in this chapter.) Some states allow a candidate to become a licensed architect without a formal degree by completing the requirements of the NCARB's Broadly Experienced Architect (BEA) program; the candidate must also pass the ARE and complete the IDP.

After becoming licensed in one state, an architect can apply for reciprocal licensure in other states by providing documentation of education, experience, and exam status to each state's licensing board; if the architect has current NCARB certification, NCARB will send documentation on request. The architect may need to meet additional state requirements, such as passing the California Supplemental Examination. An architect who is licensed in more than one state must meet each of those states' continuing education requirements.

ETHICAL STANDARDS

An architect must conform to the same federal, state, provincial, and local laws that any other businessperson must follow, as well as any state laws governing the practice of architecture. Beyond this, however, a professional's conduct should be guided by a general sense of what is ethically correct and incorrect. For most professions, ethics are defined by historical practice as well as codified standards developed by a profession's trade organization.

The main source of ethical standards for architects is the American Institute of Architects (AIA). Although the AIA *Code of Ethics & Professional Conduct* applies specifically to AIA members, it provides good guidance for all architects, and all architects and ARE candidates should be familiar with it. The code provides minimum standards of conduct, procedures for enforcement, and sanctions against AIA members who violate the standards.

Any legal or regulatory violation applicable to the *Code of Ethics* must be determined by an appropriate legal authority. If an AIA member is found in violation of the *Code of Ethics*, sanctions may include nonpublic *admonishment*; *censure*, which includes publishing a description of the violation in an AIA periodical; *suspension* of membership; or *termination* of membership.

Over the decades, some of the prohibitions in the original 1909 *Code of Ethics* have been dropped. An architect may

- compete for projects on the basis of fee
- advertise, as long as no misleading or false statements are made
- supplant or replace another architect on a project (though intentionally seeking to interfere with another architect's contractual relationship with a client may be illegal in some cases)
- be involved with construction, as on a design-build project
- offer free design services for the purpose of securing a commission, as long as the prospective client is not deceived or misled (for example, by implying that an informal preliminary sketch is actually a fully thought-out solution to the client's needs)

The AIA *Code of Ethics* is arranged into three tiers of statements, including canons, ethical standards, and rules of conduct. Canons are broad principles of conduct, ethical standards are specific goals toward which members should aspire, and rules of conduct are specific, mandatory statements that members must follow. Violating a rule of conduct is grounds for discipline. Some of the most important guidelines are summarized here; the complete AIA *Code of Ethics*, with commentary, is available on the AIA website.

Canon I, General Obligations

Members should

- maintain and improve their knowledge and skill
- seek to raise architectural standards in aesthetics, education, research, training, and practice
- respect and seek to improve society and the environment
- exercise learned professional judgment
- uphold human rights
- not discriminate on the basis of race, religion, national origin, age, disability, or sexual orientation

Canon II, Obligations to the Public

Members should

- uphold the law
- never try to influence a public official with a payment
- never accept payments intended to influence their judgment
- never help a client with anything fraudulent or illegal
- promote and serve the public interest
- render pro bono services
- be involved in civic activities
- strive to improve public appreciation of architecture

Canon III, Obligations to the Client

Members should

- serve their clients competently and professionally
- exercise unbiased judgment
- not accept projects beyond their professional capacity
- avoid conflicts of interest
- be truthful in professional communications
- keep clients informed about their projects
- maintain client confidentiality

Canon IV, Obligations to the Profession

Members should

- uphold the integrity and dignity of the profession
- practice with honesty and fairness
- not sign and seal documents for which they do not have responsible control
- not knowingly make false statements
- be honest about their qualifications and about the work they claim credit for

Canon V, Obligations to Colleagues

Members should

- respect the rights of their colleagues and acknowledge their professional contributions
- provide associates and employees with suitable working conditions and fair compensation
- nurture fellow professionals through their education, internships, and careers
- give credit to others for their professional work

Canon VI, Obligations to the Environment

Members should

- be environmentally responsible
- promote sustainable design in their professional work
- advocate sustainable buildings and site design
- use sustainable practices within their firms and encourage clients to do the same

HUMAN RESOURCES

Human resource management, or *personnel management* as it is sometimes called, involves the entire range of hiring, compensating, managing, and terminating employees, along with the legal responsibilities of having employees. Although large offices have more complicated human resources operations than small ones, architectural firm with employees must deal with the same issues. Human resource management is vital to the success of a firm because its most valuable assets are the people who provide the services that the business sells.

Hiring

There are many ways to find employees, such as placing advertisements in local newspapers and trade journals, hiring an executive search firm, contacting university placement offices, and posting jobs on the internet and social media sites. Most architectural firms also receive unsolicited resumes, phone calls, and email requesting interviews for employment. Depending on the state of the local economy, these unsolicited requests may be few or many. Word-of-mouth notice that a particular firm is hiring can also be an effective way to find interviewees within the local community.

When interviewing, an architect must be aware of the many legal requirements in regard to speaking with candidates and hiring employees. For example, equal employment opportunity laws make it illegal for an employer to ask a job candidate about age, date of birth, marital status, national origin, race, or maiden name. The Civil Rights Act of 1964, the Equal Employment Opportunity Act of 1972, and the Civil Rights Act of 1991 also make it illegal to discriminate on the basis of sex, race, color, religion, or national origin. The Americans with Disabilities Act (ADA) makes it illegal to discriminate on the basis of disabilities. In most cases, these laws apply only to firms with 15 or more employees. However, all

firms should follow these hiring guidelines to minimize the potential for problems. Refer to the section later in this chapter for other legal requirements.

The process of considering someone for employment should include a review of the candidate's past work experience and resume, a portfolio review, and one or more personal interviews. It can also be valuable to speak with the candidate's references.

One important legal aspect of human resources is the condition under which employees are hired. In some cases, a firm may have a formal employment contract that both the employee and employer sign. This contract spells out the employee's responsibilities, work duties, and compensation, as well as the firm's benefits, work conditions, termination procedures, and policies on accepting work from outside firms (moonlighting). The contract may include a *noncompete clause*, sometimes called a *restrictive covenant*, which may include limits or prohibitions on such matters as who the employee may work for during a specified amount of time after leaving the firm, setting up a competing business in the same geographical area, working for the firm's clients, and passing on confidential information to others.

The firm must be cautious that the freelancer is truly an independent contractor and cannot be classified by the Internal Revenue Service as an employee.

If an employment contract is not used, the employee works under the concept of *employment at will*, which means that there is no written contract and the employee can be terminated at any time without explanation. Likewise, the employee can quit at any time without giving a reason. However, the employee is still protected from being terminated because of age, sex, religion, and the other conditions mentioned previously.

If an office does not need a full-time, permanent employee the firm may elect to hire a freelance person, also technically known as an independent contractor, thereby avoiding the need to withhold taxes, pay benefits, or establish any other type of employee-employer relationship. However, the firm must be cautious that the person is truly an independent contractor and cannot be classified by the Internal Revenue Service or other governmental entities as an employee.

The IRS uses three broad areas to determine if a worker is an employee or an independent contractor (freelancer): behavioral control, financial control, and the relationship between the worker and employer. There are many details involved with the determination and all three factors must be considered, but in general the following are the most important. A person is an independent contractor if they are hired for a specific project, they control where and how they perform their work after given their initial assignment, they provide their own supplies and equipment, they receive no benefits from the firm other than payment for services, and they are free to work for other firms at the same time. In addition, the architectural firm should establish the amount of payment as a set fee or on an hourly basis before beginning any work and be sure that the independent contractor is not otherwise financially tied to the firm.

Management and Communication

All staff must have the physical support they need to do their jobs, including a comfortable and well-planned office environment, as well as the most effective electronic tools and programs available. Beyond these basics, good management and a continuous exchange of ideas are the basis for a productive professional team in an architectural firm of any size.

Good management is necessary in all aspects of office operation. This includes development of a sound and workable business plan that outlines a direction for all phases of business operation, policy statements concerning personnel, a stable financial plan, and rigorous project management procedures. All members of the team need clear direction, from understanding how a particular job helps the firm to how the most productive use can be made of a morning's work. Good planning makes this possible. With it, morale will remain high and less time will be wasted.

Management must share the goals and objectives of the organization with all team members. Employees need to see the big picture if they are to understand how their efforts contribute. They should know the

prospects for work in both the short and long term, what the firm's marketing strategies are and how staff may help achieve them, and the general business climate.

Employees' complaints and suggestions should be heard. Opening up the lines of communication is one of the best ways to get everyone working together as a professional team rather than struggling with an "us-against-them" relationship between employees and management.

Principals and firm management should continue their own education in the area of personnel management. Architects almost never receive this kind of training in architecture school. Universities and trade groups offer seminars in this area of practice.

Work Organization and Job Descriptions

Every office, regardless of size, should have a defined method of completing projects and an understanding of who is responsible for each task and who reports to whom. For small firms, this may simply be an agreed-upon practice; for large firms, it is often formalized in an organizational chart. In addition an organizational structure, there should be written *job descriptions* for all positions in the firm. Job descriptions define the duties and responsibilities of the person holding a specific job title; they may also include the qualifications and experience required for the position and an explanation of how that position fits into the organizational and reporting structure of the firm.

Individual job titles vary from one firm to another. The AIA publishes standard definitions of various positions, which commonly include principal, project manager, design director, department head, architect, and intern. The AIA defines three architect/designer titles based on the number of years of experience and responsibilities. Other common job titles include receptionist, resource coordinator, librarian, CAD operator, marketing director, and bookkeeper.

All this information can be included in a personnel policy manual. A personnel policy manual should be a positive statement of the firm's commitment to employees, clients, and the public at large. This policy should be viewed as a tool to help maintain clear communication in the firm, not as a book of rules that must be followed on threat of disciplinary action.

A personnel policy manual may also include statements regarding office organization, employment policies, office procedures, salary and benefits, and professional development.Each personnel manual will be different, reflecting the firm's philosophy and method of operating.

Compensation

Compensation is any kind of payment made to employees for their work. For architectural firms, this includes a base salary or wage along with standard benefits. In addition, some firms may offer bonuses, which may be based on the profitability of the firm or employee performance, or be a fixed amount delivered at holidays or other times and based on the employee's base salary. Standard benefits include compensation such as paid vacation and sick leave, health insurance, educational benefits, retirement plans, dental and vision insurance, travel expenses, and life insurance. The benefits offered can vary widely, depending on each firm's size, structure, and financial position. In addition, a firm may offer fringe benefits such as use of a car, gym membership, and use of the company vacation house. Additional benefits are listed below.

Whatever the firm's size or profitability, a significant portion of the budget will be devoted to compensating employees for their efforts. A firm's particular financial plan may allocate more or less to this line item than other firms, but salaries always represent a fixed expense.

A firm should tailor salaries and benefits to fit both its goals and organizational structure as well as the goals of employees. This is especially important if the firm expects to attract and keep the best people. To be competitive in this area, architectural firms need to be creative in their rewards, both monetary and otherwise. Here is a list of benefits that a firm might offer.

- *Flextime.* Being able to set their own hours is a big plus for many workers. Most offices need to be staffed during the standard five-day week, so half or full days off must usually be alternated among employees. A simple option is to allow employees to set their own starting and quitting times while

requiring a standard eight-hour day and defining a core time when everyone should be there, such as from 9:30 a.m. to 3:30 p.m. Another variation is to work nine- or ten-hour days to allow for a half or full day off every week or every other week.

- *Flexible benefit packages.* Required statutory benefits are provided, and employees can choose their additional benefits from a menu of options, based on a lump-sum allowance. For example, an unmarried employee may choose extra paid time off while an employee with a large family chooses an increased contribution to a medical insurance plan.
- *Office-sponsored events.* These can include parties, sightseeing "field trips," holiday activities, pizza lunches, wine tastings, skiing trips, educational programs, seminars, and so on. In-house educational programs can benefit both employees and the firm, helping employees stay current with new developments while keep them informed of procedures and topics of special relevance to the office.
- *Floating holidays.* Two or three days per year can be set aside for employee-selected "holidays." This can allow, for example, an employee to take off the Friday after Thanksgiving or extend the Christmas break without taking away from regular vacation time. A variation of this is to provide a certain number of days of "personal leave" for emergencies or "mental health" days.
- *Sabbaticals.* A sabbatical can be given every three to five years to allow a refresher break. This gives an added incentive for someone to stay with the company and furnishes time for travel, special study, or simply a break from the demands of the profession.
- *Flexible days off.* A set number of days can be established for employees to use in any way they want: for sick days, vacation, or to trade in for cash.
- *Compensation alternatives.* Employees can receive compensation in addition to salary. A straight raise or bonus is taxable income for the employee and offers no deduction for the employer. However, such things as educational reimbursements, paying for travel to conventions and seminars, merit awards, day care services (if they are offered to all employees), and group term life insurance may also be given.
- *Annual performance bonuses.* Money is not the only thing that motivates, but recognizing outstanding performance with money is one way of rewarding a good job and encouraging high-quality work.
- *Profit sharing.* Profit sharing is based on individual project performance. If the team produces a job on schedule and is profitable, then each member of the team receives a percentage of that profit in addition to a base salary.
- *Wellness.* Wellness programs can be offered in addition to traditional health insurance. Often, insurance providers assist firms with setting up these programs, which might include health club memberships, weight management programs, or smoking cessation programs. Many see this as a way to reduce the rising costs of health care by preventing problems before they occur. When employees follow a good health care program, they take fewer sick days and have more energy and a better attitude.
- *Company cars.* The economics of providing one or more company cars should be reviewed, especially if extensive traveling is required. Employees will appreciate saving wear and tear on their personal automobiles. In large urban areas, an added benefit is eliminating the hassle of driving to and from work merely to have a car available for trips out of the office.
- *Community involvement.* Employees may be given time off for professional and civic activities. Besides contributing to employees' professional development, the firm can benefit from added exposure among peers and potential clients.
- *Professional dues.* Firms should encourage membership in professional organizations by providing full or partial payment of dues. Likewise, less experienced employees can be encouraged to work for their professional licenses by reimbursing their exam fees.
- *Office amenities.* A stocked snack refrigerator and good coffee can have a significant impact on morale.

