

Construction Managers

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Significant Points

- Construction managers must be available—often 24 hours a day—to deal with delays, bad weather, or emergencies at the jobsite.
- Employers prefer individuals who combine construction industry work experience with a bachelor's degree in construction science, construction management, or civil engineering.
- Good employment opportunities are expected; however, employment can be sensitive to the short-term nature of many construction projects and to cyclical fluctuations in construction activity.

Nature of the Work

Construction managers plan and coordinate construction projects. They may have job titles such as constructor, construction superintendent, general superintendent, project engineer, project manager, general construction manager, or executive construction manager. Construction managers may be owners or salaried employees of a construction management or contracting firm, or may work under contract or as a salaried employee of the owner, developer, contractor, or management firm overseeing the construction project. They may plan and direct a whole project or just a part of a project. The *Handbook* uses the term “construction manager” to describe salaried or self-employed managers who oversee construction supervisors and workers.

In contrast with the *Handbook* definition, “construction manager” is defined more narrowly within the construction industry to denote a management firm, or an individual employed by such a firm, involved in managerial oversight of a construction project. Under this definition, construction managers usually represent the owner or developer along with other workers throughout the project. Although they usually play no direct role in the actual construction of a structure, they typically schedule and coordinate all design and construction processes, including the selection, hiring, and oversight of specialty trade contractors.

Managers who work in the construction industry, such as general managers, project engineers, and others, increasingly are called *constructors*. Constructors manage, coordinate, and supervise the construction process from the conceptual development stage through final construction on a timely and economical basis. Given designs for buildings, roads, bridges, or other projects, constructors oversee the organization, scheduling, and implementation of the project to execute those designs. They are responsible for coordinating and managing people, materials, and equipment; budgets, schedules, and contracts; and safety of employees and the general public.

On large projects, several different management systems may be used. In the general contractor system, the owner hires a general contractor to manage all activities. Working for the general contractor, construction managers oversee the completion of all construction in accordance with the engineer's and architect's drawings and specifications and prevailing building codes. They arrange for trade contractors to perform specialized craftwork or other specified construction work. On small projects, such as remodeling a home, a self-employed construction manager or skilled trades worker who directs and oversees employees often is referred to as the con-

struction “contractor.” In the construction management system, the owner hires a firm to oversee all aspects of the project. The management firm will then hire a general contractor to run the construction process and oversee construction of the structure. The major difference from the general contractor system is that the hired management firm, rather than the owner, works with the individual construction manager. In the design-build system, the owners, architects, general contractors, and major subcontractors are brought together to cooperatively plan and design the project. The design-build group may be from an individual firm or a conglomeration of separate entities. The construction manager participates during the design process and may be in charge of the construction project once the design is agreed upon.

Large construction projects, such as an office building or industrial complex, are too complicated for one person to manage. These projects are divided into many segments: Site preparation, including land clearing and earth moving; sewage systems; landscaping and road construction; building construction, including excavation and laying of foundations, as well as erection of structural framework, floors, walls, and roofs; and building systems, including fire-protection, electrical, plumbing, air-conditioning, and heating. Construction managers may be in charge of one or more of these activities. Construction managers often work with engineers, architects, and others who are involved in the construction process.

Construction managers evaluate and determine appropriate construction methods and the most cost-effective plan and schedule. They divide all required construction site activities into logical steps, budgeting the time required to meet established deadlines. This may require sophisticated estimating and scheduling techniques and use of computers with specialized software. (See the statement on cost estimators elsewhere in the *Handbook*.) They oversee the selection of trade contractors to complete specific pieces of the project—which could include everything from structural metalworking and plumbing to painting and carpet installation. Construction managers determine the labor requirements and, in some cases, supervise or monitor the hiring and dismissal of workers. They oversee the performance of all trade contractors and are responsible for ensuring that all work is completed on schedule.

Construction managers direct and monitor the progress of construction activities, sometimes through construction supervisors or other construction managers. They oversee the delivery and use of materials, tools, and equipment; and the quality of construction,



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worker productivity, and safety. They are responsible for obtaining all necessary permits and licenses and, depending upon the contractual arrangements, direct or monitor compliance with building and safety codes and other regulations. They may have several subordinates, such as assistant managers or superintendents, field engineers, or crew supervisors, reporting to them.

