

Unit 2: Overview of the Construction Industry and the Skilled Trades

Learning Objectives—At the end of this unit, you will be able to:

- Describe each major part of the construction industry
- Describe construction career pathways, including apprenticeships, journey level workers, crafts, union and management leadership roles, and continuing education opportunities
- Recognize the roles of occupations indirectly related to the construction industry
- Discuss the roles of government agencies of interest to the Building Trades unions

Unions Involved in the Construction Industry:

International Association of Heat and Frost Insulators and Allied Workers



Members of this union apply insulation to pipes, tanks, boilers, ducts, refrigeration equipment and other surfaces requiring thermal control of temperatures. The responsibilities of these mechanics, improvers and apprentices also include the manufacture, fabrication, assembling, molding, erection, spraying, pouring, mixing, hanging, preparation, application, adjusting, alteration, repairing, dismantling, reconditioning, corrosive control, testing and maintenance of heat or frost insulation. Workers also handle insulation materials made of fiberglass, rubber, calcium silicate and urethane. Insulators also do removal of asbestos containing material.

www.insulators.org

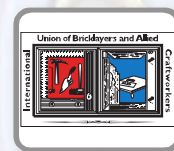
International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmiths, Forgers and Helpers



The Boilermakers are a diverse union of workers in construction, maintenance, manufacturing, professional emergency medical services, repair and related industries. Boilermakers build and repair ships, fishing boats, ferries, barges, cranes, boilers, tanks, pressure vessels, plate and structural fabrications among other things. These skilled workers often use acetylene torches, power grinders and other equipment for welding, burning, cutting, rigging, layout and bolting. It's hard work, and heavy lifting and dedication to the craft is required.

www.boilermakers.org

International Union of Bricklayers and Allied Craftworkers



BAC represents all skilled trowel trades workers, including bricklayers, tile setters, plasterers, cement masons, marble masons, restoration workers, stonemasons, helpers or finishers, terrazzo and mosaic workers. Their work includes buildings, homes, stadiums, monuments and landmarks throughout the United States and Canada.

www.bacweb.org

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International Brotherhood of Electrical Workers

The IBEW represents workers in the electrical industry including construction, gas and electric utilities, telecommunications, railroads and government agencies. Construction and residential electricians work in all phases of the electrical construction and service industry. Their worksites range from single-family residences to state-of-the-art industrial plants. Inside wire workers may install and maintain conduits, switches and converters, as well as wire lighting, to complex systems incorporating computerization and high technology. Electricians work in the electric sign industry and increasingly perform more work in the installation of fiber optics and voice/data/video equipment.

www.ibew.org



International Union of Elevator Constructors

The IUEC represent the most qualified and trained elevator constructors in the world. Members assemble, install and replace elevators, escalators, dumbwaiters, moving walkways and similar equipment in new and old buildings. Elevator constructors also maintain and repair this equipment once it is in service, as well as modernize older equipment.

www.iuec.org



International Association of Bridge, Structural, Ornamental and Reinforcing Iron Workers

Members of the Iron Workers assemble and erect steel framework and other metal parts in buildings and on bridges, dams, skyscrapers, factories and other steel structures. They raise, place and join steel girders and columns to form structural frameworks, including the welding for metal decking. In addition iron workers are responsible for the steel reinforcing of concrete construction. Iron workers fabricate and install ornamental, architectural and miscellaneous metal building components. They install as well curtain wall under the umbrella of the Ornamental and Architectural Department.

www.ironworkers.org



Operative Plasterers' and Cement Masons' International Association of the United States and Canada

OPCMIA members represent skilled plasterers, cement masons, shophands and associated members. Plasterers finish interior walls and ceilings of buildings, apply plaster on masonry, metal, wirelath or gypsum. Bridges, canals, dams, reservoirs, roads and many other engineering feats would be impossible without the skills of OPCMIA cement masons. Cement masons are responsible for all concrete construction, including pouring and finishing of slabs, steps, wall tops, curbs and gutters, sidewalks, paving and other concrete construction.

www.opcmia.org



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International Union of Painters and Allied Trades