- *Continuing education.* Time off can be given for conventions, seminars, and other educational programs. Employees need to keep up with the latest developments in their fields. Not only do most states make it a requirement maintaining one's professional license, but continuing education increases an employee's value to a firm.
- *Family medical leave.*

Any of these ideas can be used if they are consistent with the firm's goals. Some can be implemented inexpensively, others have significant costs. But however much is spent, this is an investment in the most important commodity a firm can offer to clients—the skill and talent of its people.

Evaluations

A *performance evaluation* is a formal review performed by a manager to assess each employee's performance. Evaluations are typically conducted annually for existing employees and may be conducted more frequently for newly hired employees. Generally, evaluations tell employees how they are doing and in what areas they need to improve. More specifically, performance evaluations

- serve as the basis for pay increases, promotions, and terminations
- provide a way to direct improved employee work performance
- help the firm understand the strengths and weaknesses of personnel
- help direct hiring
- help protect the firm from claims by employees

To be useful, the evaluation process must be objective, treat all employees equally, and be based on each employee's job description. To the extent possible, evaluations should be based on objective, measurable criteria or on goals set jointly by the employer and employee.

Personnel evaluations can be one of the most uncomfortable parts of running an architectural practice, but they are also one of the most crucial. Employees want to know how they are doing. Evaluation is necessary for the growth of both the firm and the employee. Individual performance needs to be measured against goals periodically to determine if any corrective action is needed.

To make the best use of evaluations, there are a few fundamentals to keep in mind.

- Each employee should be evaluated in regard to how successfully he or she is performing to reach stated goals; the firm as a whole should be evaluated by the same measure.
- The goal of the evaluation is to improve both the firm and the employee, not simply to criticize past actions.
- Evaluations should be focused on results. It is less important to evaluate specific actions than it is to evaluate how well they achieved their intended effects.
- Personnel assessments should be made as a result of ongoing management and project decisions, rather than on the basis of one or two evaluations per year.

A productive evaluation can be made only if there is something against which performance can be measured. It is crucial that employees clearly understand their expected roles and that these roles be formalized in some way for use during the evaluation. It is likewise necessary that the firm's goals and objectives are clearly communicated to the staff so that the firm can be evaluated.

Objectives should be measurable. It is not enough just to tell an employee that his or her performance has been poor. If an architect has had the specific goal of reducing the average design time of a particular kind of project by two weeks, it is possible to evaluate whether the goal has been achieved, the reasons that it has or has not, and what steps can be taken next toward the employee's improvement and development.

The type of evaluation used, as well as the timing, forms used, procedures, and other aspects of evaluations, will vary depending on the firm's operating philosophy, size, services offered, and commitment to a program. Certain guidelines, however, should be included in almost any evaluation process.

- Employees must know what kind of performance is expected of them. Clear job descriptions or similar statements are important. They also help eliminate personal bias from the review process.
- Evaluations should be performed at least once a year. Holding them twice a year is often helpful so that issues can be addressed expediently. Some firms schedule fixed dates related to bonus time; others schedule evaluations based on the date each staff member started working for the firm. The latter approach has the advantage of spreading out the work load of giving evaluations.
- Standard forms should be used. These will help evaluators maintain consistency from one session to another, keeping attention focused on areas most important to the firm.
- If possible, more than one person should evaluate each employee. This helps prevent a one-sided judgment that might be based on personality differences or something else unrelated to job performance. It is helpful for the reviewers to discuss their evaluations before meeting with the employee and to develop a shared agenda for the discussion, so that the employee does not receive mixed messages.
- Strengths as well as weaknesses should be discussed. Give praise where warranted and be tactful and respectful when discussing shortcomings. Instead of simply pointing out weaknesses, offer suggestions on how to correct them.
- Unusual incidents should not be the primary basis for evaluation. Performance over the entire time period should be considered, not just the highs and lows.
- A thorough evaluation consists of many independent parts. Opinions about one part of an employee's performance should not affect the evaluation of others. A staff member may be doing very well in every area except one; this one area should not be given undue weight or dominate the review.
- The evaluation should conclude with definite steps for the employee to take to improve on weaknesses during the next review period. New objectives or expectations that will be reviewed at the next evaluation should be discussed with the employee.
- It is helpful to give each employee a written summary of his or her evaluation, both to review after the meeting is over and to prepare any questions or comments for later discussion. Written documentation also allows progress to be tracked over the long term, and can be referred to later if disputes arise.
- Salary adjustment reviews should be kept separate from performance reviews. Salary is based on other items in addition to performance, such as length of service, job category, cost-of-living increases, comparison with other professionals in similar positions, general performance and prospects of the firm, and other factors. Financial rewards may be a result of good performance but are not necessarily dependent on it. Similarly, a firm may wish to recognize exemplary performance with a bonus or increase in salary, yet may not be in a financial position to do so.

Architectural Experience Program

Young professionals gain most of their knowledge and experience not from schoolwork and reading but from actually participating in projects and working in a firm. Traditionally, people new to the architecture profession interned in a firm under the guidance of senior members and performed entry-level jobs while they "looked over the shoulders" of more experienced professionals. This approach had mixed results. Some interns were assigned a wide range of responsibilities, representing all that architects do, and benefited from the mentoring and guidance offered by their employers. Others ended up with less than desirable experiences, spending their time on repetitive tasks and never being exposed to the wide range of skills an architect needs to practice independently.

This haphazard approach to intern work has been replaced by NCARB's *Architectural Experience Program* (AXP). Participating in the AXP is one of the prerequisites for taking the ARE. As the term is used

today, an *intern* is someone in the process of satisfying a state registration board's experience requirement prior to or while taking the ARE. The AXP provides a formalized way to make the transition from school to the profession.

NCARB has established the *AXP Guidelines*, which state the type and amount of experience an intern must have before becoming eligible for the ARE. These include the number of hours an intern is required to devote to various professional tasks, as well as requirements for documenting and reporting this time to NCARB. Each intern is also required to have a supervisor who is a licensed architect in the intern's firm. The supervisor guides the intern on a daily basis, is responsible for providing opportunities for the intern to gain the experience required for an architecture career, gives feedback on the quality of the intern's work, and certifies the intern's experience reports. An intern may also select a mentor, who may or may not be a part of the intern's firm and who can provide professional guidance from a different perspective than the intern's employer. The intern/mentor relationship tends to be less formal than the intern/supervisor relationship.

Employee Involvement

Nearly all architectural firms can benefit from increased participation by staff in both the short- and long-term success of the office. Most employees want to do more than receive orders, carry them out, and go home. They want to be actively involved in all aspects of the work and want to make an important contribution not just to their own careers but to the overall effort of the firm. This kind of involvement is crucial to the spirit of the firm and, ultimately, its productivity.

The functional organization of the firm and the desires of the owners will help determine exactly how employee participation can be most useful for both the employee and the employer. It may range from the simplest "gripe session" to actual financial ownership. The following three methods are often used.

Most employees want to make an important contribution not just to their own careers but to the overall effort of the firm.

A *quality control circle* is a small group of employees who meet regularly among themselves and with management representatives to identify and resolve issues that affect their area of work. The philosophy is that employees know better than management what their immediate problems are and how to solve them. Quality control circles are not set up in response to an immediate situation, but are ongoing groups that seek to improve the quality of work.

When the group doesn't have specific problems to confront, it can take on special research activities in areas that may improve productivity. A group of administrative staff, for example, could explore ways to speed clerical activities or find out how automation could improve their work flow. Project managers could study methods for streamlining job administration.

Quality control group meetings may take an hour or two per week of company time, but the benefit-to-cost ratio is usually high. The overall results can be great because employee-generated actions produce more enthusiasm than employer-mandated ones, and they can pull company goals and personal goals closer together.

Another way employees can be involved with the firm is through special *study groups* that work on specific projects. Ideas are generated, evaluated, and submitted to the firm principals for study and implementation. Some firms have committees made up of the heads of each department, who meet regularly to coordinate actions and do long-range planning.

A third method of encouraging employee involvement is financial, by giving employees partial ownership in the firm. One of the ways to do this is with an *Employee Stock Ownership Plan* (ESOP). The company sets up a trust, through which it gives employees stock, or possibly cash with which to buy stock. The contributed stock is then allocated to each employee based on one of several allowable formulas. Over a period of time, usually from ten to fifteen years, the employee becomes fully vested. (Usual vesting is 10 percent per year.) Voting rights may or may not be given depending on how the plan is set up, and the amount of stock the trust holds for the employees may range from 1 percent to 100 percent.

In addition to the benefits of ownership and significant participation in the firm, ESOPs offer tax advantages and financing opportunities for the business. There are also several disadvantages to ESOPs. They are generally for larger firms and definitely only for the architectural firm that is on stable financial and management footing to begin with.

ESOPs are complicated and often expensive to set up, requiring legal advice and careful planning. If properly established, however, they can result in greater employee job satisfaction and increased firm profit and productivity.

Termination

Terminating an employee is one of the most difficult tasks a manager or firm principal performs. Reasons for termination generally fall into one of two broad categories: Employees may be terminated because of low business volume (layoffs) or because of some unacceptable behavior. Unacceptable behavior may include incompetence, low productivity, chronic lateness or absences, negligence, dishonesty, sexual harassment, fraud, misappropriation of company property, insubordination, illegal activity, or noncompliance with company policies. Employees cannot be terminated for age, activities outside of work hours (except for moonlighting, if it is against company policy), missing work for required military obligations or jury duty, or reporting company violations of health or safety laws.

Legal Requirements

In addition to the previously mentioned legal requirements for hiring, there are many other federal laws that regulate the employee-employer relationship. Which of these laws apply is often based on the number of employees in the firm.

All Employers Regardless of Number of Employees

The *National Labor Relations Act* (also called the *Wagner Act*) allows private sector employees to organize into trade unions and protects union employees from unfair labor practices by employers.

The *Equal Pay Act* requires equal pay for employees who have the same work duties, responsibilities, and experience.

Employee Eligibility Verification requires employers to verify the employee's right to work in the United States by maintaining an employee's I-9 form for at least three years as well as for one year after termination.

The *Wages and Fair Labor Standards Act* (FLSA) establishes minimum wage, overtime, pay, recordkeeping, and child labor standards in both the private sector and in government employment.

The *Occupational Safety and Health Act* of 1970 (OSHA) requires employers to provide a safe work environment. Although primarily aimed at construction sites, factories, and industrial plants, OSHA can inspect offices and levy fines for failure to provide things such as first aid kits, posted material safety data sheets, and fire extinguishers.

The *Health Insurance Portability and Accountability Act* of 1996 (HIPAA), among other provisions, protects the privacy of individually identifiable health information.

The *Employee Retirement Income Security Act* (ERISA) sets minimum standards for pension plans in the private sector for those employers who have a pension plan program.

Employers with More than 15 Employees

The *Consolidated Omnibus Budget Reconciliation Act* of 1986 (COBRA) requires employers with 20 or more employees to continue group medical coverage if employment is terminated, working hours are reduced, employment is changed, or in the event of death, divorce, and other significant life events.

The *Civil Rights Act* of 1991 prohibits discrimination on the basis of sex, race, color, religion, or national origin.

The *Age Discrimination in Employment Act* of 1967 (ADEA) prohibits age discrimination in employment for persons age 40 or over, including hiring, firing, segregation in the workplace, and reducing wages or salary.

Employers with 50 or More Employees

The *Family and Medical Leave Act* (FMLA) requires that companies give an employee up to 12 weeks of unpaid leave for child, spousal, or parental care, without initiating retribution or jeopardizing the employee's job. This also applies to an employee with a serious health condition.

Firms that do any work for the federal or state government must comply with additional regulations.

BUSINESS DEVELOPMENT

In the competitive marketplace of professional services, it is no longer possible for an architect to sit in the office waiting for a phone call about a new job or for a referral from a previous client. Marketing and public relations have become integral parts of successful firms, and ARE candidates should be familiar with the basic techniques.

Marketing Plan

The first step in successful business development is to create a sound marketing plan. This includes first identifying the type of work the firm wants to do, in what geographical areas the firm wants to work, what the competition is, how much work the firm needs, and a budget for active marketing and public relations. Only then can the firm begin to formulate an approach to meeting its goals.

A number of marketing techniques are used by architectural firms. Some are traditional, while others have developed with the growth of electronic communications. The strategies that should be used depend on the type of market the firm is hoping to capture, the geographical area the firm markets in, the type of work the firm wants to perform, and the budget and personnel available for marketing, among other factors. The following marketing techniques are some of the more common methods.

- *Networking:* Person-to-person contact is one of the primary and often one of the most effective ways to market services. Networking, whether in person or through electronic means, is a way to understand the market, identify the needs of potential clients, develop trust, and maintain contact when a business opportunity arises. Through networking, an architect can identify a *lead*, or a source of information about a potential client who may need the services of an architect now or in the future. A lead can also be a planned building project that requires design services. Networking can be done by staying active in professional architectural organizations, becoming a member of a potential client's trade organization or going to their conventions, getting involved in civic groups, and talking with consultants who work with the firm's market.
- *Corporate identity:* Although a corporate identity is not a specific marketing technique in itself, it is a fundamental requirement for a professional firm and is important to other marketing efforts. A corporate identity is a distinct and consistently applied graphic image that brings the architect's firm to the mind when people see it. may include a specially designed logo or mark that is unique to the firm or a unique treatment of the firm's name. Every firm should have a well-designed corporate identity program that encompasses all the graphic and promotional items the firm produces, such as letterhead, envelopes, brochures, business cards, proposals, newsletters, forms, websites, and social media accounts and pages. A properly designed corporate identity program can visually communicate the firm's philosophy, present a strong, visible identity to support the firm's marketing efforts, organize the firm's internal office procedures and project documentation, and give the firm a visual coherence and consistency.
- *Brochures:* A brochure is a basic marketing tool for all architectural firms. gives a brief description of the firm and its capabilities and service specialties, and includes representative photographs of past projects. Brochures are produced in a wide range of sizes and styles, from simple, pocket-size folders to hardbound books. In most cases, a brochure should be well designed, fairly brief, and laid out to give potential clients an overall impression of the firm and its abilities. should serve as a reminder of

the firm and encourage a potential client to seek more information from the architect. The traditional printed brochure is now often supplemented with or even replaced by a well-designed website that can be updated more frequently and easily than a full-color brochure.

