

SIGNIFICANT POINTS

- Job opportunities are expected to be excellent for experienced workers.
- Workers in construction have relatively high hourly earnings.
- More than 4 out of 5 establishments in the industry employ fewer than 10 people.
- Construction has a very large number of self-employed workers.

Nature of the Industry

Houses, apartments, factories, offices, schools, roads, and bridges are only some of the products of the construction industry. This industry's activities include work on new structures as well as additions, alterations, and repairs to existing ones. (Some government establishments do the same work and employ a significant number of people, but information about them is not included in this statement. Information concerning government construction is included in the statements on Federal Government and State and local government, except education and health, elsewhere in the *Career Guide to Industries*.)

The construction industry is divided into three major segments. *Construction of buildings contractors*, or *general contractors*, build residential, industrial, commercial, and other buildings. *Heavy and civil engineering construction contractors* build sewers, roads, highways, bridges, tunnels, and other projects. *Specialty trade contractors* are engaged in specialized activities such as carpentry, painting, plumbing, and electrical work.

Construction usually is done or coordinated by general contractors, who specialize in one type of construction such as residential or commercial building. They take full responsibility for the complete job, except for specified portions of the work that may be omitted from the general contract. Although general contractors may do a portion of the work with their own crews, they often subcontract most of the work to heavy construction or specialty trade contractors.

Specialty trade contractors usually do the work of only one trade, such as painting, carpentry, or electrical work, or of two or more closely related trades, such as plumbing and heating. Beyond fitting their work to that of the other trades, specialty trade contractors have no responsibility for the structure as a whole. They obtain orders for their work from general contractors, architects, or property owners. Repairwork is almost always done on direct order from owners, occupants, architects, or rental agents.

Working Conditions

Most employees in this industry work full time, and many work over 40 hours a week. In 2002, about 1 in 5 construction workers worked 45 hours or more a week. Construction workers may sometimes work evenings, weekends, and holidays to finish a job or take care of an emergency. Workers in this industry need physical stamina because the work frequently requires prolonged standing, bending, stooping, and working in cramped quarters.

They also may be required to lift and carry heavy objects. Exposure to weather is common because much of the work is done outside or in partially enclosed structures. Construction workers often work with potentially dangerous tools and equipment amidst a clutter of building materials; some work on temporary scaffolding or at great heights and in bad weather. Consequently, they are more prone to injuries than are workers in other jobs. In 2002, cases of work-related injury and illness were 7.1 per 100 full-time construction workers, which is significantly higher than the 5.3 rate for the entire private sector. Workers who do roofing, siding, and sheet metal work experienced the highest injury rates. In response, employers increasingly emphasize safe working conditions and work habits that reduce the risk of injuries. To avoid injury, employees wear safety clothing, such as gloves and hardhats, and sometimes devices to protect their eyes, mouth, or hearing.

Employment

Construction, with 6.7 million wage and salary jobs and 1.6 million self-employed and unpaid family nongovernment jobs in 2002, was one of the Nation's largest industries.

Almost 2 out of 3 wage and salary jobs were with specialty trade contractors, primarily plumbing, electrical, and masonry contractors. Around 1 out of 4 jobs were with building contractors, mostly in residential and nonresidential construction. The rest were with heavy and civil engineering construction contractors (table 1). Employment in this industry is distributed geographically in much the same way as the Nation's population; the concentration of employment is generally in industrialized and heavily populated areas.

There were about 792,000 construction companies in the United States in 2002: 237,000 were building construction contractors; 60,000 were heavy and civil engineering construction or highway contractors; and 496,000 were specialty trade contractors. Most of these establishments tend to be small, the majority employing fewer than 10 workers (chart 1). About 4 out of 5 workers are employed by these small contractors.

Construction offers more opportunities than most other industries for individuals who want to own and run their own business. The 1.6 million self-employed and unpaid family workers in 2002 performed work directly for property owners or acted as contractors on small jobs, such as additions, remodeling, and maintenance projects. The rate of self-employment varies greatly by individual occupation in the construction trades (chart 2).