IUPAT members work in one or more of several crafts: painting, wallpaper hanging, glazing (glass work), drywall and taping, floor covering, and sign and display work. Painters and paperhangers work in industrial, commercial and residential settings, from bridges and ships to interior walls of office buildings and homes. Drywall finishers tape, fill in and smooth seams in sheets of drywall. Glaziers prepare and install various kinds of glass, mirrors, metal framing and doors/entrances to buildings. Floor coverers work with resilient floors, as well as carpet and decorative coverings. Exterior sign and display work, like billboards, is another choice. Other types of work are convention display and show decorators.

www.iupat.org



United Union of Roofers, Waterproofers and Allied Workers

Members of the Roofers union install new roofs and remove old roofs using a variety of materials. Roofers install hot built-up and single-ply roofing systems on mostly commercial/ industrial structures. Waterproofers install moisture-resistant products on below-grade structures and other surfaces to prevent water intrusion into buildings. The work is performed in all weather conditions. Members also operate a variety of mechanical and electrical equipment associated with the installation of roofing and waterproofing products.

www.unionroofers.com



International Association of Sheet Metal, Air, Rail and Transportation Workers

SMART members work in several industries. Sheet metal workers fabricate, install and service heating, venting, and air conditioning (HVAC) systems; blowpipe and industrial systems; metal roofing; coping and flashing; and stainless steel work for restaurants, kitchens and hospitals. They prepare shop and field drawings manually and with computer programs. Members also provide HVAC and refrigeration service.

www.smart-union.org



United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry of the United States and Canada

UA is a multi-craft union that represents plumbers and pipe, sprinkler, and refrigerator fitters, as well as service technicians. All of these jobs require the installation, remodeling or maintenance of systems that carry water, steam, air and other liquids or gases necessary for sanitation, industrial production, heating and air conditioning, and many other uses. Workers measure, cut, and bend pipe, as well as weld, braze, caulk, solder, glue or thread joints at residential and commercial job sites.

www.ua.org



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United Brotherhood of Carpenters and Joiners of America

Members of the UBC are commercial and residential carpenters, floor layers, millwrights, pile drivers, interior systems carpenters, lathers, cabinetmakers and trade show carpenters. They build forms for concrete and frame buildings, walls, footings, columns and stairs. Carpenters also install doors, windows, storefronts and hand rails, and build cabinets, counter tops and finished stair handrails. Carpenters must read blueprints, measure accurately and calculate dimensions.

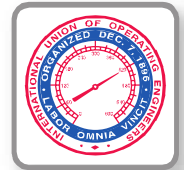


Carpenter crafts include: Carpenters and Joiners, Millwrights, Pile Drivers, Residential Carpenters, Interior Systems Carpenters, Lathers and Drywallers, Cabinet Makers and Millworkers and Floor Layers.

www.carpenters.org

International Union of Operating Engineers

IUOE members are operating and stationary engineers, as well as significant numbers of public employees engaged in a wide variety of occupations. Stationary engineers work in operations and maintenance in building and industrial complexes, and in the service industries. Operating engineers operate heavy construction equipment such as cranes, bulldozers, pavers, trench excavators and many other kinds of equipment used in constructing buildings, dams, airports and highways. Operating engineers also work in the sand and gravel, cement and asphalt industries; in the shipyards; on water dredges, oil refineries and oil pipelines; in sewer and water construction; in ports of major cities and many other industries. Most work is done outdoors and depends on the weather.



Operating Engineers' work includes, for example: cranes, bulldozers, pavers and trench excavators.

www.iuoe.org

Laborers' International Union of North America

LIUNA represents members working in construction, environmental remediation, maintenance, food service, health care, clerical and other occupations, as well as in state, local and municipal government jobs and as mail handlers in the U.S. Postal Service. LIUNA members have helped lay down new highways, build spectacular bridges, dig tunnels and subways, build new plants, factories, dams and power plants, and erect new schools, churches, hospitals and houses. In building construction and housing, Laborers' work includes excavation, footing and foundations, carpenter tending, compaction, concrete placement, power and hand tools, general clean-up and mason tending for bricklayers. Environmental laborers do asbestos removal, hazardous waste and radiation clean-up. The work performed by Laborers is very physical and it includes digging, carrying, pulling and bending--usually outside in all kinds of weather for long hours at a time.



