Construction and Building Inspectors

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Significant Points

- About 41 percent of inspectors worked for local governments, primarily municipal or county building departments.
- Many home inspectors are self-employed.
- Opportunities should be best for experienced construction supervisors and craftworkers who have some college education, engineering or architectural training, or certification as construction inspectors or plan examiners.

Nature of the Work

Construction and building inspectors examine buildings, highways and streets, sewer and water systems, dams, bridges, and other structures. They ensure that their construction, alteration, or repair complies with building codes and ordinances, zoning regulations, and contract specifications. Building codes and standards are the primary means by which building construction is regulated in the United States for the health and safety of the general public. National model building and construction codes are published by the International Code Council (ICC), although many localities have additional ordinances and codes that modify or add to the National model codes. To monitor compliance with regulations, inspectors make an initial inspection during the first phase of construction and follow up with further inspections throughout the construction project. However, no inspection is ever exactly the same. In areas where certain types of severe weather or natural disasters—such as earthquakes or hurricanes—are more common, inspectors monitor compliance with additional safety regulations designed to protect structures and occupants during those events.

There are many types of inspectors. *Building inspectors* inspect the structural quality and general safety of buildings. Some specialize in for example, structural steel or reinforced-concrete structures. Before construction begins, *plan examiners* determine whether the plans for the building or other structure comply with building codes and whether they are suited to the engineering and environmental demands of the building site. To inspect the condition of the soil and the positioning and depth of the footings, inspectors visit the worksite before the foundation is poured. Later, they return to the site to inspect the foundation after it has been completed. The size and type of structure, as well as the rate at which it proceeds toward completion, determine the number of other site visits they must make. Upon completion of the project, they make a final, comprehensive inspection.

In addition to structural characteristics, a primary concern of building inspectors is fire safety. They inspect structures' fire sprinklers, alarms, smoke control systems, and fire exits. Inspectors assess the type of construction, contents of the building, adequacy of fire protection equipment, and risks posed by adjoining buildings.

Electrical inspectors examine the installation of electrical systems and equipment to ensure that they function properly and comply with electrical codes and standards. They visit worksites to inspect new and existing sound and security systems, wiring, lighting, motors, and generating equipment. They also inspect the installation of the electrical wiring for heating and air-conditioning systems, appliances, and other components.

Elevator inspectors examine lifting and conveying devices such as elevators, escalators, moving sidewalks, lifts and hoists, inclined railways, ski lifts, and amusement rides.

For information on *Fire inspectors*, see the *Handbook* statement on *Fire fighting occupations*.

Home inspectors conduct inspections of newly built or previously owned homes, condominiums, town homes, manufactured homes, apartments, and at times commercial buildings. Home inspection has become a standard practice in the home-purchasing process. Home inspectors are most often hired by prospective home buyers to inspect and report on the condition of a home's systems, components, and structure. Although they look for and report violations of building codes, they do not have the power to enforce compliance with the codes. Typically, they are hired either immediately prior to a purchase offer on a home or as a contingency to a sales contract. In addition to examining structural quality, home inspectors inspect all home systems and features, including roofing as well as the exterior, attached garage or carport, foundation, interior, plumbing, and electrical, heating, and cooling systems. Some home inspections are done for homeowners who want an evaluation of their

Construction and building inspectors must check building measurements against construction codes.

home's condition, for example, prior to putting the home on the market or as a way to diagnose problems.

Mechanical inspectors inspect the installation of the mechanical components of commercial kitchen appliances, heating and air-conditioning equipment, gasoline and butane tanks, gas and oil piping, and gas-fired and oil-fired appliances. Some specialize in boilers or ventilating equipment as well.

Plumbing inspectors examine plumbing systems, including private disposal systems, water supply and distribution systems, plumbing fixtures and traps, and drain, waste, and vent lines.

Public works inspectors ensure that Federal, State, and local government construction of water and sewer systems, highways, streets, bridges, and dams conforms to detailed contract specifications. They inspect excavation and fill operations, the placement of forms for concrete, concrete mixing and pouring, asphalt paving, and grading operations. They record the work and materials used so that contract payments can be calculated. Public works inspectors may specialize in highways, structural steel, reinforced concrete, or ditches. Others specialize in dredging operations required for bridges and dams or for harbors.