Construction managers regularly review engineering and architectural drawings and specifications to monitor progress and ensure compliance with plans and schedules. They track and control construction costs against the project budget to avoid cost overruns. Based upon direct observation and reports by subordinate supervisors, managers may prepare daily reports of progress and requirements for labor, material, machinery, and equipment at the construction site. They meet regularly with owners, other constructors, trade contractors, vendors, architects, engineers, and others to monitor and coordinate all phases of the construction project.

Working Conditions

Construction managers work out of a main office from which the overall construction project is monitored, or out of a field office at the construction site. Advances in telecommunications and Internet access allow construction managers to be onsite without being out of contact of the office. Management decisions regarding daily construction activities generally are made at the jobsite. Managers usually travel when the construction site is in another State or when they are responsible for activities at two or more sites. Management of overseas construction projects usually entails temporary residence in another country.

Construction managers may be “on call”—often 24 hours a day—to deal with delays, bad weather, or emergencies at the site. Most work more than a standard 40-hour week because construction may proceed around-the-clock. They may have to work this type of schedule for days, even weeks, to meet special project deadlines, especially if there are delays.

Although the work usually is not considered inherently dangerous, construction managers must be careful while performing on-site services.

Employment

Construction managers held 389,000 jobs in 2002. Almost half were self-employed. Most of the rest were employed in the construction industry, 15 percent by specialty trade contractors—for example, plumbing, heating and air-conditioning, and electrical contractors—and 21 percent by general building contractors. Architectural, engineering and related services firms, as well as local governments, employed others.

Training, Other Qualifications, and Advancement

Persons interested in becoming a construction manager need a solid background in building science, business, and management, as well as related work experience within the construction industry. They need to understand contracts, plans, and specifications, and to be knowledgeable about construction methods, materials, and regulations. Familiarity with computers and software programs for job costing, online collaboration, scheduling, and estimating also is important.

Traditionally, persons advance to construction management positions after having substantial experience as construction craftworkers—carpenters, masons, plumbers, or electricians, for example—or after having worked as construction supervisors or as owners of independent specialty contracting firms overseeing workers in one or more construction trades. However, employ-

ers—particularly large construction firms—increasingly prefer individuals who combine industry work experience with a bachelor’s degree in construction science, construction management, or civil engineering. Practical industry experience also is very important, whether it is acquired through internships, cooperative education programs, or work experience in the industry.

Construction managers should be flexible and work effectively in a fast-paced environment. They should be decisive and work well under pressure, particularly when faced with unexpected occurrences or delays. The ability to coordinate several major activities at once, while analyzing and resolving specific problems, is essential, as is an understanding of engineering, architectural, and other construction drawings. Good oral and written communication skills also are important, as are leadership skills. Managers must be able to establish a good working relationship with many different people, including owners, other managers, designers, supervisors, and craftworkers.

Advancement opportunities for construction managers vary depending upon an individual’s performance and the size and type of company for which they work. Within large firms, managers may eventually become top-level managers or executives. Highly experienced individuals may become independent consultants; some serve as expert witnesses in court or as arbitrators in disputes. Those with the required capital may establish their own construction management services, specialty contracting, or general contracting firm.

Many colleges and universities offer 4-year degree programs in construction management, construction science, and construction engineering. These programs include courses in project control and development, site planning, design, construction methods, construction materials, value analysis, cost estimating, scheduling, contract administration, accounting, business and financial management, safety, building codes and standards, inspection procedures, engineering and architectural sciences, mathematics, statistics, and information technology. Graduates from 4-year degree programs usually are hired as assistants to project managers, field engineers, schedulers, or cost estimators. An increasing number of graduates in related fields—engineering or architecture, for example—also enter construction management, often after acquiring substantial experience on construction projects or after completing graduate studies in construction management or building science.

Several colleges and universities offer a master’s degree program in construction management or construction science. Master’s degree recipients, especially those with work experience in construction, typically become construction managers in very large construction or construction management companies. Often, individuals who hold a bachelor’s degree in an unrelated field seek a master’s degree in order to work in the construction industry. Some construction managers obtain a master’s degree in business administration or finance to further their career prospects. Doctoral degree recipients usually become college professors or conduct research.