- *Websites:* Most firms have websites that provide an overview of the firm, examples of the types of work the firm does, photographic images, and a listing of staff experience and capabilities. Websites may also contain links to other sites, basic helpful information for potential clients, a method to submit resumes, and online newsletters.
- *Social media:* Social media and networking services such as LinkedIn, Facebook, Instagram, and Twitter allow virtual networking and may be useful in communicating the capabilities of an architectural firm and its professionals.
- *Newsletters:* A newsletter is an effective way to keep an architectural firm's name and work in front of a large audience on a regular basis. Promotional newsletters (as opposed to the in-house types that are intended for staff) are well-designed pieces that are sent to past, present, and potential clients. Newsletters are a relatively inexpensive marketing tool, but to be effective they must be produced on a regular basis, which takes a commitment of time and money. Newsletters can also be produced in electronic format and made available through a firm's website.
- *PowerPoint presentations:* Audiovisual presentations are often used to present more detailed information about a firm and its work or to focus on how a designer might approach a particular client's design problem. These are fairly easy to customize for each type of client and reproduce as needed.
- *Advertising:* Advertising is any paid communication in some type of media, such as on websites or television or in newspapers and magazines. Advertising was once considered professionally unethical, but it is now accepted in architecture and can be used to reach a wide market. Unlike press releases, articles, and other publicity tools, advertising has the advantage of being guaranteed to reach a given audience because firms do not have to depend on the decision of an editor to place their promotions.
- *Past clients:* One of the best sources for new work is through current and past clients. If an architectural firm has done a good job providing service, the client is more likely to hire the firm again. A satisfied client is also a good source of word-of-mouth advertising.

Example 1.3

An architectural firm's practice consists of a wide range of building types from higher education to professional sports facilities to health care clinics. Over the years, the firm has designed football stadiums, basketball and ice hockey arenas, and tennis stadiums. Professional football is expanding the number of teams in three new U.S. markets and one international location to be determined. What are the three most effective ways for this architecture firm to begin the marketing effort to these potential clients? (Choose the three that apply.)

(A) improve the firm's website to showcase sports facilities designed by the firm

(B) post on social media

(C) an electronic brochure sent to new team owners

(D) advertise in a sports magazine

(E) team up with a local architecture firm that has been a past project partner

(F) visit team locations

Solution

Social media and magazine advertising do not target specific clients. Visiting the teams would not ensure contact with the owners, and the international sites are not yet selected. The firm has a long-standing reputation in designing sports facilities. This strength should be communicated through improvements in the website and by sending a firm brochure to each new franchise owner. Teaming up with a local

partner would help the firm understand the local politics, timing, and players to be targeted in order to make further marketing efforts in the project.

The answers are (A), (C), and (E).

Public Relations

Public relations (PR) differs from marketing in that it is not tied to a particular potential job or single potential client. Rather, PR establishes and communicates the firm's presence to various groups of people on many different levels. The goal of PR is to create a positive image of the firm in the minds of targeted audiences. Of course, the most important group that an architect tries to communicate with are the people who may need the firm's services or who are able to recommend the firm to others.

A PR program should be a part of any firm's marketing plan. To be effective, a PR effort must identify who the target audience is and what its needs are, because the firm is ultimately trying to communicate how its services mesh with the interests of a particular community of people. To get the firm's message across most effectively, all PR efforts must communicate on the target audience's terms and in the language it understands best.

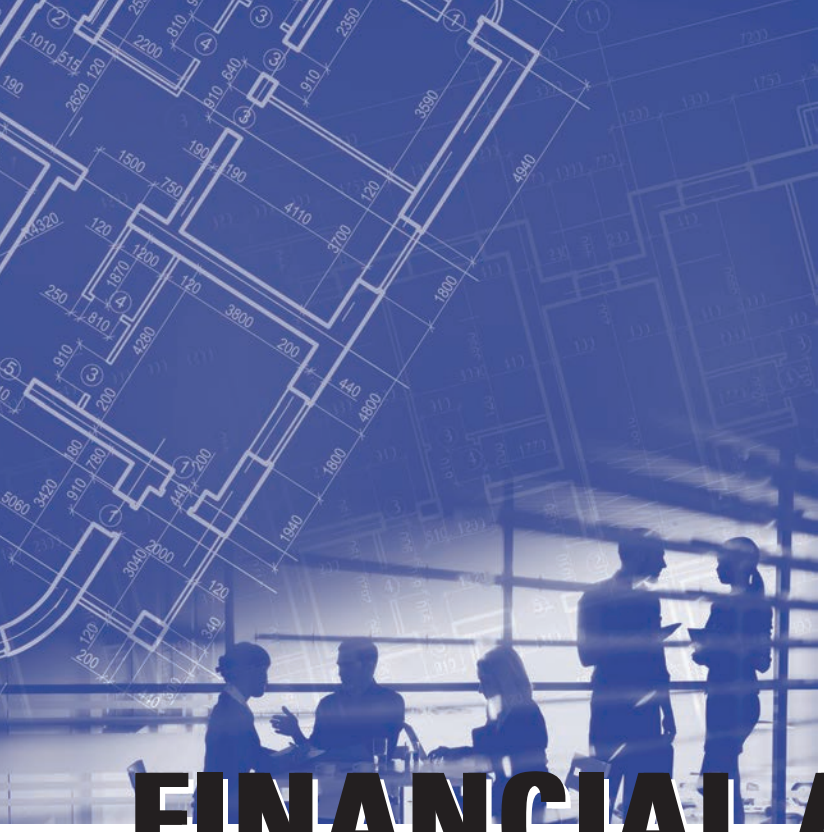
There are several ways to promote an architectural firm through good PR. One of the most common is through a press release, a short statement concerning some newsworthy event related to the firm that is sent to appropriate publications with the hope that the editors will use it. These may be local newspapers, trade newspapers, regional magazines, or national trade magazines.

Press releases are one of the most economical ways to publicize a firm. Unfortunately, many releases never go to press because they are poorly written or incorrectly presented, do not conform to the requirements of the publication, or do not contain anything really newsworthy. Before sending a press release to a publication, it is important to follow the publication's format and editorial standards and determine to whom the release should be sent.

Another excellent form of publicity is an article about one of the architectural firm's projects in a magazine. Highly publicized projects may offer opportunities for media coverage. Although it is flattering to be featured in a trade magazine, is better to be published in a magazine received by potential clients. For instance, a bank project that is featured in banking magazines will be more likely to reach and impress other bankers looking for architectural services than if the job is shown in an architectural trade journal. Wherever the article appears, however, reprints can be sent to existing and potential clients.

Technical articles written by an architect can also be used to promote a firm and its services. Architects can write and publish articles in local magazines or newspapers, on LinkedIn or their firm's website, or in trade association newsletters. Before releasing project-related information or photographs, however, it is customary to request permission from the client, and to let the client review and approve the material to ensure that the article does not violate any nondisclosure agreements.

Other methods of public relations include organizing seminars or workshops on a topic of interest to the firm's target audiences, volunteering for local service groups or projects, getting involved with local politics, winning design awards, and setting up open houses for the public.



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FINANCIAL AND RISK MANAGEMENT

FINANCIAL MANAGEMENT

The financial management of an architectural firm includes two broad categories of accounting. The first is basic accounting, which all businesses must do. Keeping track of money flowing into and out of the business is needed for day-to-day operations, banking, taxes, and auditing. Often called *general ledger accounting*, this provides firm-wide statements about the overall financial status of the business so that firm owners can make decisions crucial to the firm's profitability and survival.

The second type of accounting is *project cost accounting*, which tracks revenue, expenses, and profit by individual projects. Project cost accounting is vital for professional service businesses, such as architectural firms, that depend on knowing how the amount of time spent on specific projects affects the financial health of the firm. Firm principals need to be able to differentiate between projects that are making money and those that are losing money, and that goes beyond the scope of general ledger accounting. Information from project cost accounting reports can help managers decide how to allocate resources, manage projects, and develop accurate proposals for new work.

FINANCIAL TERMINOLOGY

Financial management is a complex subject. Some basic terms include

- *accounts payable:* Amounts owed to the suppliers of goods or services (such as consultants, reproduction companies, or the utility company) that have not yet been paid.
- *accounts receivable:* Money that others owe to the business through invoices for services.
- *assets:* Any type of tangible or intangible resource that can be measured in monetary terms, including current assets, fixed assets, and other assets.
- *chart of accounts:* A list of the various accounts a business uses to keep track of money, along with corresponding account numbers used for data processing.
- *current assets:* Resources of a business that are converted into cash within one year.
- *direct labor:* All labor of technical staff, principals, and support staff that is directly chargeable to projects.
- *direct personnel expense:* The expense of employee salaries plus the cost of mandatory and discretionary expenses and benefits such as payroll taxes and health insurance.
- *discretionary distribution:* Voluntary distribution of profits to owners and nonowners, such as performance bonuses, profit sharing, and incentive compensation.[1]
- *fixed assets:* Resources that the firm uses and retains for a long period of time, such as equipment and property.
- *gross revenue:* All the revenue generated by a business during a stated period of time.
- *indirect labor:* All labor not charged to a specific project or revenue-producing account, such as administration, general office time, and marketing.
- *liabilities:* Claims by people outside the business and claims by the owners of the business against the total assets of the business.
- *net operating revenue* (or *net revenue*): The money that remains from billing after deducting fees and expenses, reimbursable expenses, and non-reimbursable project-related expenses.
- *other assets:* Miscellaneous resources such as securities and copyrights.
- *overhead:* Expenses incurred to keep a business operating whether or not any revenue is being generated, such as rent, software leases, and fees for power and telephone service.

[1] Some architectural firms view this as an expense that is necessary to attract qualified personnel, while other firms view it as a profit-related item.

Accounting Methods

There are two basic accounting methods: cash accounting and accrual accounting. With *cash accounting*, revenue and expenses are recognized at the time the business receives the cash or pays a bill. With *accrual accounting*, revenue and expenses are recognized at the time they are earned or incurred, whether or not cash changes hands. For example, if a firm sends an invoice to a client for $50,000, that money is listed as revenue even though the client has not yet paid the invoice.

Both methods have their advantages and disadvantages. Cash accounting is better at tracking actual cash flow, while accrual accounting gives a better picture of a business's long-term financial status and provides information that is important for active financial management. Cash accounting is fairly simple and is often used by single-person businesses and small businesses; businesses above a certain size or that maintain inventory are required by the IRS to use accrual accounting.

A slight variation of the accrual method typically used by architectural firms is the *modified accrual basis* method. This method records fee revenue, expenses billed to the client, and invoices to the firm by outside consultants. However, it does *not* include the amounts of fees that have been earned but not yet billed to the client.

In both cash and accrual accounting, revenue and expenses are grouped into individual accounts for the purposes of auditing, review, tax preparation, management, and analysis. For example, there are separate expense accounts for wages, rent, telephone, supplies, and so on. The accrual accounting method uses *double-entry bookkeeping*, in which all transactions are listed chronologically in a *journal*. They are then posted to a *ledger* where transactions are grouped into individual accounts. (Although legacy terms such as journal and ledger are still used in accounting, nearly all but the smallest businesses do their accounting with computer programs, some of which are designed specifically for architectural firms.)

Accounting Statements

From the basic information entered in journals and ledgers, various types of *accounting reports* can be generated. Some of the more common include the following.

A *balance sheet* summarizes all assets and liabilities and shows the financial position of a business. All the assets listed must exactly equal all the liabilities listed. One important part of a balance sheet is the net worth of the business or the owner's equity. The *net worth* of a firm is the total assets less the total liabilities. *Owner's equity* is the money invested in a business by the owners or stockholders. Another way to view this, and the way it normally shows on a balance sheet, is that the total assets must equal the total liabilities plus the net worth or owner's equity.

A *profit and loss statement* (or *income statement*) lists all the income and expenses of a business for a certain period of time. The difference between all the income and all the expenses gives either the profit or the loss for that period.

A *cash flow statement* shows actual inflows and outflows of cash or cash equivalents. Cash is defined as money, checks, or anything else accepted by banks. *Cash equivalents* are short-term investments that can be quickly converted into cash, such as short-term certificates of deposit. Cash flow statements are important because a business's month-to-month financial health depends on being able to meet payroll and pay bills.

In addition to reports that show the overall financial health of a business, the basic information obtained from journals, ledgers, and project data can be used to develop reports for individual projects so that project managers and firm management can track the progress of each job.

Profit Planning and Financial Management

Beyond basic bookkeeping and accounting activities is *financial management*. Financial management includes active planning, monitoring, and controlling of financial information as well as acting on that information.

The most fundamental equation for financial planning in any profit-oriented business is

$$\text{profit} + \text{expenses} = \text{revenue}$$

This equation is often shown in the form

$$\text{revenue} - \text{expenses} = \text{profit}$$

Even though the two equations are mathematically equal, the second equation suggests that profit is whatever may be left over after expenses are subtracted from revenue. The first equation suggests that the business will make its targeted profit, and that the business must then control expenses and generate appropriate revenue to make the equation work.