Roles of Building Trades Workers:

Laborers' work includes, for example: excavation, footing and foundations, carpenter tending, compaction, concrete placement, power and hand tools, general clean up and mason tending for bricklayers.

International Brotherhood of Teamsters



The Teamsters union has several divisions, including a Building Material and Construction Trades Division. Members in this division are truck drivers who transport and haul material, merchandise, equipment or personnel between various locations—including construction sites, manufacturing plants, freight depots, warehouses, and wholesale and retail facilities. They may also load and unload, make mechanical repairs and keep trucks in good working order.

Building material and construction Teamsters are employed in the following types of work: rigging, demolition work, landscaping, pipeline construction work, warehousing and building supply manufacturing.

www.teamster.org

Construction Careers After Apprenticeship

Being a union member offers a broad range of career opportunities. The degree to which you take advantage of these opportunities for advancement is up to you. You could become a journeyman, a foreman, or a contractor. You may also become an apprentice training instructor or a union officer. Virtually all of the people in these positions started as apprentices. Let's look closer at these roles and how they evolved.

Apprentice

As you may already know, when you start out in a union construction trade you'll begin working and learning as an apprentice. The apprentice's role is to be the learner. You will not be expected to know everything there is to know about the trade all at once, but you will be responsible for showing up to work on time with your tools and a desire to learn. In addition to being trained on the job, another responsibility of apprentices is to attend

classes at night and on weekends. To become a successful craft worker, it is important that you remember to be attentive in class and use all the resources made available to you both in the classroom and on the jobsite.

Trade unions are democratic organizations. This means that even apprentices have rights. Your employer or journeyman may assign you to some jobs that are repetitive and boring, or otherwise uncomfortable. There may be times when jobs need doing that are not completely instructional. That does not mean, however, that there are no limits to what you, as an apprentice, can be assigned. You should not perform tasks that are not part of the union contract covering a job. In addition, you should not do work that is clearly for the personal gain of either your supervisor or employer. If you feel you are being exploited or abused as an apprentice, beyond reasonable limits, take the matter up with your union representative at the earliest opportunity.

Roles of Building Trades Workers:

Journeyman

After you complete your classes and on-the-job training, and following your graduation from apprenticeship, you will be a journey-level worker. Along with increased pay, journeymen take on the responsibility of setting the example for new apprentices.

Journeymen must show up for work on time with the right tools and an upbeat attitude. Since journeymen are seasoned workers, they are expected to share industry knowledge with their co-workers and apprentices. Because their activities are watched carefully, they must take care to display correct techniques for common tasks. Journeymen must also follow the proper safety procedures to ensure the safety of themselves, as well as that of their crew and apprentices. Journey-level workers are on-the-job teachers. In all that they do, they must demonstrate a quality of workmanship that will set a high standard for each passing class of apprentices.

Foremen

Foremen are successful and experienced journey-level workers who have been asked by the contractor to assume supervisory responsibilities. To become a foreman or forewoman, a journey-level worker must display skills such as leadership, organization, and time management. A foreman normally oversees the work of journey-level workers and ensures that a job is progressing as efficiently as possible, while still maintaining the highest quality workmanship. Foremen must ensure that their crews meet safety standards, as well as comply with company policies. Because new materials, equipment,

methods, and procedures are frequently introduced to the construction trade, foremen must be aware of these new technologies and call them to the attention of the crew.

Direct Supervisor, Superintendent, or General Foreman

The position of direct supervisor – sometimes called superintendent or general foreman – is a step above that of a foreman. Direct supervisors usually oversee foremen and their crews. The responsibilities of a direct supervisor vary from local to local, and depend, in part, on company policies.

General Supervisor or Superintendent

The main role of the general supervisor – in some contracts referred to as the superintendent – is to oversee an entire job or project from start to finish. He or she supervises the direct supervisors, the foremen and their crews, and ensures that a project will be completed within the time allotted. The general supervisor must also ensure that the project at hand is a quality one. If there is a problem with the project, it is the general supervisor's responsibility to pinpoint the problem and make the adjustments to mend it. If a job is late or exceeds its budget, the general supervisor will usually be held accountable.

