

Construction Trades

Bricklayer / Carpenter / Cement Mason / Electrician / Glazier / Iron Worker / Laborer /
Operating Engineer / Painter/Paperhanger / Pipefitter/Steamfitter / Plaster / Plumber / Roofer /
Sheet Metal Worker / Surveyor/Field Engineer

BRICKLAYER

Bricklayers construct walls, partitions, fireplaces, chimneys, and other structures from brick, block, and other masonry materials such as structural tile, concrete cinder, glass, gypsum and terra cotta. They spread a layer or “bed” of soft mortar that serves as base and binder using a trowel. The brick or block is then positioned and the excess mortar removed. Bricklayers must understand and work from blueprints, and be able to use measuring, leveling, and aligning tools to check their work.

WORKING CONDITIONS

Much of masonry work is out-of-doors and depends on suitable weather. However, modern construction methods along with heaters and temporary enclosures stretch the season and make bricklayers less dependent on good weather. Bricklayers are on their feet all day, and do considerable lifting of heavy materials with much bending – sometimes from scaffolding high above the ground.

APTITUDE AND INTEREST

Masonry construction involves a variety of duties requiring close tolerances and standards. Bricklaying requires careful, accurate work by the craftsman. Masons should enjoy working outside under many different weather conditions. Good eyesight is important to quickly determine lines and levels. Also, manual dexterity is especially important.

EDUCATION AND TRAINING

To become a skilled bricklayer training is essential. It can be acquired informally through “learning-by-working,” through company on-the-job training programs; by attending trade or vocational/technical schools; through management or labor sponsored trainee programs; or a combination of the above. It is generally accepted that the more formalized training programs give more comprehensive skill training. Recommended high school courses include algebra, geometry, general science, mechanical drawing, and English.

CEMENT MASON

Cement masons level, smooth, and shape surfaces of freshly poured concrete on projects ranging from patios and basements to dams, highways, and foundations and walls of building.

Cement masons must have a thorough knowledge of concrete characteristics and related materials. Also, they must know the effects of heat, cold, and wind on the curing of concrete. They must be able to tell by sight and touch what is happening to concrete in order to prevent defects.

WORKING CONDITIONS

Since much of the concrete finishing is done outdoors, working conditions are governed by the weather. Concrete is not usually placed in rain or when temperatures are below freezing. However, the work, either indoors or outdoors, may be in areas that are muddy, dusty, and dirty. The work requires continuous physical effort.

APTITUDE AND INTEREST

Finishers should enjoy doing demanding work. They should have pride of craftsmanship and be able to work without close supervision.

EDUCATION AND TRAINING

To become a skilled cement mason training is essential. It can be acquired informally through "learning-by-working," through company on-the-job training programs; by attending trade or vocational/technical schools; through management or labor sponsored trainee programs; or a combination of the above. It is generally accepted that the more formalized training programs give more comprehensive skill training. Recommended high school courses include English, math, general science, and mechanical drawing.

CARPENTER

Carpenters possess skills and perform work which is basic to most building construction. They erect wood framework in buildings; build forms for concrete; and erect partitions, studs, joints, drywalls, and rafters. Many carpenters work indoors to install all types of floor coverings, ceilings, paneling, trim and interior systems. They must be very skillful as "finish" work is visible and often involves expensive materials. Some carpenters construct docks, work with large timbers, and drive piles to support the foundations of buildings and bridges. Another branch of the trade, called millwrights, installs heavy machinery in industrial plants and turbine generators in power plants. All carpenters use a wide variety of hand and power tools, and they must be able to maintain their tools in good, safe working order.

WORKING CONDITIONS

Carpenters usually work with or around other construction tradesmen. They work indoors, outdoors, and often in tight places. All carpenters have to do considerable climbing, lifting, and carrying to perform their work. They must also be able to do a great deal of reaching, balancing, kneeling, crawling and turning.

APTITUDE AND INTEREST

To be a good carpenter a person should enjoy doing precision work, have pride of craftsmanship, the ability to work without close supervision, and be able to adapt to a wide variety of conditions. Manual dexterity and the ability to solve math problems quickly and accurately is necessary for those who wish to become top craftsmen.

EDUCATION AND TRAINING

To become a skilled carpenter training is essential. It can be acquired informally through "learning-by-working," through company on-the-job training programs; by attending trade or vocational/technical schools; through management or labor sponsored trainee programs; or a combination of the above. It is generally accepted that the more formalized training programs give more comprehensive skill training. Recommended high school courses include algebra, general science, mechanical drawing, English, blueprint reading, and general shop.

ELECTRICIAN

Electricians lay out, install, and test electrical service and electrical wire systems used to provide heat, light, power, air conditioning, and refrigeration in homes, office building, factories, hospitals, and schools. They also install conduit and other materials, and connect electrical machinery, equipment, and controls and transmission systems.