Controlling expenses generally means reducing overhead cost wherever possible. One of the highest percentages of overhead is for *indirect labor*, personnel who do not directly work on projects. Increasing revenue generally means either increasing how much work the firm does or increasing fees.

An invoice older than 90 days means in effect that the firm is lending money to the client without charging interest.

Financial management software can generate a variety of reports based on information from accounting journals, time sheets, and project financial data. These reports can help firm principals and project managers control the work the firm performs.

In addition to basic accounting reports, one of the most important reports for architectural firms is the *project progress report*, which is a more detailed, computer-generated version of the manually produced charts shown in Fig. 4.4 and Fig. 6.1. The project progress report shows the hours and labor costs for each phase of a project, both for the current reporting period and the total to date, and compares these numbers with the estimated hours and costs. The report also shows direct costs, such as for consultants, overhead allocations, and reimbursable expenses. These reports give the project manager and firm management an accurate look at the status of a project and can be used to take corrective action as necessary.

An *office earnings report* summarizes each of the firm's projects in terms of the amount of revenue it has generated, the expenses it has incurred, unbilled services, percentage of completion, and profit or loss to date. This report can help firm management find any projects that may be hurting overall profitability and need remedial action.

An *aged accounts receivable report* shows the status of all invoices for all projects, whether or not they have been paid, and the "age" of each invoice, which is the time from the invoice date to the payment date, or to the current date if still unpaid. Generally, any unpaid invoice more than 60 days old needs attention from the firm principal or whoever is responsible for collections. In architectural firms, the average collection period for invoices runs between 60 and 75 days. An invoice older than 90 days means in effect that the firm is lending money to the client without charging interest.

A *time analysis report* lists each employee along with the number of hours he or she has spent on direct labor, indirect labor (including marketing and professional development), vacation time, sick leave, and holidays. Every firm has a targeted percentage of time that technical employees should spend on direct labor, and this report is an excellent way of monitoring such time. The most important information this report generates is the chargeable ratio. The *chargeable ratio* (or *utilization rate*) is the percentage of time (sometimes calculated as percentage of dollars) spent on direct labor, divided by the total time (or dollars) spent on direct and indirect labor, vacation, holiday, and sick leave. A chargeable ratio of about 65% for the whole firm is generally thought to be the break-even point, or the minimum that should be allowed. For the professional and technical staff, this ratio should be higher, in the range of 75% to 85%, as most of their time is spent working on projects. The chargeable ratio of principals may be on the low end because much of their time is devoted to non-chargeable work like promotion, marketing, and management.

Financial Ratios

There are many other ratios and values that firm management, accountants, and banks use to measure a business's financial health. These ratios and values can be compared against industry benchmarks to determine whether corrective action is needed.

- *current ratio:* Total current assets divided by total current liabilities. This is a measure of a firm's ability meet current obligations. Generally, the higher the ratio, the better, with 1.5 or more indicating a healthy business and 1.0 being about the minimum acceptable level.
- *net profit before tax:* The percentage of profit based on net revenue—the total annual revenue minus consultants' fees and reimbursable expenses.
- *overhead rate:* Total office overhead (or total indirect expenses) divided by total direct labor. This ratio should be in the range of 1.30 to 1.50. When used to calculate fees, this ratio is multiplied by the estimated cost of direct labor, and the resulting product is added to the direct labor amount.
- *quick ratio:* A refinement of the current ratio including only cash and cash equivalents, plus accounts receivable, plus revenue earned but not billed, divided by total current liabilities. The quick ratio is a more conservative measure than the current ratio because it includes only the most liquid assets. The quick ratio and the current ratio are commonly included on balance sheets.
- *revenue per technical staff:* The amount of net revenue produced per technical staff member, or those staff members most directly involved with charging direct time and producing jobs. This number can be used to estimate the required net operating revenue for future budgets. If a firm's operating revenue is known, revenue per technical staff can be used to estimate staffing levels.
- *revenue per total staff:* The amount of net revenue produced per staff member per year, including principals and part-time employees. This ratio is the annual net operating revenue divided by the total number of employees. It can be used in the same way as revenue per technical staff.

Example 2.1

For accounting purposes, a large plotter is considered

(A) a current asset

(B) a fixed asset

(C) a liability

(D) an overhead expense

Solution

An asset is anything a business owns that can be given a value. A current asset is either cash or an asset that is expected to be converted into cash within one year, such as accounts receivable. An item that is used in the long term, such as a plotter, is considered a fixed asset. A liability is a claim made against the total assets of a business, either by a person outside the business or by an owner of the business. An overhead expense, such as salaries, rent, power, or telephone, is an expense incurred in order to keep a business operating whether or not any revenue is being generated.

The answer is (B).

Setting Fees

One of the most important aspects of making an architectural business profitable is setting suitable fees. The most common method is to charge an hourly rate per staff member working on a project. This hourly rate is known as the *billing rate*, and it may vary with the position and experience of the staff member as well as the type of service provided. (See Chap. 5 for a discussion of the various methods of charging professional fees.) Even if the client asks for a stipulated lump sum fee proposal, that number

is most often determined by estimating the number of hours it will take for each staff member to complete his or her work on the project and multiplying each number by that staff member's billing rate.

Billing rates are determined based on the employee's salary, plus the costs for that employee's fringe benefits, plus the cost of office overhead, plus an allowance for profit. Often, calculations are simplified with a *net multiplier* found by dividing the net revenue of the firm (excluding consultants' fees and reimbursables) by the cost of direct labor. The net multiplier accounts for fringe benefits, indirect labor, overhead, and profit. For most architectural firms, this value is from 2.7 to 3.0. For example, at a firm using a net multiplier of 3.0, if an employee is paid $40 per hour, the billing rate to the client for that employee would be $120 per hour.

The *break-even rate* is similar to the net multiplier and is the total cost of operations divided by total money spent on direct labor. This rate accounts for the salary of the employee plus the amount of overhead attributed to the employee. As described above, the recommended overhead rate should be from 1.30 to 1.50, so the break-even rate should be from 2.30 to 2.50. The employee's base salary is multiplied by the break-even rate to determine the minimum hourly fee that must be charged to the client in order for the firm to break even on the employee's salary. This number can then be increased by whatever percentage of profit is wanted to arrive at an hourly fee.

Related to the net multiplier is a multiplier based on *direct personnel expense* (DPE). With DPE, the costs of providing taxes, benefits, and the like are included with the employee's base salary. The multiplier is then calculated to account for indirect labor and profit. Because benefits are already included in the DPE, this multiplier is slightly lower than the net multiplier. This way of calculating fees is not used as frequently as the net multiplier.

Billing rates are based on the employee's salary, plus that employee's benefits, plus office overhead, plus an allowance for profit.

Once hourly rates are established for all employees in the firm, the next step in setting fees is estimating the amount of time it will take to complete a project and deciding which employees (with their respective billing rates) will be doing what work. Hours are then multiplied by billing rates to get the total estimated fee. In addition to hourly fees, the person estimating the total project budget must add costs for estimated non-reimbursable direct expenses, consultants' fees (if not billed separately), and a contingency (if any).

Many firms also use information about past projects to develop benchmark fees based on area, construction costs, project type, or other measures. Comparing the proposed fees for a current project against these benchmarks serves as an additional check.

The approaches to setting fees described in this section are the most common, but there are many others. For example, some firms may base fees on the square footage of the project area or on a percentage of the construction cost.

Managing Accounts Receivable

Getting paid promptly for services rendered is basic to an architect's financial success. Timely payment is critical for cash flow to pay employees and current bills. There are four basic steps to collecting accounts receivable: contract terms, timely billing, complete invoices, and regular procedures for tracking accounts.

Put Terms of Fee Collection in the Contract

Having a clear understanding with the client, before work starts, about the fee and how it will be paid is fundamental to avoiding misunderstandings later. If problems do develop, there is little procedural or legal recourse unless everything is itemized in the agreement with the client. The contract should include the basis for the fee, when invoices will be sent and in what form, when payment is due, and any penalties for late payment, such as interest charges after 45 days or some other reasonable period of time. The contract should also contain provisions for nonpayment, including stopping work on the client's

project and making no presentations until the payment has been received. An attorney should be consulted for specifics in this area and for the language to use in the contract.

Submit Invoices Promptly

Invoices should be sent as soon after the payroll period as possible. Every day of delay is one more day until payment is made. If possible, a billing cycle of a month at most should be maintained; some firms bill twice a month to keep cash coming in more regularly. Avoid agreeing to a lump sum payment at the end of phase completion—on a large project this can sometimes delay cash inflow for months. Faster billing also helps the client associate the invoice with the work performed during the billing cycle and may forestall questions.

Make Each Invoice Complete

Every invoice should be easy to read and understand. The name and address of the client, the project name and number, and a reference to a contract must be included. In addition, a detailed breakdown of the work performed and the billing associated with each item should be included. Invoices should also include reimbursable expenses with backup documentation and any past due amount.

The exact format of the invoice will depend on the firm's method of operating and tracking professional time, as well as on the conditions of the contract. Invoices may include a breakdown of the time each team member spent on the job, their billing rates, and the total cost. Alternatively, each phase of work or work task that was outlined in the contract may be itemized. Invoices should have a consistent format so that the client always knows what to expect and where to look for information. Whatever form is chosen, an invoice that includes only the amount due, with no backup information, should not be submitted. That is an open invitation for the client to question the amount and delay payment.

Regular Procedures for Tracking Accounts

The firm should have a policy on how accounts receivable are handled. If payment for an invoice hasn't been received after about two weeks, it is a good idea to follow up with the person the invoice was sent to. This gives the firm an opportunity to verify that the invoice was received and ask whether the client has any questions. Simple problems, such as a lost invoice or an easily answered question, can be taken care of quickly, and this also lets the client know that the account is being closely followed.

Additional actions that can be taken include sending a past-due notice after 30 days, making personal calls and visits after an additional amount of time, and taking legal action if the account becomes too far overdue. Any procedure should be consistent with contract provisions, and these procedures should be known to the client before work begins. If the policy is not fully stated in the contract, the firm may want to consider providing a standard policy statement to every client at the start of a project.

A written record should be kept of all the office's actions regarding collections. If legal problems develop later, this record will be useful. Some additional suggestions for collecting fees are as follows.

- At the beginning of the project, verify the client's billing procedures and be careful to follow them. The client's project representative may not be the right person to send invoices to. The client may require that invoices be sent to a particular office, be in a specific format, and include specific information such as a purchase order number. If the procedures are not followed, payment may be delayed.
- Use the personal approach in collecting fees. A cover letter can be sent with an invoice can be sent with invoices explaining the progress on the job and what efforts the billing represents. The project architect or project manager should sign the invoices to let the client know they have been reviewed. When problems develop, a phone call or personal visit should be made, rather than sending a threatening letter. A face-to-face approach is always more successful than an impersonal one.
- Use project accounting software that develops aged accounts receivable (as discussed in the previous section). The report should show 30-, 60-, 90- and 120-day outstanding accounts. The oldest accounts should be dealt with first since these are the most likely not to be collected unless immediate action is taken.

- Be familiar with the client's payment procedures. Often, an invoice must travel a tortuous route through a large organization with multiple approvals before a check is issued. Understand how long the process should take and who to contact with questions if there is a delay.
- Plan for cash flow. Use project accounting software that develops cash flow reports. When cash flow positions can be viewed a month or two in advance, it becomes very clear how important collecting fees is.
- All invoices should include the name and telephone number of the person to contact if the client has any questions. It is better to encourage the resolution of problems than to create distance between the firm's and client's accounting departments.
- Consider offering a discount of 1% to 2% for payment made within two weeks or some other specified period of time. Encouraging prompt payment in this way may cost less than borrowing in the short term to cover a weak cash position, losing interest on short-term investments, or paying for legal assistance with late collections.
- Require a retainer before work starts. This may be anywhere from 10% to 20% of the fee, or it may be based on an average anticipated monthly billing amount. Most projects require some up-front money, and there is no reason why the architect should not receive some of it. Explain to the client the amount of time and money the office must expend before a normal billing payment is made. If a client has objections to a reasonable retainer, it may be worth investigating further to verify financial solvency.
- If the firm's involvement with the project is expected to last more than a year, include provisions in the contract to allow for the renegotiation of terms, billing rates, and other financial considerations that may change over a long period of time.
- Beware of delaying tricks. A delinquent client may send a letter of dissatisfaction to justify not paying. As long as the firm has fulfilled its contractual obligations, it should not be dissuaded from aggressively seeking payment.
- Be prepared to file a lien against the client's project if necessary. Because lien laws vary from state to state, an attorney should be consulted.

Controlling Overhead

Overhead expenses are necessary for the functioning of an office, but they don't produce revenue as professional fees do. Keeping overhead to a minimum can increase the firm's profits or allow the firm to offer lower fees than the competition. Some ways to minimize overhead include the following.

- The single largest overhead expense is non-billable labor. Every firm's highest priority in reducing overhead should be to minimize this component. The first step is to carefully control time reporting. Often, much of the time legitimately spent on a project ends up listed as "office" time or in some other non-chargeable category. This often happens when staff fills in time cards or time-tracking software at the last minute, trying to remember an entire week or two weeks of work late on a Friday afternoon. Principals are often the worst offenders, listing their efforts as general coordination, marketing, or administration when they were actually working on specific projects. Some firms require time information to be turned in daily; others require that task sheets or project management software logs be completed during the day as jobs are worked. This is especially useful for project managers and others who may be involved in several projects every day. The project coordinator or project manager should check all time spent and verify that all legitimate time is being charged.
- All significant non-labor direct expenses should be reported. Most firms know to include costs for project-related travel, construction document printing, and the like in invoices, but many chargeable expenses are often thought of as general overhead. Firms should keep accurate records of these project-related expenses and charge them to the client. Some non-labor direct expenses include
    - progress prints made during the course of the job
    - all copy machine reproduction

- computer expenses charged by an outside company
- model supplies for a specific project
- postage and delivery
- all local travel expenses
- presentation supplies used for a project

Some of these may seem like small expenditures, but they can add up. Some other strategies for controlling overhead expenses include the following.