Table 1. Distribution of wage and salary employment in construction by industry, 2002
(Employment in thousands)

Industry	Employment	Percent
Total, all industries	6,731.7	100.0
Construction of Buildings	1,583.8	23.5
Residential building	807.4	12.0
Nonresidential building construction	776.4	11.5
Heavy and Civil Engineering Construction	930.0	13.8
Utility system construction	380.5	5.7
Highway, street, and bridge construction	344.4	5.1
Land subdivision	86.1	1.3
Other heavy and civil engineering construction	119.0	1.8
Special trade contractors	4,217.9	62.7
Building equipment contractors	1,842.5	27.4
Foundation, structure, and building exterior contractors	915.4	13.6
Building finishing contractors	879.5	13.1
Other specialty trade contractors	580.5	8.6

Occupations in the Industry

Construction offers a great variety of career opportunities. People with many different talents and educational backgrounds—managers, clerical workers, skilled craftworkers, semiskilled workers, and laborers—find job opportunities in the construction industry (table 2).

Most of the workers in construction are skilled craftworkers or laborers, helpers, and apprentices who assist the more skilled workers. Most construction workers generally are classified as either structural, finishing, or mechanical workers. *Structural workers* include carpenters; construction equipment operators; brickmasons, blockmasons, and stonemasons; cement masons and concrete finishers; and structural and reinforcing iron and

Table 2. Employment of wage and salary workers in construction by occupation, 2002 and projected change, 2002-12
(Employment in thousands)

Occupation	Employment, 2002		Percent change, 2002-2012
	Number	Percent	
All occupations	6,732	100.0	15.1
Management, business, and financial occupations	576	8.6	14.5
Top executives	181	2.7	13.2
Construction managers	166	2.5	13.1
Cost estimators	100	1.5	19.6
Professional and related occupations	101	1.5	12.5
Architecture and engineering occupations	79	1.2	11.3
Sales and related occupations	127	1.9	13.0
Office and administrative support occupations	620	9.2	-0.2
Bookkeeping, accounting, and auditing clerks	125	1.9	1.9
Secretaries and administrative assistants	204	3.0	-5.1
Office clerks, general	123	1.8	1.4
Construction and extraction occupations	4,456	66.2	17.0
First-line supervisors/managers of construction trades and extraction workers	378	5.6	14.4
Brickmasons, blockmasons, and stonemasons	111	1.6	17.4
Carpenters	685	10.2	14.2
Carpet, floor, and tile installers and finishers	70	1.0	16.8
Cement masons, concrete finishers, and terrazzo workers	163	2.4	25.5
Construction laborers	675	10.0	13.2
Construction equipment operators	253	3.8	11.2
Drywall installers, ceiling tile installers, and tapers	139	2.1	24.3
Electricians	430	6.4	27.3
Painters and paperhangers	194	2.9	14.7
Pipelayers, plumbers, pipefitters, and steamfitters	380	5.7	22.5
Roofers	108	1.6	18.8
Sheet metal workers	134	2.0	22.8
Helpers, construction trades	390	5.8	12.3
Installation, maintenance, and repair occupations	434	6.5	23.1
Heating, air conditioning, and refrigeration mechanics and installers	114	1.7	37.5
Industrial machinery installation, repair, and maintenance workers	82	1.2	17.0
Production occupations	105	1.6	11.5
Transportation and material moving occupations	250	3.7	10.9
Truck drivers, heavy and tractor-trailer	97	1.4	14.5
Material moving occupations	118	1.8	7.7

NOTE: May not add to totals due to omission of occupations with small employment.

Chart 1. More than 80 percent of construction establishments employ fewer than 10 people