WORKING CONDITIONS

Electricians work both in and outside. They work in all kinds of weather while installing grounding and temporary lights and power. The work is active and strenuous with much of it done in awkward positions and frequently in cramped quarters. They must do considerable standing, reaching, bending, stooping, climbing, carrying, and lifting in order to install electrical conduit and equipment.

APTITUDE AND INTEREST

Applicants interested in becoming electricians must enjoy working with math problems and be able to work with fine measurements. They must be able to work very carefully, without close supervision, have steady nerves, and possess a great deal of patience. Prospective electricians should have above average intelligence, the ability to visualize detailed sketches, finger dexterity, understanding of electrical theory, and be able to plan sequences of operations. Good color vision is also important.

EDUCATION AND TRAINING

To become a skilled electrician training is essential. It can be acquired informally through "learning-by-working," through company on-the-job training programs; by attending trade or vocational/technical schools; through management or labor sponsored trainee programs; or a combination of the above. It is generally accepted that the more formalized training programs give more comprehensive skill training. Recommended high school courses include algebra, geometry, trigonometry, physics, mechanical drawing, English, blueprint reading, and general shop.

GLAZIER

In the construction industry, glaziers are responsible for the sizing, cutting, fitting, and setting of all glass products into openings of all kinds. Basically, glaziers perform two types of glass settings. The first and most common is the installation of glass in windows and doors. The second type of glasswork is the installation of structural glass. This type of glass is used as decoration for ceilings, walls, building fronts, and partitions.

WORKING CONDITIONS

Glaziers sometimes work alone on small jobs, but usually they work in crews on larger jobs where it takes several glaziers to carry, position, and set the huge pieces of glass. There is much lifting, carrying, and climbing.

APTITUDE AND INTEREST

Glaziers should be patient and careful workers. Good manual dexterity and the ability to align things by eye are also important assets.

EDUCATION AND TRAINING

To become a skilled glazier training is essential. It can be acquired informally through "learning-by-working," through company on-the-job training programs; by attending trade or vocational/technical schools; through management or labor sponsored trainee programs; or a combination of the above. It is generally accepted that the more formalized training programs give more comprehensive skill training. Recommended high school courses include general mathematics, English, blueprint reading, and general shop.

IRON WORKER

Structural Iron Workers erect the steel framework for large industrial, commercial, or residential buildings, bridges, and metal tanks. They erect, bolt, rivet, or weld the fabricated structural metal members that support the structure during and after construction. Some iron workers, called rodmen, set steel bars (rebar) or steel mesh in forms to strengthen concrete buildings, bridges, and highways. Other ironworkers called Ornamental Iron Workers, install and assemble grills, canopies, stairways, iron ladders, decorative iron railings, posts, and gates.

WORKING CONDITIONS

Ironworkers work in crews, usually outdoors. Work is highly seasonal and dependent upon suitable weather conditions. They frequently work in high places and cramped quarters. There is considerable climbing, walking, sitting, and balancing on ladders and girders.

APTITUDE AND INTEREST

Ironworkers must receive satisfaction from working with their hands. They must be able to work to rigid standards and fine measurements. They must have an acute awareness of dangers to both themselves and their co-workers. Also, ironworkers can not be afraid of work in high places.

EDUCATION AND TRAINING

To become a skilled ironworker training is essential. It can be acquired informally through "learning-by-working," through company on-the-job training programs; by attending trade or vocational/technical schools; through management or labor sponsored trainee programs; or a combination of the above. It is generally accepted that the more formalized training programs give more comprehensive skill training. Recommended high school courses include general math, algebra, geometry, physics, mechanical drawing, English, and welding.

LABORER

Laborers range from unskilled to semi-skilled workers whose duties include but are not limited to handling the materials of bricklayers, cement masons, and carpenters. Laborers are generally needed on virtually all types of construction projects – highways, bridges, tunnels, large buildings, sanitation, residential, etc. – and they are usually employed on-site from the day the project begins until the day it is completed. A laborer must know how to work with his/her hands and with power tools run by gasoline, electricity, and compressed air. They may work with pavement breakers, reamers, pumps, compressors, lasers, and vibrators. Laborers clear timber and brush, place and vibrate concrete, landscape, install pipe, and do a variety of other jobs.

WORKING CONDITIONS

Laborer work is performed both indoors and outdoors and may be done at a surface environment, at extreme heights, underground, or above or under water. All laborers should expect to do a considerable amount of lifting, carrying, climbing, kneeling, balancing, and even crawling. Thus, a certain amount of strength, dexterity, and alertness is required. Because laborers work in so many varied conditions, they must be very knowledgeable of the hazards and safety requirements of the job.