- Shop around for the best prices on telephone service, internet access, and other communications services.
- Reevaluate where the firm's offices are located. The firm may be spending extra for a office space in a location that does not really benefit the business. Review how the space is used, too, to make sure the firm is not paying for more space than it needs.
- Team up with other firms to share the costs of continuing education. Instead of three firms each sending a staff member to a trade show or seminar, one firm can send one employee who then shares what he or she learned with the staffs of all three firms. The firm that sends an employee can alternate so that each firm has a chance to be represented at the show or seminar.
- Study the firm's insurance policies to see if there is too much coverage or overlapping coverage. Consider raising the deductible on health care coverage in order to lower premiums. Shop around for insurance to get the lowest possible price. Consider getting low base coverage, and then adding supplemental project insurance as needed. The project insurance may then be billed as a reimbursable expense to the client.

Example 2.2

An architect can determine which clients have not paid by looking at the

(A) aged accounts receivable

(B) balance sheet

(C) cash flow statement

(D) income statement

Solution

Aged accounts receivable are accounts with invoices that are still unpaid after a certain length of time, such as 90 days. A list of aged accounts receivable should be kept and regularly updated, and used to follow up with clients who have outstanding invoices.

The answer is (A).

LEGAL ISSUES

Architects need to be familiar with many legal issues, pertaining not only to contracts but also to the organizational structure of the firm, human relations, financial management, insurance, professional conduct, copyright, expert witness involvement, and obligations to the public. It is helpful to understand the fundamental principles on which contract language is based. Some of the more important ones are briefly described.

Agency

The legal concept of *agency* is that one person, the *agent*, acts on behalf of another, the *principal*, in dealings with another, the *third party*. In architecture and construction, the agent is the architect, the principal is the owner or client, and the third party is the contractor. Legally speaking, when the agent consents to act on behalf of and represent the interests of the principal, the agent is empowered to create a legal relationship between the principal and third parties.

When architects work with and convey information to contractors, the contractors may assume the architects have more authority than they actually do. The contractors may blame the architects for instructions the owners may not be aware of, and the owners may blame the architects for inadequately or incorrectly carrying out their wishes. Architects must be careful to act on the owner's behalf and to keep the owner informed of progress or issues. The standard agreement forms and general conditions of the contract attempt to minimize potential problems by clearly defining the duties and responsibilities of the various parties. This is one reason, for example, why change orders must be signed by owners as well as architects.

Contractors are considered to be *vendors*. A vendor supplies a specific product for a fixed price. Unlike architects/agents, vendors act primarily in their own interest.

Duties

The law defines what one person "owes" another in particular relationships, including contracts, by applying the term *duties* to a set of terms or requirements. Duties are important in the construction industry because of the many formal (contractual) and informal relationships involved. For architects, there are three ways that duty is established.

The first is by the terms of a contract, whether written or oral. The standard forms of agreement established by the American Institute of Architects (AIA) outline the services and responsibilities of the architect and state that these may not be extended without the written consent of the owner.

The second way that duty is established is by legislative enactment, such as by means of building codes and architectural licensing laws.

The third way duty is established is by the architect's conduct. Courts often look to the *implied duties* that depend on how the parties have conducted themselves in the course of performing their work. Situations may arise that are not covered by the contracts or general conditions. In these cases, architects are not free to act unilaterally without consulting clients. Architects may be held liable for the consequences of either action or inaction.

Some examples of implied duties are as follows.

- *cooperating with contractors*. While some actions related to this duty are clearly stated in contracts, others are not.
- *not interfering with the contractor's work*. Such interference includes actions that might cause delay or additional costs, or that cause the contractor to modify standard methods and procedures of construction.
- *giving relevant information to contractors*. This includes anything that may affect the progress of the job, including any problems or errors the architect has observed.
- *assisting the owner in coordinating work*. This includes helping owners coordinate the schedules and requirements of other contractors and vendors who are not under the control of the general contractor.

Liability and Negligence

Liability is the legal responsibility for injury to another person or damage to property. Architects are constantly exposed to liability through their actions and inactions or simply by being named as a responsible third party in other claims. An important way that architects can be liable is through *negligence*, which is the failure to use due care to avoid harming another person or damaging property.

For an architect to be found negligent, three conditions must be met. First, there must be a legal duty established between the parties. Second, it must be shown that the architect breached that duty. Third, it must be shown that the breach of duty was the cause of the damage or injury suffered by the other party.

Architects represent themselves as having special knowledge and skill, and the law holds such professionals liable for their professional actions. However, the prevailing legal concept is that professionals are not expected to be perfect. An architect is expected only to use the same degree of skill, knowledge, and judgment that is normally used by other professionals in similar circumstances and communities. This is the *standard of care* discussed in Chap. 1. Architects are expected to perform to the standards of the professional community, which means that an architect should display the generally accepted knowledge and use the generally accepted practices and procedures of that community.

Defense of Claims

While the design professional should do everything possible to avoid liability and negligence, there are times when a claim will be made against the architect for which there may be a viable defense. Three of these are commonly used.

Betterment

The concept of *betterment* often can apply to claims of omission by the architect. For example, if a client originally approved the use of wood paneling in a room but the architect mistakenly showed a painted finish, a change order would have to be issued to correct the mistake. The client may claim that the architect should bear the full cost of the change. However, to minimize the consequences of having to pay the full amount of the change order, the architect could claim that the owner would have had to pay for the wood paneling anyway (a betterment to the project), so that the architect should have to pay only for any extra charges caused by the change order above what the original cost of labor and materials would have been; for example, to add blocking for the paneling and to call back the workers to redo the room.

Statute of Limitations

A *statute of limitations* sets a time limit within which a claim can be made. After the time limit, the claim is permanently barred. Each state has its own statute of limitations on construction claims against architects, but the time limit is generally between three and ten years. A claim of breach of contract may have a different time limit, even within the same state. In many states, the statute of limitations begins with the date of substantial completion.

Statute of Repose

A *statute of repose*, used in some states, is similar to a statute of limitations, except that the time limit is usually much shorter and does not begin until the problem is first discovered. There is also a second time limit within which any claim can be made. For example, the statue of repose for a claim against an architect may be three years from discovery, with the absolute cutoff date six years from substantial completion. In this case, if a client discovered a problem five years after substantial completion, he or she would have only one year in which to file a claim.

Risk Management

Although architects cannot avoid all liability, they can limit their exposure to liability through good risk management. Some strategies for managing risk are as follows.

- *Know the client.* In some cases, an architect should not even agree to accept a client who is unknowledgeable about construction, expects too much, has a history of poor payment, or has a history of litigation. (See Chap. 3 for a discussion of client selection.)
- *Use well-written contracts and follow them thoroughly.* The standard AIA documents have been written to coordinate with each other and are based on decades of experience. If these cannot be used, employ an attorney to write the contract or to review the client's contract.
- *Make sure the appropriate employees are assigned to each project.* Experienced project managers and design staff should be in charge of the design and production of each project as well as construction administration. Less experienced staff—with correspondingly lower billing rates—can be assigned to tasks appropriate to their skill levels while they experience their on-the-job training.
- *Maintain an active quality control program.* Establish a well-defined program and set of objectives for each project. Use standard checklists of procedures. Use proven construction methods, details, and specifications. Maintain communication among everyone on the architectural and construction team, including the client. Make sure everyone in the firm who works on a project understands the contractual obligations and their responsibilities. (See Chap. 6 for a discussion of project quality control.)
- *Maintain thorough documentation.* Document every decision, meeting, action, and observation throughout the entire life of the project. (See Chap. 4 for more information on documentation.) Documentation is invaluable in establishing a sequence of events, who each decision was made by, and what standard of care the architect took in completing the work.
- *Be very careful about last-minute changes and substitutions.* Many claims and lawsuits are caused by last-minute actions, which result in modifications that the architect does not have time to fully research and consider.
- *Carry liability insurance.* Be sure it's sufficient for the types of work the firm does. (See the following discussion on types of insurance.)

Exposure to Third-Party Claims

Through the concept of *privity*, architects are in theory protected from claims by parties with whom they have no direct contractual relationship. This is clearly stated in the *General Conditions of the Contract for Construction*, AIA Document A201, as an indemnification clause. An *indemnification clause* holds harmless both owners and architects for any damages, claims, or losses resulting from the performance of any work on the project, whether by contractors or others with whom the architects have no contractual relationship.

However, there are cases where courts may not support the enforcement of this clause for a variety of reasons, one of which may be that instructions the architects gave or failed to give were the primary cause of the damage or injury. In addition to making sure an indemnification clause is in the contract and general conditions, architects can minimize third-party claims by these actions.

- Don't include language in the contract that expressly states or implies responsibility to provide management, supervision, coordination, or planning of construction, unless those services are specifically being provided.
- Do not give directions concerning methods of construction. Actions or directions to contractors during construction may imply that the architects' responsibility extends to portions of the work beyond what the contract requires.
- Point out obvious construction safety problems to contractors. Follow up in writing with both the contractors and owners. If the problems are not corrected, suggest to the owners that construction be stopped until they are corrected.

Copyright

Copyright protection for architectural work falls into two categories. The first, and traditional, category includes copyright for the drawings, specifications, and other pictorial or graphic representations of an architect's work. The second category is for the building itself. This latter category of copyright protection was established under The Architectural Works Copyright Protection Act, which applies to buildings erected after December 1, 1990. Under current copyright protection, the rights retained by the copyright holder include the graphical representation of the building as well as the overall form, arrangement, and composition of spaces and elements in its design. This means that a building owner cannot construct buildings based on unauthorized copies of an architect's design. Likewise, derivative works may not be made. Derivative works are buildings designed after the original building that are substantially similar to the original. Making modifications to the original building falls under derivative works.

Generally, the architect owns the copyright unless the architect is an employee of the building owner or specifically assigns the copyright to the owner. This is something that should be clearly stated in the Owner-Architect Agreement. AIA Document B101, *Standard Form of Agreement Between Owner and Architect*, states that the architect is the owner of the instruments of service and retains all common law, statutory, and other reserved rights, including copyrights. In addition, the architect should specifically claim ownership rights of the building copyright. To do this, the owner-architect agreement should state that these rights belong to the architect, and the architect should register the work with the U.S. Copyright Office. Although not technically required, official registration is advisable and allows the architect to bring a lawsuit for infringement, to collect attorneys' fees, and to recover statutory damages. Registration should be made within three months of "publication," which is the completion of the building.

As is discussed in Chap. 5, the architect grants to the owner a license to use the instruments of service solely and exclusively for the purposes of constructing, using, maintaining, altering, and adding to the project. If the owner terminates the owner-architect agreement for the owner's convenience, or if the architect terminates the agreement due to the owner's suspension of the project, the owner cannot continue to make use of the architect's instruments of service without paying a licensing fee to the architect.

The architect can transfer copyright to the owner, if desired, or grant a license to reproduce the building or a derivative work one or more times.

Example 2.3

According to the legal concept of implied duties, which of the following should an architect be diligent about following when conducting construction observation? (Choose the three that apply.)

(A) performing only those actions related to the contractor and site visitation that are explicitly required by the *General Conditions*

(B) notifying the contractor if the architect thinks there is poor quality construction

(C) working with the general contractor to coordinate schedules of the owner's separate contractors

(D) notifying a subcontractor if a dangerous situation is observed with the subcontractor's work

(E) making suggestions to the contractor about the processes by which work should be carried out

(F) giving the contractor information regarding local laws and regulations regarding the project

Solution

Option A is incorrect because the architect has the duty to cooperate with the contractor even if a particular action is not in the *General Conditions* or any other relevant contract. Option D is incorrect because if a safety problem is observed, the architect should notify the contractor, not the subcontractor. Option E is incorrect because the architect should not advise the contractor about methods of construction. Options B, C, and F are reasonable implied duties that any architect should follow.

The answer is (B), (C), and (F).

INSURANCE

There are many types of insurance, some required and some optional, that pertain to doing business and completing an architectural project. In a sense, insurance is a risk management strategy for architects. Each of the three main parties to a project—the architect, the owner, and the contractor—must have certain kinds of insurance to protect against liability, property loss, and personal loss. Because the issue of insurance is so complex, and because architects are not qualified to give insurance advice, it is best that the owner receive insurance recommendations for specific projects from an insurance counselor. Architects and contractors should also have their own insurance advisers recommend needed insurance for their businesses.

Architect's Insurance

AIA Document B101, the owner-architect agreement, requires architects to maintain professional liability, general liability, automobile liability, and workers' compensation insurance. If the owner requires the architect to carry insurance at limits greater than the architect normally does, the owner is responsible for paying the additional cost. The following are some of the common types of insurance architects carry.

- *professional liability insurance:* Sometimes called *malpractice insurance* or *errors and omissions insurance*. This type of insurance protects architects in case one of their actions causes bodily injury, property damage, or other damage. This covers problems resulting from things such as incorrect specifications, mistakes on drawings, and negligence. However, it excludes intentional wrongful acts, claims for cost estimates being exceeded, and claims arising from express warranties.
- *general liability insurance:* This term includes a range of insurance that protects against claims of property damage, liability, and personal injury caused by architects or their employees, consultants, or other people hired by the architects. Sometimes an architect will also buy insurance to protect against the possibility that a contractor or subcontractor does not have the needed, valid insurance coverage.
- *property insurance:* Property insurance protects the architects' building and the building's contents against disasters such as fire, theft, and flood. Even if office space is rented, property insurance protects the contents of the office.
- *personal injury protection:* This insurance protects architects against charges of slander, libel, defamation of character, misrepresentation, and other torts. (A *tort* is a civil wrong, as contrasted with a criminal act, which causes injury to another person.)
- *automobile insurance:* Automobile insurance covers liability and property damage to vehicles owned and used by the business. This insurance can include protection against claims made by employees who use their own cars while on company business.
- *workers' compensation:* This insurance is mandatory in all states and protects employees in the event of injuries caused by work-related activities.