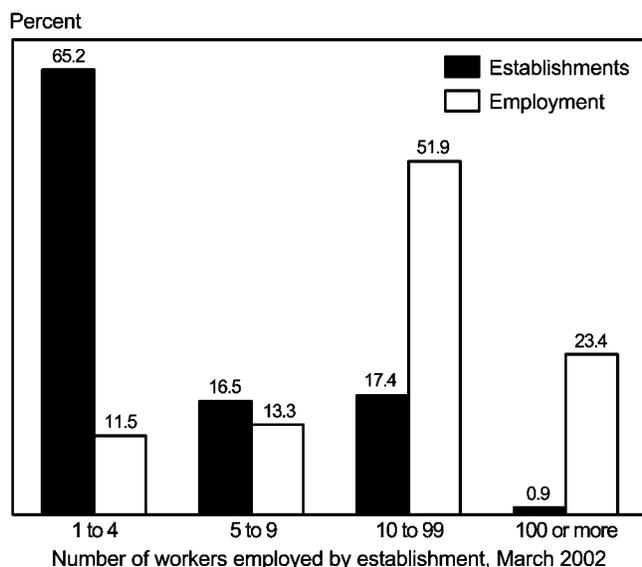
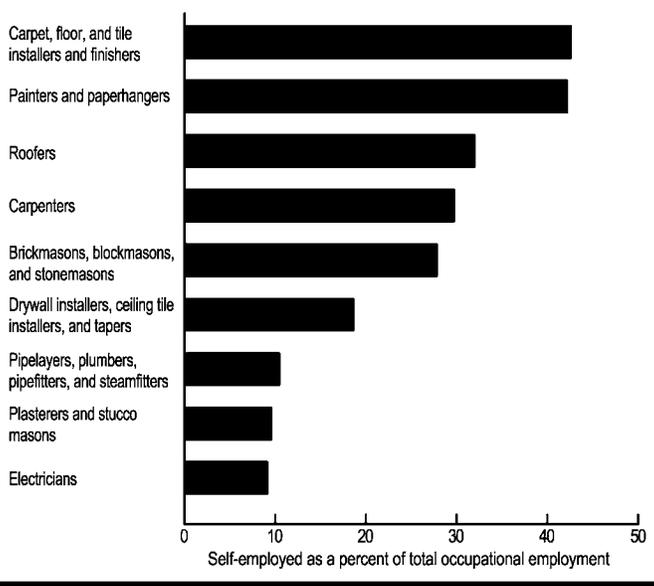


Chart 2. Many construction occupations have a substantial percentage of self-employed workers



metal workers. *Finishing workers* include carpenters; drywall installers, ceiling tile installers, and tapers; plasterers and stucco masons; segmental pavers; terrazzo workers; painters and paperhangers; glaziers; roofers; carpet, floor, and tile installers and finishers; and insulation workers. *Mechanical workers* include pipelayers, plumbers, pipefitters, and steamfitters; electricians; sheet metal workers; and heating, air-conditioning, and refrigeration mechanics and installers. Other workers, called *hazardous materials removal workers* remove hazardous materials such as asbestos, lead, and radioactive and nuclear materials from buildings, facilities, and the environment to prevent further contamination of natural resources and to promote public health and safety.

The greatest numbers of construction craftworkers are carpenters; electricians; pipelayers, plumbers, pipefitters, and steamfitters; construction equipment operators; painters and paperhangers; sheet metal workers; drywall installers, ceiling tile installers and tapers; cement masons, concrete finishers, segmental pavers, and terrazzo workers; brickmasons, blockmasons, and stonemasons; and roofers. The construction industry employs nearly all of the workers in some construction craft occupations—such as plasterers and stucco masons; roofers; structural and reinforcing iron and metal workers; and drywall installers, ceiling tile installers, and tapers. In other construction craft occupations—for example, electricians; painters and paperhangers; plumbers, pipefitters, and steamfitters; and carpet floor, and tile installers and finishers—large numbers also work in other industries (table 3). Other industries employing large numbers of construction workers include transportation equipment manufacturing; transportation, communication, and utilities; real estate; wholesale and retail trade; educational services; and State and local government.

Many persons enter the construction crafts through apprenticeship programs. These programs offer on-the-job training under the close supervision of an experienced craftworker, and

formal classroom instruction. Depending on the trade, apprentices learn a variety of skills, ranging from laying brick to putting together steel beams.

Many persons advance to construction craft occupations from related, less skilled jobs as *helpers* or *laborers*. They acquire skills while they work. They are first hired as laborers or helpers, performing a variety of unskilled tasks and providing much of the routine physical labor needed in construction. They erect and dismantle scaffolding, clean up debris, help unload and carry materials and machinery, and operate simple equipment. They work with experienced craftworkers, learning the basic skills of a particular craft. After acquiring experience and skill in various phases of the craft, they may become skilled craftworkers.