Subcontractor

Subcontractors acquire projects through bidding procedures. The union contractor for whom you'll work is normally a subcontractor to the mechanical contractor or general contractor on a large job. Subcontractors provide the tools and facilities to

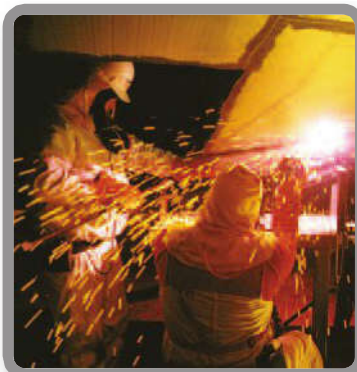


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complete the project within the stipulations of their contract. They are responsible for the management of the project as well as for hiring and maintaining payroll for all personnel they employ. “Subs,” as they are called, must also provide for project management, insurance, billing procedures, and collection of funds related to their portion of a construction project.

General Contractor or Project Manager

General contractors or project managers are responsible for the entire project. They appropriate money for the project and its personnel, and ensure that the job is done on time - by withholding payment to the subcontractors until their jobs are completed. They are also responsible for ensuring the overall quality of all work, controlling the flow of a project from beginning to end, completing the punch list and cleanup for the project at its finish.



Union Officers

Union officers are nominated and elected by union members in each local. Once elected, a union member is responsible for negotiating and enforcing the union’s collective-bargaining agreement, as well as any other contracts the union might have with companies, and must organize new companies and groups. Union officers also hold meetings to discuss union matters, such as insurance and pension, and they must keep the tradesmen in their locals updated on those matters. The union officer’s job is to act in the best interests of the tradesmen whom he or she represents.

Training Instructors

Training instructors have an important job with major professional responsibilities. They must teach the skills necessary for apprentices to become valued and productive members of the trade. Training instructors also introduce the latest technologies and methods to apprentices and journeymen to ensure that they are aware and up-to-date on the latest advances in the construction field. More importantly, training instructors are role models for those they instruct. Their job is to encourage apprentices and journey-level workers to take pride in their work and demand quality in all that they produce.

Occupations Indirectly Related to the Construction Trades

Many construction jobs involve a number of people from unions across the trades, as well as those in other occupations indirectly related to construction. These are people who are working on the same project, but in different ways and from different perspectives. As a construction

worker, you should know what these professionals do, so that you can better see the total picture of each project. If you should choose to pursue any of these other occupations, you should consider that it is possible to receive higher education credit from your work to complete a journeyman certificate. Many apprentices pursue a community college diploma at the same time that they complete their apprenticeship and discover that their apprenticeship work counts toward that diploma. Others go on to complete a 4-year degree in construction management, engineering, architecture, and other occupations requiring a four-year

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degree, and their journeyman's certificate gives them a big head start.

Architects

Many construction projects are the result of the plans or projects of architects and architectural firms, especially larger construction or renovation projects. Architects draft plans and drawings to convey the structures, systems, and treatments that they want built, installed, or applied for a given project. Today, much of this work is done in computer-generated 3-D imaging called BIM, or building information modeling.

Based on the designs they create, architects prepare working drawings as well as plans and specifications for each project. Architects often serve as the representative of a building's owner during the construction phase. Architects and their firms often coordinate the work of engineers and other consultants, and frequently the work of the union workers, especially for major electrical systems, HVAC, or plumbing projects.

Mechanical Engineers

Mechanical engineers design the mechanical systems relating to HVAC, plumbing, and electrical systems, and fire-protection components of projects. They work closely

with architects to coordinate the proper mechanical installation of systems, and also work with the end user to ensure that mechanical system requirements are understood and equipment properly installed.

Electrical Engineers

Electrical engineers design power, lighting, and other electrical systems in building programs. They work closely with the architects to ensure that an electrical installation conforms to the design drawings and specifications. Electrical engineers must also review the design and operation of the system with the end user, as well as with maintenance, security, and other personnel.