Other types of insurance that architects may carry include health and life insurance for employees, special flood insurance, valuable papers insurance, and business life insurance.

Owner's Insurance

As stated in AIA Document A201, *General Conditions of the Contract for Construction*, the owner is required to carry liability insurance as well as property insurance for the full insurable value of the work. This insures against physical loss or damage caused by fire, theft, vandalism, collapse, earthquake, flood, windstorm, and malicious mischief. It also provides for reasonable compensation for architect and contractor services and expenses that may be needed as a result of insured losses.

The policy must be the "all risk" type rather than the "specified peril" type. All-risk insurance is broader in coverage and includes all hazards except those that are specifically excluded by the policy. If the property insurance requires deductibles, any costs that are not covered because of the deductibles are paid by the owner. All-risk insurance also covers work stored off site and portions of the work in transit.

The owner is also required by the *General Conditions* to carry boiler and machinery insurance.

Contractor's Insurance

The *General Conditions of the Contract for Construction* require that contractors carry insurance that will protect from the following types of claims.

- workers' compensation
- damages because of bodily injury, occupational sickness, or death of employees
- damages of bodily injury or death to people other than employees
- personal injury, which includes slander, libel, false arrest, and similar actions
- damages other than to the work because of destruction of tangible property, including loss of use resulting from such damages
- damages related to use of motor vehicles
- bodily injury or property damage arising when an injury occurs after the job is complete and the contractor has left the site
- contractual liability insurance

3

DELIVERY OF SERVICES

This chapter discusses four important aspects of practice management:

- how to decide whether or not to accept a project
- how to decide on the type of project delivery method to use
- how to implement each of the possible project delivery methods
- how to determine what types of practice methodologies will best meet the needs of the client and the selected project delivery method

ACCEPTING A PROJECT (CLIENT SERVICES REQUESTS)

One of the first decisions an architect must make, and one of the most important, is whether to accept or turn down a project that is offered by a prospective client. Some architects think that almost any project should be accepted for the well-being of the firm, but sometimes it is much better not to accept an offer. In fact, making good decisions about which projects to accept (or to reject) is one of the most important ways that an architect can reduce risk for the firm.

There are many factors involved in this decision, including the firm's current workload, how well the project matches the type of work the firm is qualified to do or wants to do, and how feasible the project is. Two especially important factors are

- whether the client's budget is sufficient to cover construction and professional fees
- the reliability and reputation of the client

Sometimes the client requests work that the architect expects will exceed the construction budget, the budget for professional fees, or both. In such a case, the architect may decide to accept a lower profit margin on the project, possibly because it will give the firm experience in a project type that the architect wants to pursue. Another possibility is to negotiate with the client to reduce the scope of the project, the scope of services, or both. When neither of these is an acceptable option, however, the architect must decline the job.

If the prospective client is unknown to the architect, some investigation is called for. This can include researching on the internet, reviewing trade journal indexes in the client's line of business, doing a credit check, contacting other professionals who have worked with the prospective client, and talking with the client's business associates, vendors, and customers. Specifically, look for information about the client's ability to fund the project, history with building projects, and history working with design professionals. If the prospective client's experience in these areas is questionable or nonexistent, the architect must carefully weigh the potential rewards of accepting the project against the possible risks.

Some other considerations are as follows.

- Does the prospective client want to use a nonstandard contract? If so, it will probably be written to the client's benefit, not the architect's. Ask the client why he or she wants to use a nonstandard contract, and suggest the use of a standard AIA owner-architect agreement. Explain how this contract is coordinated with the AIA owner-contractor agreement and how this integration is beneficial during the construction administration phase of the project.

  If the owner still insists on using a nonstandard contract, the architect should have it thoroughly reviewed by an attorney familiar with construction law.

- Is the prospective client using bidding as a method of selecting design professionals? This indicates the client is very concerned with costs and may be likely to file a claim to save or recover money.

- Does the prospective client have a history of litigation with professionals, consultants, and contractors?
- In initial meetings, has the prospective client made unreasonable requests or shown unreasonably high expectations? These should be "red flag" indications. The client may continue to have unreasonable expectations throughout the project. These expectations most often involve schedule and budget constraints, but can also include strong preconceived ideas about design solutions and products.

If the architect decides accept the job, the architect must first negotiate an agreement with the client that determines the scope of the work, fees required, and other aspects of the contract. (See Chap. 5 for more information on owner-architect agreements.) Part of the negotiations may involve developing a preliminary design and construction schedule to help determine the project's feasibility—and the architect's expected fees—before a complete owner-architect agreement is written. Having such an agreement in writing, even if just in the form of a simple letter or memo, reduces potential risk.

If another architect or design professional has been involved with the project, the architect should determine whether any formal or informal agreement currently exists between the owner and the other design professional. The architect should not accept work from the owner unless the agreement with the other architect or design professional has been dissolved. Under the current versions of the AIA *Code of Ethics & Professional Conduct*, an architect may supplant or replace another architect on a project; however, seeking to interfere with an existing contractual relationship is still often regarded as unethical and in some cases may also be illegal.

SELECTING A PROJECT DELIVERY METHOD

The term *project delivery* describes the entire sequence of events that is needed to provide an owner with a completed building. It includes the selection of people who will design and construct the project, the establishment of contractual relationships, and some method of organizing contractors to perform the work. This section reviews some of the elements of project delivery and discusses the main project delivery methods.

Responsibility for Design and Construction

Traditionally, the owner hires an architect to design the project and a contractor to build it. The architect acts as agent for the owner, looking after the owner's best interests, with no financial stake in the project. The contractor agrees to provide, for a fixed price and within a certain time period, the materials and labor needed to construct the project according to the plans and specifications. In this project delivery model, the owner has separate contracts with the architect and the contractor.

More recent project delivery methods include a single entity being responsible for both designing and building a project, the involvement of a construction manager, and having all those involved in the design and construction process working together on one team.

Factors in Selecting a Method

Although the owner is often the one who selects the project delivery method (especially if the owner has had experience with other construction projects), the architect may be in the best position to evaluate the many variables that affect the choice.[1] These variables include cost, schedule, project scope, building quality, and risk.

Cost

Cost is an important factor is choosing the project delivery method. Traditionally, owners have chosen the design-bid-build method in order to achieve the lowest cost. There is considerable risk, though, that in the end the building will cost more than the lowest bid.

[1]The project delivery method should be confirmed before the architect's agreement with the owner is made final, as different delivery methods will demand different levels of design and detailing effort from the architect, and will determine the extent of the architect's involvement in the project beyond the design phase.

Bidding puts the contractor in the role of adversary to the owner and architect. On the one side, the owner and architect want a high-quality project completed at the lowest cost; on the other side, the contractor wants to win the contract and still make a profit on construction. To achieve a low bid, a contractor will often underestimate the requirements of the project or base the bid on low-quality materials and labor, and then try to make up costs with change orders. A contractor may also try to take advantage of discrepancies or ambiguities in the construction documentation to force change orders that could be considered errors or omissions and may be charged to the architect.

Unless the project is well designed and well detailed and the specifications are thoroughly researched and written, the design-bid-build approach is fraught with risks for both the owner and architect. An owner who prefers to avoid the bidding process may choose a different project delivery method and negotiate a contract with a guaranteed maximum price instead.

Schedule

The project schedule is another important factor in selecting the project delivery method. Nearly any owner, whether private and public, will be under pressure to complete a building project as quickly as possible, whether the reason is to minimize the cost of financing, to meet a certain move-in date, or so that the building can begin generating income. Everyone loses when a project is delayed.

This scheduling pressure led to the development of the fast-track method of construction, discussed in the section on construction management. When the fast-track method is used with multiple prime contracts and with a construction manager as constructor, projects can proceed quickly.

Project Scope

Project scope refers to the size and complexity of the project, as well as what is unknown about the project when the construction contract is signed. For large and complex projects, it may be best to have a construction manager who organizes multiple contracts, either with or without a fast-track schedule. When a project has many unknowns, any of the project delivery methods may be employed using a cost-plus-fixed-fee price from the contractor, either with or without a guaranteed maximum price.

Building Quality

Finally, building quality must be considered. The developer of a speculative office building may want a lower-quality building that can be built quickly for a low cost, while the development of a government-owned civic building may call for a structure with durable materials, energy-efficient systems, low maintenance, and low life-cycle costs, all of which will demand a higher initial investment. For a low-cost building, the design-bid-build project delivery method may be right, while a construction-manager-as-constructor method or an integrated project delivery approach may be better for a higher-quality building.

Risk

There are many risks involved in the design and building process. One of the ways the architect can reduce these risks is by helping the owner select the best delivery method for the project. To minimize risks during both design and construction, the architect may want the advice of someone with construction expertise. This may suggest using a design-build team, hiring a construction manager (either as adviser or constructor), or creating an integrated project delivery arrangement. These methods largely remove the adversarial relationship between architect, owner, and contractor in the traditional design-bid-build approach and encourage the team to avoid potential problems early in design as well as during construction.

PROJECT DELIVERY METHODS

There are six main types of project delivery methods.

- design-bid-build (DBB)
- construction manager as adviser (CMa)
- construction manager as constructor (CMc)

- design-build (DB)
- design-assist contracting
- integrated project delivery (IPD)

Each method may include a different method of compensation, such as a stipulated sum or cost plus a fee, either with or without a guaranteed maximum price.

See Chap. 49 for a description of the architect's preconstruction responsibilities under the various types of project delivery methods.

Design-Bid-Build

The design-bid-build approach is the traditional method of project delivery.[2] With this approach, the architect designs the project and prepares the construction drawings and specifications. These documents are used as the basis for pricing the project and awarding a construction contract, either through competitive bidding or through negotiation with one contractor. The contractor then builds the project, while the architect provides contract administration services. The owner has separate contracts with both the architect and contractor.

This method of project delivery is fairly simple because all the roles are well defined and the work proceeds in a linear fashion, from selection of the architect to final build-out. Coordination problems are minimized, contractual relationships are straightforward, and the owner can be quoted a fixed price before proceeding with construction.

The main disadvantage is that the design phase must be completely finished before the construction phase proceeds. This can be a problem if the owner needs the building quickly or if extended design and construction times result in higher financing costs. If the contractor is not selected by negotiation, this method often leads to an adversarial relationship between the architect and contractor or between the owner and contractor.

The roles and responsibilities of the architect, owner, and contractor using standard AIA contracts are described in Chap. 5.

Construction Manager as Adviser (CMa)

A construction manager (CM) can be either the construction contractor or an independent third party who acts as the owner's agent (as does the architect) without any financial interest in the project. The CM is generally hired by the owner, outside of the architect's contract. The CM advises on the constructability of the design as it is developed, provides early cost estimating and value analysis, completes project scheduling, assists with contract negotiations, manages multiple construction contracts and fast-track construction, makes early material purchases, and, in some cases, gives a guaranteed price and completion date.

There are two important disadvantages of using a CM. First, because the CM is hired before the design work is finished, there is no competitive bidding on the cost of building the project, which may mean higher costs for the owner. Second, there is a more complicated management structure due to having one more person on the design and build team. These disadvantages can be reduced considerably, however, if the contractor also acts as CM (see the next section).

If the CM is an independent adviser (CMa), different AIA agreements should be used from those for a design-bid-build project. These include

- AIA Document B132, *Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition*
- AIA Document A132, *Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition*

[2]Design-bid-build is sometimes called design-award-build because one of the contractors bidding on the project is awarded the contract.

- AIA Document A232, *General Conditions of the Contract for Construction, Construction Manager as Adviser Edition*
- AIA Document C132, *Standard Form of Agreement Between Owner and Construction Manager as Adviser*

There are also versions of these agreements for use on a sustainable project.

When the CM acts as an adviser, there are three common methods for establishing the total construction cost of a project. The first is the fixed-price method, also known as the stipulated sum or lump sum method, in which the contractor gives the owner a set price for completing the project. With this method, the owner knows the final cost before construction begins and is not responsible for cost overruns. However, the owner does not share in any savings that the contractor may realize.

The second is the cost-plus-fee method with a guaranteed maximum price (GMP). In this case, the owner pays the actual cost of construction (direct plus indirect costs) plus a fee that is agreed on before construction begins, and the CM guarantees a maximum price. If the project is completed for less than this amount, the client receives the cost savings.

The third method is the cost-plus-fee without a GMP.

Fast-Tracking

When the overall time for design and construction must be compressed, the fast-track method can be used. In this method, the construction process is allowed to begin before the design process is completed. This is possible because the architectural and engineering documents are issued in stages, often called *bid packages*. For example, construction drawings and specifications for foundations can be completed based on design development drawings and sent to bid, even though the architect is still working on interior finish design.

Fast-track construction requires many prime contracts and a great deal of coordination, but it can reduce the time and cost of a project substantially. Although fast-track construction can be used with any project delivery method, including design-bid-build, it is most commonly used when a CM is involved.

Architect's Roles and Responsibilities with a CMa

AIA Document A232 requires the architect and the CM to perform joint construction administration services in regards to visiting the site, certifying applications for payment, rejecting work, reviewing submittals, investigating concealed and unknown conditions, determining dates of substantial completion and final completion, issuing certificates of substantial completion, deciding matters of performance, and reviewing requests for information from the contractor.

The CMa schedules and coordinates the activities of the contractor and other multiple prime contractors, facilitates communication between the owner and contractor, and prepares change orders and construction change directives; the CMa must keep the architect informed about these actions.

The architect's construction administration services are similar to those provided on a design-bid-build project, but the architect must advise and consult with *both* the owner and CM and report to both any known deviations from the contract documents and the most recent construction schedule as well as any observed defects and deficiencies in the work. The architect's decisions on matters relating to aesthetic effect are final if consistent with the intent in the contract documents.