APTITUDE AND INTEREST

As a supporter of other skilled craftsmen, laborers' work requires that their skills be diversified. It is not enough to have a strong back and will to work. Laborers should master basic reading and math skills necessary to operate today's increasingly complex and highly technical tools, equipment, and instruments.

EDUCATION AND TRAINING

To become a skilled laborer training is essential. It can be acquired informally through "learning-by-working," through company on-the-job training programs; by attending trade or vocational/technical schools; through management or labor sponsored trainee programs; or a combination of the above. It is generally accepted that the more formalized training programs give more comprehensive skill training. Recommended high school courses include English and basic math.

OPERATING ENGINEER/EQUIPMENT OPERATOR

Operating Engineers or Equipment Operators operate and maintain a variety of powerful equipment ranging from bulldozers, backhoes, and earthmovers to very large power shovels and cranes. They also lubricate, maintain, and perform minor repair and adjustment to the machinery.

WORKING CONDITIONS

Because almost all the work is outdoors, working conditions are governed by the weather. The work is physically demanding and operators are subject to jarring, jolting, and continuous noise. Working with the equipment offers danger of injury and requires constant attention.

APTITUDE AND INTEREST

Operators must have good eyesight and better than average coordination in order to operate both hand and foot levers simultaneously. They must have good judgment in order to perform complicated tasks, and must be able to work closely with other crafts without constant supervision. Skilled operators are constantly alert and observant of their surroundings.

EDUCATION AND TRAINING

To become a skilled equipment operator training is essential. It can be acquired informally through "learning-by-working," through company on-the-job training programs; by attending trade or vocational/technical schools; through management or labor sponsored trainee programs; or a combination of the above. It is generally accepted that the more formalized training programs give more comprehensive skill training. Recommended high school courses include English, algebra, geometry, general sciences, and mechanical drawing.

PAINTER AND PAPER HANGER

These are two separate skills, but many craftsmen learn to do both. The methods of preparation and application are different, but both jobs are concerned with covering walls and surfaces. Painting includes the preparation of surfaces and the application of paint, varnish, enamel, lacquer, and similar materials to wood, metal, or masonry buildings. Painters may apply the paint with a brush, a spray gun, or a roller. They also mix pigments, oils, and other ingredients to obtain the required color and consistency. Paperhangers must also prepare surfaces. They have great skills to measure the surface, cut the wallpaper to size, paste, and position and match designs, and work the air bubbles out to leave a smooth surface. A wide variety of specialized tools help throughout the process. They also learn to work with many fabrics, vinyl, or other materials.

WORKING CONDITIONS

Painters work on floors, walls, ceilings and equipment in interiors, and outside on everything from foundations to water towers and flagpoles. Odors from paints, thinners, or shellac are usually present. Painters may work alone or in crews. Painters and paperhangers stand, stoop, turn, crouch, crawl, kneel and frequently climb scaffolds and ladders. Safety in this occupation depends on caution and safe practices while working.

APTITUDE AND INTEREST

Applicants should be able to work with numbers and work well with their hands. To qualify for some jobs the ability to distinguish between colors might be necessary.

EDUCATION AND TRAINING

To become a skilled painter and paper hanger training is essential. It can be acquired informally through "learning-by-working," through company on-the-job training programs; by attending trade or vocational/technical schools; through management or labor sponsored trainee programs; or a combination of the above. It is generally accepted that the more formalized training programs give more comprehensive skill training. Recommended high school courses include English, art, chemistry, general shop, interior decorating, math and woodwork finishing.

PIPEFITTER/STEAMFITTER

Pipefitters work from blueprints to determine the types and placement location of piping, valves, and fixtures to be installed. Pipefitters assemble, install, and maintain pipes to carry liquids, steam, compressed air, gases, and fluids needed for processing, manufacturing, heating, and cooling. They must be able to change and repair pipe systems and do all types of pipe welding. They measure, cut, bend, and thread pipes, joining sections together as necessary using elbows, "T" joints, or other couplings. Pipefitters install and repair high pressure pipe systems, especially in industrial and commercial establishments. After a pipe system is installed, pipefitters check for leaks by forcing liquid steam or air through it under pressure. Tools used include wrenches, reamers, drills, hammers, chisels, saws, gas torches, gas or electric welding equipment, pipe cutters, benders, and threaders.

WORKING CONDITIONS

Pipe work is active and sometimes strenuous. The work is subject to hot and cold temperatures and fumes. Frequently it is necessary to stand for prolonged periods on ladders or on scaffolds. Occasionally pipefitters must operate in cramped or uncomfortable positions. The work may be indoors or outdoors in unfinished sections of new buildings.

APTITUDE AND INTEREST

Applicants should be able to understand detailed written and verbal instructions. They must enjoy working with their hands and working outdoors. Also, they must be able to solve arithmetic problems quickly and accurately.