The owner of a building or structure under construction employs *specification inspectors* to ensure that work is done according to design specifications. Specification inspectors represent the owner's interests, not those of the general public. Insurance companies and financial institutions also may use their services.

Details concerning construction projects, building and occupancy permits, and other documentation generally are stored on computers so that they can easily be retrieved and updated. For example, inspectors may use laptop computers to record their findings while inspecting a site. Most inspectors use computers to help them monitor the status of construction inspection activities and keep track of permits issued, and some can access all construction and building codes from their computers on the jobsite, decreasing the need for paper binders. However, many inspectors continue to use a paper checklist to detail their findings.

Although inspections are primarily visual, inspectors may use tape measures, survey instruments, metering devices, and equipment such as concrete strength measurers. They keep a log of their work, take photographs, and file reports. Many inspectors also use laptops or other portable electronic devices onsite to facilitate the accuracy of their written reports, as well as e-mail and fax machines to send out the results. If necessary, they act on their findings. For example, government and construction inspectors notify the construction contractor, superintendent, or supervisor when they discover a violation of a code or ordinance or something that does not comply with the contract specifications or approved plans. If the problem is not corrected within a reasonable or otherwise specified period, government inspectors have authority to issue a "stop-work" order.

Many inspectors also investigate construction or alterations being done without proper permits. Inspectors who are employees of municipalities enforce laws pertaining to the proper design, construction, and use of buildings. They direct violators of permit laws to obtain permits and to submit to inspection.

Work environment. Construction and building inspectors usually work alone. However, several may be assigned to large, complex projects, particularly because inspectors tend to specialize in different areas of construction. Although they spend considerable time inspecting construction worksites, inspectors also spend time in a field office reviewing blueprints, answering letters or telephone calls, writing reports, and scheduling inspections.

Many construction sites are dirty and may be cluttered with tools, materials, or debris. Inspectors may have to climb ladders or many flights of stairs or crawl around in tight spaces. Although their work generally is not considered hazardous, inspectors, like other construction workers, wear hardhats and adhere to other safety requirements while at a construction site.

Inspectors normally work regular hours. However, they may work additional hours during periods when a lot of construction is taking place. Also, if an accident occurs at a construction site, inspectors must respond immediately and may work additional hours to complete their report. Non-government inspectors—especially those who are self-employed—may have a varied work schedule, at times working evenings and weekends.

Training, Other Qualifications, and Advancement

Although requirements vary considerably, construction and building inspectors should have a thorough knowledge of construction materials and practices. In some States, construction and building inspectors are required to obtain a special license or certification, so it is important to check with the appropriate State agency.

Education and training. Most employers require at least a high school diploma or the equivalent, even for workers with considerable experience. More often, employers look for persons who have studied engineering or architecture or who have a degree from a community or junior college with courses in building inspection, home inspection, construction technology, drafting, and mathematics. Many community colleges offer certificate or associate degree programs in building inspection technology. Courses in blueprint reading, algebra, geometry, and English also are useful. A growing number of construction and building inspectors are entering the occupation with a college degree, which often can substitute for previous experience. The distribution of all construction and building inspectors by their highest level of educational attainment in 2006 was:

	Percent
High school graduate or less	31
Some college, no degree	28
Associate's degree	12
Bachelor's degree	26
Graduate degree	2

The level of training requirements varies by type of inspector and State. In general, construction and building inspectors receive much of their training on the job, although they must learn building codes and standards on their own. Working with an experienced inspector, they learn about inspection techniques; codes, ordinances, and regulations; contract specifications; and recordkeeping and reporting duties. Supervised onsite inspections also may be a part of the training. Other requirements can

Projections data from the National Employment Matrix

Occupational Title	SOC Code	Employment, 2006	Projected employment, 2016	Change, 2006-16	
				Number	Percent
Construction and building inspectors	47-4011	110,000	130,000	20,000	18

NOTE: Data in this table are rounded. See the discussion of the employment projections table in the *Handbook* introductory chapter on *Occupational Information Included in the Handbook*.

include various courses and assigned reading. Some courses and instructional material are available online as well as through formal venues.