Structural Engineers

Structural engineers coordinate with the architect on the structural design of a project. Their job is to ensure that the plans and specifications for the project are in agreement with the original building design, or - in renovations - are consistent with the structure of the original building. As with mechanical and electrical engineers, structural engineers must review the design of the structure with the end user, and with maintenance and other personnel, ensuring that all requirements of the plans and specifications for the building have been met.

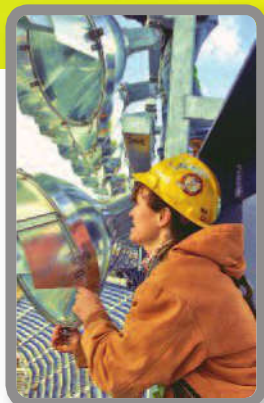
Local Mechanical Inspectors

Local mechanical inspectors conduct detailed reviews to ensure that the designs of architects and engineers meet the same requirements of applicable building codes. To enforce these codes, they must inspect every duct, pipe, and piece of equipment. For many jobs, the inspector completes a final check before the end user takes possession of the project. It is the inspector's job to ensure that there are no omissions or mistakes, and that



Government Agencies

the final project is safe and in compliance with all relevant laws. Local inspectors must be aware of the latest developments in the industry, both legal and technical.



Government Agencies

A number of government agencies are responsible for looking out for your interests in your career and your safety on the job.

The US Department of Labor

The Department of Labor (DOL) is the department of the federal government that oversees and promotes the welfare of US job seekers, wage earners, and retirees. The DOL is responsible for administering US labor laws, including workers' rights to:

- a. a safe work environment,
- b. a minimum hourly wage and overtime pay,
- c. protection of insurance and retirement benefits,
- d. and freedom from sexual, religious, racial, or ethnic discrimination.

The DOL also assists workers by enforcing standards for working conditions and protecting collective bargaining rights.

Office of Apprenticeship and the State Apprenticeship Councils or Agencies

The National Apprenticeship Act of 1937 (known as "the Fitzgerald Act") required that the federal government oversee the nation's apprenticeship system, in cooperation with the states. This role was assigned to the Office of Apprenticeship, which is a separate entity within the US Department of Labor. The Office of Apprenticeship works in cooperation

with state apprenticeship agencies to establish labor standards that protect the welfare of apprentices. Any industry or trade that chooses to operate an apprenticeship program must register with the Office of Apprenticeship or a state apprenticeship agency. To be registered, an apprenticeship program must comply with federal and state standards. This registration is important in order for the apprentice, upon completion of the apprenticeship, to be recognized by agencies and other unions as a legitimate journeyman.

It's important to remember that Registered Apprenticeship programs must comply with state or federal apprenticeship standards. These standards include:

- a. full and fair opportunity to apply for apprenticeship,
- b. a schedule of work processes in which an apprentice is to receive training and experience on the job,
- c. a progressively increasing schedule of wages,
- d. proper supervision of on-the-job training, with adequate facilities to train apprentices,
- e. properly maintained and appropriate records of apprentice performance and progress, and
- f. no discrimination in any phase of apprentice selection, employment, or training.

All apprenticeship programs must include organized instruction designed to provide apprentices with knowledge in technical subjects related to their trade. A minimum of 144 hours per year is normally considered necessary to fill this requirement. Some states regulate apprenticeship programs through State Apprenticeship Agencies. These regulations must follow the national standards.

Government Agencies

US Occupational Safety and Health Administration (OSHA)

The mission of the US Occupational Safety and Health Administration (OSHA), established in 1971, is to “assure so far as possible every working man and woman in the nation safe and healthful working conditions.”

OSHA's aim is to make America's workers the safest in the world. Nearly every working man and woman in the United States comes under OSHA jurisdiction. There are a few exceptions, such as miners, transportation workers, and people who are self-employed.

OSHA's staff consists of inspectors, complaint-discrimination investigators, educators, and standards writers. This staff establishes and enforces protective standards for America's workers. They monitor workplaces for safety, and provide up-to-date safety information to employers to ensure that workplaces remain safe. We will learn more about OSHA when we discuss workplace safety.