Construction Manager as Constructor (CMc)

Under a CMc method of project delivery, the construction manager is part of the contracting firm, which has a single agreement with the owner covering the construction management services as well as the construction services provided. The owner-CMc agreements divide the CMc's services into two phases: the preconstruction phase and the construction phase, portions of which may proceed concurrently in order to fast-track the process.

As with the CMa method, during the preconstruction phase the CMc provides advice to the owner on constructability of the design, cost estimating, value analysis, scheduling, contract negotiations, and early material purchasing. Unlike the CMa method, however, there are only two ways to price the project—on cost of the work plus fee, either with or without a GMP. There is no stipulated sum option.

In most cases, the CMc bases cost estimates and GMP on partially completed documents, typically after the design development phase is complete. Establishing a GMP before all details, specifications, and drawings are complete puts the CMc at risk, which is why many construction managers prefer the cost-plus-fee method without a GMP. This method is often referred to as Construction Manager at Risk (CM@R) for this reason. This way, the owner and CMc can monitor cost through periodic review of the original estimate as the project proceeds, and the fee to the construction manager can be adjusted accordingly if the scope of work changes. The CMc can also advise the architect on the cost implications of the architect's work as drawings are finalized.

During the construction phase, the roles and responsibilities of the contractor and architect become essentially what they are under the *General Conditions of the Contract for Construction*, AIA Document A201.

If the CM is also the contractor, different AIA agreements should be used from those used for a design-bid-build project or a CMa-managed project. These include

- AIA Document B133, *Standard Form of Agreement Between Owner and Architect, Construction Manager as Constructor Edition*
- AIA Document A133, *Standard Form of Agreement Between Owner and Construction Manager as Constructor where the basis of payment is the Cost of the Work Plus a Fee with a Guaranteed Maximum Price*
- AIA Document A134, *Standard Form of Agreement Between Owner and Construction Manager as Constructor where the basis of payment is the Cost of the Work Plus a Fee without a Guaranteed Maximum Price*

All documents are intended to be used with AIA Document A201, *General Conditions of the Contract for Construction*, which is discussed in Chap. 5. There are also versions of these agreements for use on a sustainable project.

Architect's Roles and Responsibilities with a CMc

In addition to the architect's responsibilities during preconstruction (see Chap. 49), the architect provides construction administration services as described in AIA Document A201. This responsibility begins once one of three things happens: the owner accepts the CMc's GMP, the owner approves the CMc's control estimate, or the owner issues a notice to proceed to the CMc.

The *control estimate* is the sum of the CM's estimate of the cost of the work plus the CM's fee. The control estimate establishes the expected date of substantial completion and includes a list of drawings and specifications as well as other items used by the CMc in the preparation of the control estimate.

During the construction phase services, the architect must also advise and consult with the owner and CM.

Design-Build

With the design-build method of project delivery, the owner contracts with one entity (a person or a firm) to provide both design and construction services; that entity then subcontracts portions of the work to others as needed. The design-build entity could be a construction contractor with in-house design services, a construction contractor collaborating with an architect or other design professional through a joint venture or other project-specific legal entity, a real estate developer subcontracting both design and construction services, or any other person or firm legally permitted to do business as a design-builder in the location where the project is located.

Most often, the design-build entity is led by a construction contractor, and an independent architect and engineer act as consultants. The architect and engineer have agreements with the contractor, not with the owner. A design manager from the contracting firm then works with the contracted architect to coordinate the efforts of the two firms.

Less commonly, the design-build process may be led by an architect, and the construction contractor and engineer are subcontractors to the architect. Another possibility is that the design-build entity is an organization with in-house capabilities for both design and construction.

It is also possible for a design firm and construction firm to establish a joint venture, which is a project-specific legal entity. In a joint venture, the new entity becomes something separate from the firms that have joined to create it and bears responsibility for the project. It is important to research and understand all of the legal, regulatory, and tax implications before agreeing to a joint venture.

In the design-build method of project delivery, the owner provides the design-builder with a set of criteria that establishes the owner's requirements for the project. The design-builder then uses this information to develop a preliminary design and provide a proposed contract sum. If the proposal is accepted, the owner and design-builder execute the agreement.

The design-build method can be used for small or large projects and for private or public works. However, local or state laws and regulations may limit or otherwise control how a public project is completed.

The design-build approach offers the owner several advantages. Because the design and construction firms are under one contract, there is a single source of responsibility, and all the parties work together to give the owner the best value. A skilled constructor gives advice early in the design stages of the project when time- and cost-saving measures can be implemented. The owner receives a fixed price early in the process; this price is generally lower than with other project delivery methods. The total time of design and construction is usually less than it would be with more traditional approaches.

However, the design-build approach also has several disadvantages for the owner. Once the contract is signed, the owner has less control over design and construction than with other project delivery methods. There may be disagreements about what should have been included in the design. The design-build entity has control over the quality of the materials and construction methods used, and may substitute lower-quality or less expensive materials or finishes to stay within the project budget.

With the design-build method, the owner is responsible for developing a set of performance requirements that will act as a program for the designers and constructors. For this reason, design-build contracts are typically used by owners who have experience with building projects and who can define and state their needs clearly and precisely.

Example 3.1

A community college district wants to build a new campus, which will be financed through local and state bonds. The most important considerations are controlling costs and sharing in any savings that the contractor may realize as the project progresses. Transparency of costs is also important, as board members will follow the project carefully. State laws have established minimum quality standards for the project. What is the best method of project delivery under these conditions?

(A) construction manager as constructor (CMc) with a guaranteed maximum price (GMP)

(B) construction manager as adviser (CMa)

(C) design-build

(D) design-bid-build

Solution

Controlling costs and sharing in savings are the most important considerations. In option B, the CMa method, the CM does not act as the contractor and cannot directly control costs. Option D, the design-

bid-build method, is competitively bid, but once the contract is signed, the cost is fixed with no opportunity for the owner to share in any savings.

The feature that allows the owner to control costs and also share in savings is a GMP in the contract. Both the design-build and CMc methods lend themselves to the use of a GMP, but in this case state law will not allow the contractor to substitute lower-quality materials to achieve savings in the design-build method.

The answer is (A).

Example 3.2

Which series of AIA contract documents includes a joint venture agreement between two architecture firms?

(A) A-series

(B) B-series

(C) C-series

(D) D-series

Solution

The AIA contract documents are organized into six series according to their end users. Each series is identified with a letter as follows.

A-series	owner-contractor agreements
B-series	owner-architect agreements
C-series	other agreements
D-series	miscellaneous documents
E-series	exhibits
G-series	contract administration and project management forms

An agreement involving an architect but not an owner is part of the C-series. AIA Document C101 is *Joint Venture Agreement for Professional Services*.

The answer is (C).

Requirements for Success

For a design-build project to be successful, the following conditions should be met.

- The owner must be educated in the unique aspects of the design-build method or have experience working with the method.
- The owner's project criteria must be clearly and completely stated. This is what the design-builder will use to develop a proposal, analyze costs, and design the building. The project criteria include the building program and the objectives for cost, time, and design excellence, as well as performance specifications, sustainable criteria, and other project-specific requirements.
- An owner may choose to hire a consultant to analyze project needs and develop a building program and statement of performance requirements. This consultant may also develop and issue a request for proposal (RFP) and assist the owner in evaluating, interviewing, and selecting a design-build entity. (This is discussed in greater detail under "Bridging" later in this section.)

- Although competitive bidding can be used to solicit pricing for many parts of the project, it is best if the key contractors, such as the structural and mechanical engineers, are selected early and are involved in the design process.
- Whatever form of contract is used should allow for adjustments in cost and time as the project proceeds, even when a GMP contract is used based on the owner's original criteria.
- Because a design-build project depends on cooperation among all parties, the contract should provide for a method of dispute resolution to solve problems quickly.
- Forms of communication that allow for close working relationships between the parties should be established, such as building information modeling (BIM) and the location of representatives from all the parties in the same space.
- There must be trust among the parties and willingness to work together to get the best value for the price while meeting the owner's requirements.

The main AIA contract for a design-build approach is AIA Document A141, *Agreement Between Owner and Design-Builder*. There are several other agreements that can be used instead, depending on what type of entity the design-builder is. For example, if the architect is hired as a consultant or subcontractor to the prime contractor, AIA Document B143, *Standard Form of Agreement Between Design-Builder and Architect* may be used. On the other hand, if the architect is already on the staff of the design-builder, then that architect performs the design duties required by the applicable laws, and no separate agreement is needed.

The Design-Build Institute of America (DBIA) also offers a series of standard agreements that can be used for this type of project delivery. The DBIA agreements tend to be more neutral for all parties, while the AIA documents tend to favor the architect.

Owner's Responsibilities

In addition to providing the project criteria, the owner also assumes many of the construction contract administration duties normally performed by the architect, including reviewing and approving submittals, approving changes submitted by the design-builder, visiting the site, and rejecting nonconforming work. When using AIA documents, the owner must also certify substantial completion using AIA Document G744, *Certificate of Substantial Completion for a Design-Build Project*.

The agreement between the owner and the design-builder can be based on a stipulated sum, the cost of the work plus a fee, or the cost of the work plus a fee with a GMP. AIA Document A141 includes the provisions for the unit prices, allowances, and assumptions on which a GMP is based.

Architect's Responsibilities

Under AIA Document B143, the architect's roles and responsibilities during all phases of the project are defined in an exhibit to the agreement. From a list of services, the design-builder, architect, and owner select the specific ones the architect will provide. These design services may (but do not necessarily) include

- normal design administration services, including design scheduling, consultant coordination, design presentations, and assistance with submissions to governmental authorities
- evaluation of the project criteria provided by the owner
- normal design of the project based on the owner's project criteria
- providing construction documents, including specifications

See Chap. 50 for the architect's responsibilities during construction administration.

Example 3.3

The owner of a proposed five-acre office park is planning to develop the property in phases. A consultant is hired to analyze how the property might be best utilized and to develop a master plan showing where the multiple buildings will be located on the property and how the zoning requirements will be met. The master plan also shows how the buildings could be phased depending on the demands and needs of the ultimate users. The owner has signed an agreement with the first tenant, who will occupy the whole of the first building to be constructed. To control costs and expedite the construction of this building, the owner has selected a design-build delivery method using a GMP. The design-build team will consist of an architect and contractor who have worked with the owner on traditional design-bid-build but not design-build projects. Which of the following topics are most likely to become problems or risks for the architect? (Choose the three that apply.)

(A) the type of agreement used between the architect and contractor

(B) the guaranteed maximum price

(C) rejection of nonconforming work

(D) adequate design staff

(E) communication and coordination of documentation with the contractor's staff

(F) certificate of substantial completion

Solution

The GMP is provided by the contractor. Under the design-build-method, the construction administration duties of rejecting work and providing a certificate of substantial completion become the duty of the owner. Since the architect and the contractor have not worked as a design-build team the major issues will be: what type of agreement is used, providing enough design staff to meet the expedited schedule, and coordinating communication and documentation with the contractor's staff.

The answers are (A), (D), and (E).

Bridging

A variation of the design-build approach is *bridging*, which combines the advantages of the traditional design-bid-build process and the design-build approach. Using this method, the owner hires an architect or engineer (AE) to be the project manager. The AE acts as an adviser and works with the owner to develop the project requirements that will be used by the selected design-build firm. This relieves the owner of the responsibility to develop the project criteria. As project manager, the AE (sometimes called the criteria architect) also works with public and private groups to gain the needed approvals for the project, and develops preliminary scope drawings and specifications so that design-build firms interested in bidding for the project can understand the extent of the project and the owner's design intent.

Using the documents developed by the AE, the owner makes the project available for bidding by design-build firms. When a design-build firm is selected, this firm takes over the AE's responsibilities and produces the final, detailed construction documents. The AE reviews the final documents on the owner's behalf, to ensure that the owner's design goals have been achieved, but is not legally responsible for them. The design-build firm then uses the final documents it has prepared to secure the necessary permits, review submittals, and construct the project.

Bridging is based on the idea that the design-build firm is in the best position to work with manufacturers, subcontractors, and other suppliers to determine the best way to construct the project at the lowest possible cost while meeting the requirements of the owner. For the owner, bridging combines an important advantage of design-build—someone to represent the owner's interests throughout the process—with the advantages of competitive bidding, a fixed cost, and single-source responsibility for construction.

Design-Assist Contracting

Design-assist contracting is a project management method in which specialty subcontractors or trades are included early in the design and construction document phases to help with the development of complex or unique portions of the building. This method is based on the assumption that in some cases subcontractors, trades, and product suppliers will be more knowledgeable about their portions of the work than the architect or the general contractor.

For example, a unique and innovative exterior cladding system may be better designed and detailed by the supplier of the system than by the architect. The details and specifications of the system can then be shared with the general contractor and other subcontractors whose work is affected by the system. The shop drawings and specifications of the specialty subcontractor or supplier can then be incorporated into the architect's construction documents.

The design-assist contracting method does take some additional work to make it effective. The owner must develop a clear statement and scope of work, along with a budget and schedule. The architect must help with developing the requirements of the work and then with the selection of the best subcontractor to meet the design, budget, and schedule requirements.

Integrated Project Delivery

In the integrated project delivery (IPD) method, all participants collaborate closely from the project's earliest conceptualization to move-in. The theory behind IPD is that the best design and the most efficient and cost-effective building will be produced when everyone works together throughout the process, without the adversarial positions that sometimes develop in the traditional design-bid-build approach or other project delivery methods.

IPD has many things in common with the design-build approach. A key difference is that in IPD the owner often has multiple agreements with independent design and construction firms, whereas in the design-build method the owner always has only one agreement.