Licensure and certification. Many States and local jurisdictions require some type of license or certification for employment as a construction and building inspector. Requirements may vary by State or local municipality. Typical requirements for licensure or certification include previous experience, a minimum educational attainment level, such as a high school diploma, and possibly the passing of a State-approved examination. Some States have individual licensing programs for inspectors, while others may require certification by such associations as the International Code Council, International Association of Plumbing and Mechanical Officials, and National Fire Protection Association.

Similarly, some States require home inspectors to obtain a State issued license or certification. Currently, 33 States have regulations affecting home inspectors. Requirements for a license or certification vary by State, but may include obtaining a minimum level of education, having a set amount of experience with inspections, purchasing liability insurance of a certain amount, and the passing of an examination. Renewal is usually every few years and annual continuing education is almost always required.

Other qualifications. Because inspectors must possess the right mix of technical knowledge, experience, and education, employers prefer applicants who have both formal training and experience. For example, many inspectors previously worked as carpenters, electricians, or plumbers. Home inspectors combine knowledge of multiple specialties, so many of them come into the occupation having a combination of certifications and previous experience in various construction trades.

Construction and building inspectors must be in good physical condition in order to walk and climb about construction and building sites. They also must have a driver's license so that they can get to scheduled appointments.

Advancement. Being a member of a nationally recognized inspection association enhances employment opportunities and may be required by some employers. Even if it is not required, certification can enhance an inspector's opportunities for employment and advancement to more responsible positions. To become certified, inspectors with substantial experience and education must pass examinations on topics including code requirements, construction techniques and materials, standards of practice, and codes of ethics. The International Code Council offers multiple voluntary certifications, as do many other professional associations. Many categories of certification are awarded for inspectors and plan examiners in a variety of specialties, including the Certified Building Official (CBO) certification, for code compliance, and the Residential Building Inspector (RBI) certification, for home inspectors. In a few cases, there are no education or experience prerequisites, and certification consists of passing an examination in a designated field either at a regional location or online. In addition, Federal, State, and many local governments may require inspectors to pass a civil service exam.

Because they advise builders and the general public on building codes, construction practices, and technical developments, construction and building inspectors must keep abreast of changes in these areas. Continuing education is required by many States and certifying organizations. Numerous employers provide formal training to broaden inspectors' knowledge of construction materials, practices, and techniques. Inspectors who work for small agencies or firms that do not conduct their own training programs can expand their knowledge and upgrade their skills by attending State-sponsored training programs, by taking college or correspondence courses, or by attending seminars and conferences sponsored by various related organizations, including professional organizations. An engineering or architectural degree often is required for advancement to supervisory positions.

Employment

Construction and building inspectors held about 110,000 jobs in 2006. Local governments—primarily municipal or county building departments—employed 41 percent. Employment of local government inspectors is concentrated in cities and in suburban areas undergoing rapid growth. Local governments in larger jurisdictions may employ large inspection staffs, including many plan examiners or inspectors who specialize in structural steel, reinforced concrete, and boiler, electrical, and elevator inspection. In smaller jurisdictions, only one or a few inspectors who specialize in multiple areas may be on staff.

Another 26 percent of construction and building inspectors worked for architectural and engineering services firms, conducting inspections for a fee or on a contract basis. Many of these were home inspectors working on behalf of potential real estate purchasers. Most of the remaining inspectors were employed in other service-providing industries or by State governments. About 1 in 10 construction and building inspectors was self-employed. Since many home inspectors are self-employed, it is likely that most self-employed construction and building inspectors were home inspectors.

Job Outlook

Job opportunities in construction and building inspection should be best for highly experienced supervisors and construction craft workers who have some college education, engineering or architectural training, or certification as inspectors or plan examiners. Inspectors should experience faster than average employment growth.

Employment change. Employment of construction and building inspectors is expected to grow by 18 percent over the 2006-2016 decade, which is faster than the average for all occupations. Concern for public safety and a desire for improvement in the quality of construction should continue to stimulate demand for construction and building inspectors in government as well as in firms specializing in architectural, engineering, and related services. As the result of new technology such as building information modeling (BIM), the availability of a richer set of buildings data in a more timely and transparent manner will make it easier to conduct plan reviews. This will lead to more time and resources spent on inspections. In addition, the growing focus on natural and manmade disasters is increasing the level of interest in and need for qualified inspectors. Issues such as green and sustainable design are new areas of focus that will also drive the demand for construction and building inspectors.