To develop their skills further after training, construction craftworkers may work on many different projects, such as housing developments, office and industrial buildings, or highways, bridges, and dams. Flexibility and a willingness to adopt new techniques, as well as the ability to get along with people, are essential for advancement. Those who are skilled in all facets of the trade and who show good leadership qualities may be promoted to *supervisor*. As supervisors, they oversee craftworkers and helpers and ensure that work is done well. They plan the job and solve problems as they arise. Those with good organizational skills and exceptional supervisory ability may advance to *superintendent*. Superintendents are responsible for getting a project completed on schedule by working with the architect's plans, making sure materials are delivered on time, assigning work, overseeing craft supervisors, and ensuring that every phase of the project is completed properly and expeditiously. They also resolve problems and see to it that work proceeds without interruptions. Superintendents may advance to large projects as general managers and top executives. Some go into business for themselves as contractors.

Table 3. Percent of wage and salary workers in construction craft occupations employed in the construction industry, 2002

Occupation	Percent
Plasterers and stucco masons	87.6
Cement masons, concrete finishers, segmental workers, and terrazzo workers	86.5
Structural and reinforcing iron and metal workers	84.2
Insulation workers	82.5
Drywall installers, ceiling tile installers, and tapers	78.8
Pipelayers, plumbers, pipefitters, and steamfitters	69.2
Brickmasons, blockmasons, and stonemasons	67.1
Electricians	65.2
Roofers	64.9
Glaziers	64.5
Carpenters	56.7
Carpet, floor, and tile installers and finishers	42.5
Painters and paperhangers	41.5

Training and Advancement

Persons may enter most jobs in the construction industry without any formal classroom training after high school. Most skilled craft jobs require proficiency in reading and mathematics. Safety training is required for most jobs. Some laborers can learn their job in a few days, but the skills required for many jobs are substantial; they can be learned through apprenticeships or other

employer-provided training programs. Skilled workers such as carpenters, bricklayers, plumbers, and other construction trade specialists need either several years of informal on-the-job experience or apprenticeship training. Workers pick up skills by working with more experienced workers and through instruction provided by their employers. As they demonstrate their ability to perform tasks they are assigned, they move to progressively more challenging work. As they broaden their skills, they are allowed to work more independently, and responsibilities and earnings increase. They may qualify for jobs in related, more highly skilled, occupations. For example, after several years of experience, painters' helpers may become skilled painters.

Apprenticeships administered by local employers, trade associations, and trade unions provide the most thorough training. Apprenticeships usually last between 3 and 5 years and consist of on-the-job training and 144 hours or more of related classroom instruction each year. However, a number of apprenticeship programs are now using competency standards in place of time requirements, making it possible to complete a program in a shorter time. Those who enroll in apprenticeship programs usually are least 18 years old and in good physical condition.

Persons can enter the construction industry with a variety of educational backgrounds. Those entering construction right out of high school start as laborers, helpers, or apprentices. Those who enter construction from technical or vocational schools also may go through apprenticeship training; however, they progress at a somewhat faster pace because they already have had courses such as mathematics, mechanical drawing, and woodworking. Skilled craftworkers may advance to supervisor or superintendent positions, or may transfer to jobs such as construction building inspector, purchasing agent, sales representative for building supply companies, contractor, or technical or vocational school instructor. In order to advance to a management position, additional education and training is recommended.

Managerial personnel usually have a college degree or considerable experience in their specialty. Individuals who enter construction with college degrees usually start as management trainees or construction managers' assistants. Those who receive degrees in construction science often start as field engineers, schedulers, or cost estimators. College graduates may advance to positions such as assistant manager, construction manager, general superintendent, cost estimator, construction building inspector, general manager or top executive, contractor, or consultant. Although a college education is not always required, administrative jobs usually are filled by people with degrees in business administration, finance, accounting, or similar fields.