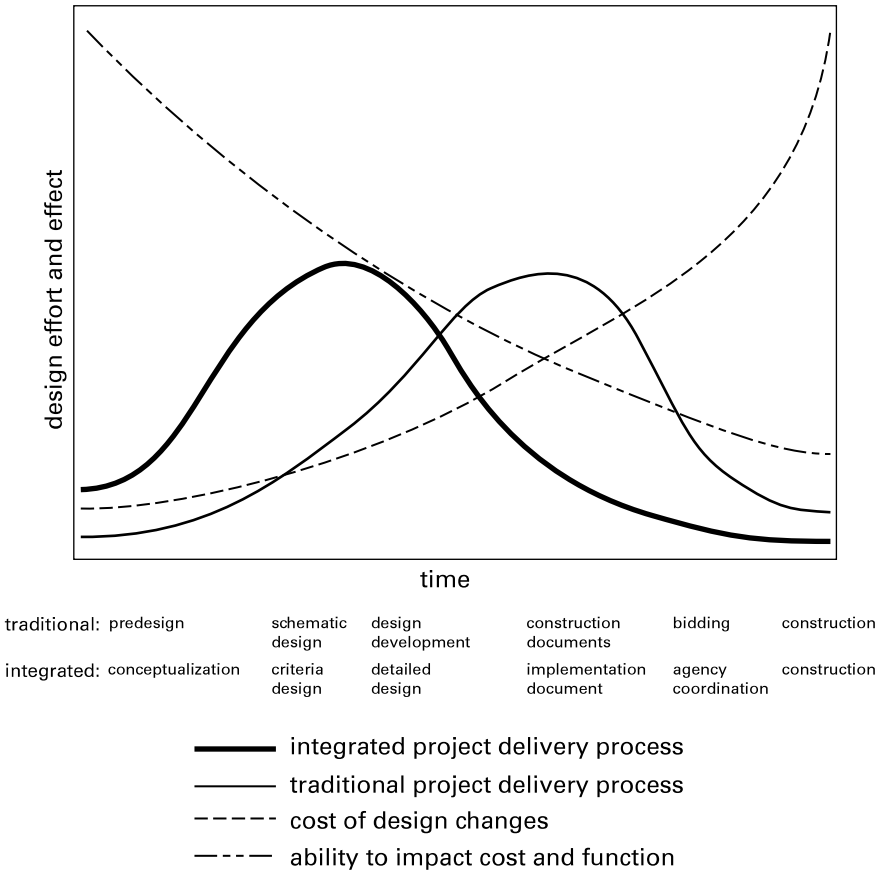
At the beginning of the project, during what is called *conceptualization* (or *pre-design* in traditional terms), the owner, building users, architect, engineers, contractors, subcontractors, suppliers, and others begin to work together. They continue their collaboration as the project design is developed, finalized, and constructed. IPD depends heavily on technology, communication, and an integrated building information model (BIM) that everyone on the team has access to.

A unique and innovative exterior cladding system may be better designed by the supplier of the system than by the architect.

The phases of IPD include *conceptualization* (predesign), *criteria design* (schematic design), *detailed design* (design development), *implementation documents* (construction documents), *agency review, buyout* (bidding from participants not included in the integrated team), *construction* (construction administration), and *closeout*. Because more participants are involved, the early design phases may take slightly longer than with traditional approaches. The implementation documents, agency review, and buyout phases will take less time, however, and the total project delivery time will be shorter overall. The *MacLeamy curve*, illustrated in Fig. 3.1, shows how IPD places more design effort earlier in project development when there is a greater ability to affect costs and the functional aspects of the building.

The advantages of IPD include a better design, shorter project delivery time, lower project cost, quality construction, and fewer problems during construction. Although there are many considerations unique to this delivery method, such as compensation, legal responsibilities, and technology standards, IPD has the potential to improve how projects are designed and built. The AIA has developed standard documents to address these issues, including AIA Document A295, *General Conditions of the Contract for Integrated Project Delivery.*

Figure 3.1 MacLeamy Curve



Using standard AIA documents, there are three ways to establish the contractual relationships between the primary participants in IDP.

- with transitional forms
- with a multi-party agreement
- with a single purpose entity

Transitional Forms

Transitional forms are modeled after existing CM agreements and include AIA Document B195, *Standard Form of Agreement Between Owner and Architect for Integrated Project Delivery*; AIA Document A195, *Standard Form of Agreement Between Owner and Contractor for Integrated Project Delivery*; and AIA Document A295, *General Conditions of the Contract for Integrated Project Delivery*.

Multi-party Agreements

A *multi-party agreement* is a single agreement executed by the owner, architect, contractor, and other key project participants for the design, construction, and commissioning of a project. This type of agreement is governed by AIA Document C191, *Standard Form Multi-Party Agreement for Integrated Project Delivery*. As with other IPD documents, the multi-party agreement outlines a collaborative working relationship that encourages the parties to meet the cost and performance goals they jointly established. An IPD project is managed by a project management team; in addition, a project executive team provides a second level of project oversight and conflict resolution. Each team consists of one representative from each major party to the agreement.

Single Purpose Entities

A *single purpose entity* (SPE) is an independent limited liability company newly created for the sole purpose of planning, designing, and constructing a particular project. An SPE provides for a complete sharing of risk and reward in a fully integrated collaborative process. AIA Document C195, *Standard Form Single Purpose Entity Agreement for Integrated Project Delivery*, requires the SPE to contract with an architect—who will become a member of the SPE—for planning, design, construction contract administration, and other services as necessary. An SPE is normally used for large and complex projects.

Once a project reaches the construction phase, the architect's construction contract administration roles and responsibilities are about the same as with AIA Document A201. See Chap. 49 for the architect's roles and responsibilities during preconstruction.

PRACTICE METHODOLOGIES

Practice methodologies are the various approaches that an architectural firm may use to complete various aspects of a project, including design, documentation, and coordination. The methods chosen by a firm often depend on the expertise and size of the staff, the overall philosophy of the firm, how the firm is organized as a business, the techniques used to develop designs, and how the firm produces the drawings and specifications.

This section reviews those aspects of practice management that apply to all phases of the architect's work. The various forms of business and office organizations are discussed in Chap. 1, methods of project management are discussed in Chap. 4, and contracts are discussed in Chap. 5. See Chap. 10 for a review of project budgeting, cost estimating, and scheduling during pre-design. See Chap. 46 for information on the content and coordination of the architectural and consultant drawings. Chapter 49 reviews the architect's role in construction procurement through the bidding or construction contract negotiation process. The duties and responsibilities of the architect during construction administration are covered in Chap. 50.

Design Methodologies

There are several ways an individual architect or an architectural firm can approach the design process.

Some firms are design-based; they concentrate on developing solutions to problems that are unique and easily identifiable with the firm. Such a firm is typically headed by a well-known architect who has a distinctive style; the architect is often sought after by clients who want signature buildings. In a firm of this sort, the initial conceptual design is developed mainly by the principal, and it is left to the project managers and production team to develop and implement the concept. The time and fees required by these design practices can be considerable.

Some firms focus on one particular type of project. Some specialize in complex building types such as hospitals, airports, or laboratories; a firm like this looks for projects that demand expertise in the firm's area of specialization. Other firms specialize in less complicated building types such as residential, retail, or religious buildings. Some of these firms become skilled at delivering one kind of project quickly and inexpensively; efficiencies in design and production can be found, solutions can be repeated, and most of the staff can be less experienced and less costly, though some senior staff are needed to manage projects well. A specialized firm may pursue projects on its own, or it may team with another, more generalist architectural firm that can provide the work force needed for full development of a design concept.

Some firms are generalist in nature and will complete a variety of project types. A firm of this sort needs principals and support staff with a broad range of experience, because taking on a new or complex building type can require more time and effort from a generalist firm than it would from a specialist firm. This can strain the firm's fee budget and resource. A generalist firm is more likely to see wide swings in staff employment due to changes in the marketplace; however, such a firm also tends to be better equipped to move quickly from one market to another, because its staff is more flexible and less locked into a particular building "formula." There is also the option of bringing in a specialist in a certain building type as a consultant, to provide expertise that the firm lacks.

As described in Chap. 1, most firms are organized on either the departmental or the studio model. A firm that specializes in a few building types or that wants to maximize efficiency will often use departmental organization; each project moves through each department in the overall design and production process, and individual specialists apply their expertise at each stage. A design-based firm can also manage projects in this way once the principal has developed the overall design. Generalist firms and some specialist firms often use studio organization, where most of the design and production for each project is responsibility of a single group of employees. Some larger offices have studios that specialize in certain building types, combining the advantages of expertise with the advantages of close communication and group problem solving.

Documentation Methodologies

The methods a firm uses to document a project and generate the needed construction drawings and specifications can affect productivity and profitability. Each firm uses its own preferred set of software and hardware tools.

For the design development phase, there are a variety of computer programs available to help the architect visualize and analyze project design. Once a project has reached the construction document phase, however, there are just a few computer-aided drafting (CAD) programs to choose from: either a two-dimensional (2-D) drafting program or the document production component of a three-dimensional (3-D) *building information modeling* (BIM) program. Some firms employ experienced architects who are also proficient with the office's CAD programs, while other firms use the more traditional model, in which experienced staff design plans and elevations and develop details that are then documented by entry-level staff who are experts at using the CAD or BIM programs. See Chap. 46 for a discussion of BIM.

While most firms use in-house staff to complete drawings, some elect to outsource portions of the work on a project-by-project basis, either locally or to overseas companies. *Outsourcing* is the practice of contracting with another company for the production of a certain part of the architect's work product. Most often, this includes drafting work that would traditionally be done by junior-level employees, such as construction documents, renderings, and 3-D modeling. Outsourcing can be an economical way to produce construction drawings, and it can help a firm manage fluctuating workloads, reduce production time, and take on more work. However, it also requires additional management and coordination by the firm.

For specifications, most firms either hire the services of a specification-writing firm, or they subscribe to a master specification system and use the system's software to produce documents in-house. Some large firms have an in-house specification writer and a master set of specifications. Regardless of how it develops specifications, a firm should follow the guidelines discussed in Chap. 49. The architect always bears the final responsibility for the content of specifications and their coordination with drawings.

Consultant Coordination

Professional consultants who will be involved in a project should be brought in as early as possible. Their advice and expertise is vital to determining the scope of the building project (especially if the project involves the renovation of an existing building), developing broad conceptual approaches to designing the building, and understanding the concerns of the client and other design professionals working on the project.

One of the most important tasks an architect has during pre-design is to assemble and coordinate a team of professional consultants to work on the project. Most project teams will include, at a minimum, structural and building systems engineers (mechanical, electrical, and plumbing). Additional consultants may include geotechnical engineers, civil engineers, fire protection engineers, historic preservation specialists, security consultants, interior designers, and audiovisual consultants. The architect can hire consultants to perform energy analyses, create renderings, build models, and perform dozens of other services. What services are expected from each consultant must be determined with the advice of the consultant and the approval of the client.

The contractual arrangement between the consultant and the architect or owner must also be determined. If the owner contracts directly with the consultant, the owner assumes all responsibility for coordinating the architect's work with the consultant's work. The architect avoids any issues with contract provisions and payment, but may lose some ability to direct the consultant.

If, on the other hand, it is the architect who contracts directly with the consultant, then the architect becomes responsible for coordination between the architectural work and the consultant's work. In this arrangement, the architect holds the primary contract with the owner, receives all payments, and is responsible for paying consultants their shares of the total fee. If payments from the owner are delayed, the architect may encounter problems paying consultants' fees. For this reason, many architects include a "pay when paid" clause in their contracts with consultants. This clause states that the consultant will be paid when payments are received from the owner.

Although being the one to contract with the consultant means more work for the architect, many architects prefer it, as it ensures them of the opportunity to comment on any portions of the consultant's design that affect the aesthetic objectives for the project. On the other hand, some architects object to working with outside consultants because it takes extra time, lessens the architect's control over a project, and reduces the amount of immediate contact among all team members.

One of the most important tasks an architect has during pre-design is to assemble and coordinate a team of professional consultants to work on the project.

As stated in Chap. 5, the architect is responsible for informing consultants about the applicable code requirements and about any design decisions that may have code implications. The architect is also responsible for understanding any design decisions the consultants make that will affect portions of the architect's work.

In addition to the standard types of consultants, such as structural, mechanical, and electrical engineers, a firm may want to use independent consultants to outsource work as described in the previous section. In addition to outsourcing production work the architect can hire consultants for energy analysis, rendering, model building, and dozens of other services.

The usual objections that most architects have are that working with non-engineering consultants is more time consuming and that it lessens the control and immediate contact that management would have if the work were being done in house. With proper working procedures and clearly defined agreements, however, these objections can be easily overcome with good coordination using the following techniques.

- Develop a list of reliable people in the area who can be called on when needed. Include several contacts for each type of work, so that there are alternatives if one's first choice is too busy. Research and interview consultants before an immediate need arises so that there will be time to choose the most appropriate one and develop the necessary agreements. Be sure to include the costs for this work in the initial project budget.
- Check references and past work before hiring a consultant. Only a small percentage of consultants available will be appropriate for the project. Speaking with colleagues in other firms and searching the internet may help narrow the choices.
- Plan and outline the work needed before giving it to the consultant. This may lead the architectural firm to study this aspect of the project in greater detail than it normally would, resulting in better coordination and less risk of omissions.

- Establish a lump-sum contract price for the work that is to be outsourced. This is usually possible for tasks like creating drawings and specifications. This makes it possible to develop a budget for the project. Be explicit in the written agreement about the extent of the work to be done and its quality.
- Set up a strict schedule of progress meetings, methods of communication, and reviews. This is the only way to catch problems before they become serious and to ensure that deadlines will be met.
- Do not assume that all work is being completed as contracted. The architect must still control overall coordination and review all the work the consultant does. This is not extra effort: Even if the work were being done in house, oversight and review would have to be provided by someone in the office.