The routine practice of obtaining home inspections is a relatively recent development, causing employment of home inspectors to increase rapidly. Although employment of home inspectors is expected to continue to increase, the attention given to this specialty, combined with the desire of some construction workers to move into less strenuous and potentially higher paying work, may result in reduced growth of home inspectors in some areas. In addition, increasing State regulations are starting to limit entry into the specialty only to those who have a given level of previous experience and are certified.

Job prospects. Inspectors are involved in all phases of construction, including maintenance and repair work, and are therefore less likely to lose their jobs when new construction slows during recessions. Those who are self-employed, such as home inspectors, are more likely to be affected by economic downturns or fluctuations in the real estate market. However, those with a thorough knowledge of construction practices and skills in areas such as reading and evaluating blueprints and plans will be better off. Inspectors with previous related experience in construction, a postsecondary degree, and engineering or architectural training will have the best prospects. In addition to openings stemming from the expected employment growth, some job openings will arise from the need to replace inspectors who transfer to other occupations or leave the labor force.

Earnings

Median annual earnings of wage and salary construction and building inspectors were $46,570 in May 2006. The middle 50 percent earned between $36,610 and $58,780. The lowest 10 percent earned less than $29,210, and the highest 10 percent earned more than $72,590. Median annual earnings in the industries employing the largest numbers of construction and building inspectors were:

Architectural, engineering, and related services	$46,850
Local government	46,040
State government	43,680

Building inspectors, including plan examiners, generally earn the highest salaries. Salaries in large metropolitan areas are substantially higher than those in small jurisdictions.

Benefits vary by place of employment. Those working for the government and private companies typically receive standard benefits, including health and medical insurance, a retirement plan, and paid annual leave. Those who are self-employed may have to provide their own benefits.

More than a quarter of all construction and building inspectors belonged to a union in 2006.

Related Occupations

Because construction and building inspectors are familiar with construction principles, the most closely related occupations are construction occupations, especially carpenters, plumbers, and electricians. Construction and building inspectors also combine knowledge of construction principles and law with an ability to coordinate data, diagnose problems, and communicate with people. Workers in other occupations using a similar combination of skills include architects, except landscape and naval; appraisers and assessors of real estate; construction managers; civil engineers; cost estimators; engineering technicians; and surveyors, cartographers, photogrammetrists, and surveying technicians.

Sources of Additional Information

Information about building codes, certification, and a career as a construction or building inspector is available from:

➤ International Code Council, 500 New Jersey Avenue, NW., 6th Floor, Washington, DC 20001-2070.
Internet: **http://www.iccsafe.org**

➤ National Fire Protection Association, 1 Batterymarch Park, Quincy, Massachusetts, 02169-7471.
Internet: **http://www.nfpa.org**

For more information about construction inspectors, contact:

➤ Association of Construction Inspectors, 1224 North Nokomis NE., Alexandria, MN 56308.

For more information about electrical inspectors, contact:

➤ International Association of Electrical Inspectors, 901 Waterfall Way, Suite 602, Richardson, TX 75080-7702. Internet: **http://www.iaei.org**

For more information about elevator inspectors, contact:

➤ National Association of Elevator Safety Authorities International, 6957 Littlerock Rd SW., Ste A, Tumwater, WA 98512. Internet: **http://www.naesai.org**

For more information about education and training for mechanical and plumbing inspectors, contact:

➤ International Association for Plumbing and Mechanical Officials, 5001 E. Philadelphia St., Ontario, CA 91761.
Internet: **http://www.iapmo.org/iapmo**

For information about becoming a home inspector, contact any of the following organizations:

➤ American Society of Home Inspectors, 932 Lee St., Suite 101, Des Plaines, IL 60016. Internet: **http://www.ashi.org**

➤ National Association of Home Inspectors, 4248 Park Glen Rd., Minneapolis, MN 55416. Internet: **http://www.nahi.org**

For information about a career as a State or local government construction or building inspector, contact your State or local employment service.