Opportunities for workers to form their own firms are better in construction than in many other industries. Construction workers need only a moderate financial investment to become contractors and they can run their businesses from their homes, hiring additional construction workers only as needed for specific projects. The contract construction field, however, is very competitive, and the rate of business failure is high. Taking courses in business helps to improve the likelihood of success.

Earnings

Earnings in construction are significantly higher than the average for all industries (table 4). In 2002, production or

nonsupervisory workers in construction averaged \$18.51 an hour, or about \$712 a week. Average earnings of workers in the specialty trade contractors segment were somewhat higher than those of workers employed by building or heavy and civil engineering construction contractors.

Earnings of workers in the construction industry vary by the education and experience of the worker, type of work, the size and nature of the construction project, geographic location, and economic conditions. Earnings of construction trade workers are often affected by poor weather. Heavy rain may slow or even stop work on a construction project. Traditionally, winter is the slack period for construction activity, especially in colder parts of the country, but there is a trend toward more year-round construction even in colder areas. Because construction trades are dependent on one another—especially on large projects—work delays in one trade delay or stop work in another. Earnings in selected occupations in construction in 2002 appear in table 5.

Table 4. Average earnings of nonsupervisory workers in construction, 2002

Industry segment	Weekly	Hourly
Total, private industry	\$506	\$14.95
Construction industry	712	18.51
Construction of buildings	676	17.74
Industrial building	779	18.77
Nonresidential building	755	19.16
Commercial building	746	19.31
Residential building	597	16.24
Heavy and civil engineering construction	754	18.00
Highway, street, and bridge construction	813	19.16
Other heavy construction	780	18.13
Specialty trade contractors	715	18.91
Electrical contractors	816	20.75
Plumbing and HVAC contractors	781	19.93
Flooring contractors	688	18.46
Building finishing contractors	645	17.72
Masonry contractors	643	18.65
Painting and wall covering contractors	596	16.49
Roofing contractors	591	16.61

About 19 percent of construction trades workers were union members or covered by union contracts, compared with about 15 percent of workers throughout private industry. Many different unions represent the various construction trades and form joint apprenticeship committees with local employers to supervise apprenticeship programs.

Outlook

Job opportunities are expected to be excellent in the construction industry, especially for workers with training and experience in construction occupations, due largely to the numerous openings arising each year as experienced construction workers leave their jobs. Further, many potential workers may prefer work that is less strenuous and has more comfortable working conditions. The continued shortage of adequate training programs also will contribute to the favorable job market.

Table 5. Median hourly earnings of the largest occupations in construction, 2002

Occupation	Construction of buildings	Heavy and civil engineering construction	Specialty trade contractors	All industries
General and operations managers	\$35.36	\$38.16	\$33.98	\$32.80
Construction managers	30.49	30.83	29.94	30.53
First-line supervisors/managers of construction trades and extraction workers	23.38	22.88	22.80	22.92
Plumbers, pipefitters, and steamfitters	19.44	18.18	19.43	19.31
Carpenters	16.78	18.38	16.67	16.44
Insulation workers	16.50	13.60	13.57	13.91
Truck drivers, heavy and tractor-trailer	14.99	14.40	14.45	15.97
Painters, construction and maintenance	14.11	13.85	14.00	13.98
Construction laborers	12.15	12.66	11.97	11.90
Helpers—electricians	11.09	11.64	11.03	11.10

The number of wage and salary jobs in the construction industry is expected to grow about 15 percent through the year 2012, compared with the 16 percent projected for all industries combined. Employment in this industry depends primarily on the level of construction and remodeling activity. New construction is usually cut back during periods when the economy is not expanding, and the number of job openings in construction fluctuates greatly from year to year. Employment growth in the various segments of the construction industry varies somewhat, depending on the demand for various types of construction. At times, there may be a high demand for new office space or housing, for example, but lower demand for road construction or remodeling work.

Although household growth may slow slightly over the coming decade, the demand for residential construction is expected to continue to grow. The demand for larger homes with more amenities, as well as for second homes, will continue to rise, especially as the baby boomers reach their peak earning years and can afford to spend more on housing. Some older, more affluent baby boomers will want townhouses and condominiums in conveniently located suburban and urban settings. At the same time, as the number of immigrants increases and as the “echo boomers” (the children of the baby boomers) start to replace the smaller “baby bust” generation in the young adult age groups, the demand for manufactured housing, starter homes, and rental apartments also is expected to increase.