Many individuals also attend training and educational programs sponsored by industry associations, often in collaboration with postsecondary institutions. A number of 2-year colleges throughout the country offer construction management or construction technology programs.

There is a growing movement towards certification of construction managers to ensure that a construction manager has a certain body of knowledge, abilities, and experience. Both the American Institute of Constructors (AIC) and the Construction Management Association of America (CMAA) have established voluntary certification programs for construction managers. Requirements com-

bine written examinations with verification of education and professional experience. AIC awards the Associate Constructor (AC) and Certified Professional Constructor (CPC) designations to candidates who meet its requirements and pass appropriate construction examinations. CMAA awards the Certified Construction Manager (CCM) designation to practitioners who meet its requirements through work performed in a construction management firm and by passing a technical examination. Applicants for the CMAA certification also must complete a self-study course that covers a broad range of topics central to construction management, including the professional role of a construction manager, legal issues, and allocation of risk. Although certification is not required to work in the construction industry, voluntary certification can be valuable because it provides evidence of competence and experience.

Job Outlook

Good employment opportunities for construction managers are expected through 2012 because the number of job openings should be sufficient to accommodate the number of qualified managers seeking to enter the occupation. Because the construction industry often is seen as having dirty, strenuous, and hazardous working conditions, even for managers, many potential managers choose other types of careers.

Employment of construction managers is projected to increase about as fast as the average for all occupations through 2012, as the level and complexity of construction activity continues to grow. Prospects in construction management, architectural and engineering services, and construction contracting firms should be best for persons who have a bachelor's or higher degree in construction science, construction management, or civil engineering, as well as practical experience working in construction. Employers prefer applicants with previous construction work experience who can combine a strong background in building technology with proven supervisory or managerial skills. In addition to those arising from job growth, many openings should result annually from the need to replace workers who transfer to other occupations or leave the labor force.

The increasing complexity of construction projects should boost demand for management-level personnel within the construction industry, as sophisticated technology and the proliferation of laws setting standards for buildings and construction materials, worker safety, energy efficiency, and environmental protection have further complicated the construction process. Advances in building materials and construction methods; the need to replace much of the Nation's infrastructure; and the growing number of multipurpose buildings, electronically operated "smart" buildings, and energy-efficient structures will further add to the demand for more construction managers. However, employment of construction managers can be sensitive to the short-term nature of many projects and to cyclical fluctuations in construction activity.

Earnings

Earnings of salaried construction managers and self-employed independent construction contractors vary depending upon the size and nature of the construction project, its geographic location, and economic conditions. In addition to typical benefits, many salaried construction managers receive benefits such as bonuses and use of company motor vehicles.

Median annual earnings of construction managers in 2002 were \$63,500. The middle 50 percent earned between \$48,720 and \$84,080. The lowest 10 percent earned less than \$38,130, and the highest 10 percent earned more than \$112,810. Median annual earn-

ings in the industries employing the largest numbers of construction managers in 2002 were:

Nonresidential building construction	\$66,280
Foundation, structure, and building exterior contractors	60,020
Building finishing contractors	59,950
Residential building construction	59,900
Other specialty trade contractors	58,860

According to a 2003 salary survey by the National Association of Colleges and Employers, candidates with a bachelor's degree in construction science/management received job offers averaging \$42,229 a year.

Related Occupations

Construction managers participate in the conceptual development of a construction project and oversee its organization, scheduling, and implementation. Other workers who perform similar functions include architects, except landscape and naval; civil engineers; cost estimators; landscape architects; and engineering and natural sciences managers.

Sources of Information

For information about constructor certification, contact:

► American Institute of Constructors, 466 94th Ave. North, St. Petersburg, FL 33702. Internet: <http://www.constructorcertification.org> or <http://www.aicnet.org>

For information about construction management and construction manager certification, contact:

► Construction Management Association of America, 7918 Jones Branch Dr., Suite 540, McLean, VA 22102-3307. Internet: <http://www.cmaanet.org>

Information on accredited construction science and management educational programs and accreditation requirements is available from:

► American Council for Construction Education, 1300 Hudson Lane, Suite 3, Monroe, LA 71201. Internet: <http://www.acce-hq.org>