Employment is expected to grow in nonresidential construction because replacement of many industrial plants has been delayed for years, and a large number of structures will have to be replaced or remodeled. Construction of nursing homes, convalescent homes, and other extended care institutions also will increase due to the aging of the population, the growing use of high-technology medical treatment facilities, and the need for more drug treatment clinics. Construction of schools will increase to accommodate the children of the baby boom generation.

Employment in heavy and civil engineering construction is projected to increase due to growth in highway, bridge, and street construction, as well as in maintenance and repairs to prevent further deterioration of the Nation’s highways and bridges.

Employment in specialty trades contracting, the largest segment of the industry, should grow as demand for contractors in building and heavy construction rises and as more workers are

needed to repair and remodel existing homes. Home improvement and repair construction is expected to continue to grow faster than new home construction. Remodeling should be the fastest growing sector of the housing industry because of a growing stock of old residential and nonresidential buildings. Many “starter” units will be remodeled to appeal to more affluent, space- and amenity-hungry buyers. Also, some of the demand from the trade-up market may result in remodeling and additions rather than the construction of new, larger homes. Remodeling tends to be more labor-intensive than new construction.

Employment growth will differ among various occupations in the construction industry. Employment of construction managers is expected to grow as a result of advances in building materials and construction methods, as well as a proliferation of laws dealing with building construction, worker safety, and environmental issues. Construction managers who have a bachelor’s degree in construction science with an emphasis on construction management, and who acquire work experience in construction management services firms, should enjoy an especially favorable job outlook. Employment growth of administrative support occupations will be limited by increased office automation.

Although employment in construction trades as a whole is expected to grow about as fast as the industry average, the rate of growth will vary by trade. Employment of cement masons, concrete finishers, segmental pavers, and terrazzo workers; electricians; sheet metal workers; and heating, air-conditioning, and refrigeration mechanics and installers should grow faster than the industry average because technological changes are not expected to offset increases in employment demand as construction activity grows. On the other hand, employment of construction equipment operators; construction laborers; and boilermakers is expected to grow more slowly than that of the construction industry as a whole because greater use of new equipment will make workers more efficient.

Sources of Additional Information

Information about apprenticeships and training can be obtained from local construction firms and employer associations, the local office of the State employment service or apprenticeship agency, or the Bureau of Apprenticeship and Training, U.S. Department of Labor.

For additional information on jobs in the construction industry, contact:

- Associated Builders and Contractors, Workforce Development Department, 9th Floor, 4250 North Fairfax Dr., Arlington, VA 22203
- Associated General Contractors of America, Inc., 333 John Carlyle St., Alexandria, VA 22314.
Internet: <http://www.agc.org>
- National Association of Home Builders, 1201 15th St. NW., Washington, DC 20005-2800.
Internet: <http://www.nahb.org>
- Home Builders Institute, 1201 15th St., NW, Washington, DC 20005-2800. Internet: <http://www.hbi.org>

There are more than 500 occupations registered by the U.S. Department of Labor's National Apprenticeship system. For more information on the Labor Department's registered apprenticeship system and links to State apprenticeship programs, check their website: <http://www.doleta.gov>

Additional information on occupations in construction may be found in the 2004-05 edition of the *Occupational Outlook Handbook*:

- Brickmasons, blockmasons, and stonemasons
- Carpenters
- Carpet, floor, and tile installers and finishers
- Cement masons, concrete finishers, segmental pavers, and terrazzo workers
- Construction and building inspectors
- Construction equipment operators
- Construction laborers
- Construction managers
- Drywall installers, ceiling tile installers, and tapers
- Electricians
- Elevator installers and repairers
- Glaziers
- Hazardous materials removal workers
- Heating, air-conditioning, and refrigeration mechanics and installers
- Insulation workers
- Material-moving occupations
- Painters and paperhangers
- Pipelayers, plumbers, pipefitters, and steamfitters
- Plasterers and stucco masons
- Roofers
- Sheet metal workers
- Structural and reinforcing iron and metal workers