EDUCATION AND TRAINING

To become a skilled pipefitter training is essential. It can be acquired informally through "learning-by-working," through company on-the-job training programs; by attending trade or vocational/technical schools; through management or labor sponsored trainee programs; or a combination of the above. It is generally accepted that the more formalized training programs give more comprehensive skill training. Recommended high school courses include English, general math, algebra, geometry, trigonometry, general science, physics, and mechanical drawing.

PLASTERER

Plasterers finish interior walls and ceilings with plaster materials, apply durable cement plasters, polymer-based acrylic finishes, and stucco to exterior surfaces. When working with interior surfaces such as cinder block and concrete, they first apply a brown coat that provides a base, and then a second or finish (white) coat, which is a lime-based plaster. A primary base or scratch coat is necessary when plastering over a wire mesh (metal lath). For the finish coat, plasterers prepare a mixture of lime, Portland cement, and water. This is quickly and carefully applied to the brown coat with a special tool known as hawk, a trowel, or a brush and water. It dries rapidly into a smooth durable finish. Modern drywall and wallboard surfaces may require only a single finish coat of plaster material. For exterior work, plasterers apply a mixture of Portland cement and sand (stucco) over concrete, masonry, or lath. Small stones are sometimes added to the mixture to create a decorative finish.

WORKING CONDITIONS

Because the plaster material can freeze, heat is usually necessary when applying plaster, and is needed to cure or dry it after it is applied. As a result, plasterers seldom work in cold conditions, and most plastering jobs are indoors. Some plasterers, however, do work outside when applying stucco to exterior surfaces. This type of work is more popular in the warmer parts of the country. Plastering is physically demanding, requiring considerable standing, bending, lifting, and reaching overhead. Good balance is required because plasterers frequently work from ladders and sometimes from scaffolds high above ground. The work can be dusty and dirty, and the plaster material soils shoes and clothing.

APTITUDE AND INTEREST

Plasterers must be very good with their hands and have very good eyesight, as the job requires the creation of both smooth and sometimes decorative surfaces. They should have no fear of heights, and the ability to read blueprints is often helpful.

EDUCATION AND TRAINING

To become a skilled plasterer training is essential. It can be acquired informally through "learning-by-working," through company on-the-job training programs; by attending trade or vocational/technical schools; through management or labor sponsored trainee programs; or a combination of the above. It is generally accepted that the more formalized training programs give more comprehensive skill training. Recommended high school courses include English, general mathematics, mechanical drawing, and shop.

PLUMBER

Plumbers are skilled craftsmen who install, repair and alter pipe systems that carry gases, water and other liquids required for sanitation, storm water, industrial production, and other uses. They install plumbing fixtures, appliances, bathtubs, basins, sinks, showers, and grease line systems. They work from blueprints and working drawings to determine materials required for installation. They cut and thread pipe using pipe cutters, cutting torches, and pipe threading machines.

WORKING CONDITIONS

Plumbers may have to work indoors or outdoors on a ladder or scaffold, underground in a trench, a crawl space under a building, or in the unfinished basement of a new building. Some of the work is dirty and messy in dusty or muddy conditions. The work is active and strenuous, with standing, bending, crawling, lifting, pulling, and pushing, and is often done in strict accordance with the states plumbing and mechanical code regulations.

APTITUDE AND INTEREST

A plumber works to solve a variety of problems. As in most service occupations, plumbers need to get along well with all kinds of people, and they can be called out during evenings, weekends, or holidays to perform their job.

EDUCATION AND TRAINING

To become a skilled plumber training is essential. It can be acquired informally through "learning-by-working," through company on-the-job training programs; by attending trade or vocational/technical schools; through management or labor sponsored trainee programs; or a combination of the above. It is generally accepted that the more formalized training programs give more comprehensive skill training. Recommended high school courses include English, math, drafting, blueprint reading, physics, and chemistry.

ROOFER

Roofers apply built-up composition roofing and many other materials such as tile, slate, composition shingles, metals, various types of plastic materials, and other surfaces. Roofers also remove old materials in preparation for new roofing material. Some of the equipment they use is tar kettles, power-operated hoists and lifts, compressors, shingle removing equipment, and spray rigs.

WORKING CONDITIONS

Roofers work as part of a crew, usually in the open, so they are dependent on good weather conditions. The majority of the work is at some height, (on roofs or scaffolds); so much of the time is spent climbing ladders. Work is strenuous and involves standing, climbing, bending, and squatting, often in a very hot environment.

APTITUDE AND INTERESTS

Roofers must be physically strong, with flexible muscles and joints. Roofers often work high above the ground and anyone with a fear of heights should look into another field. Roofers often work in very hot or very cold weather.

EDUCATION AND TRAINING

To become a roofer training is essential. It can be acquired informally through "learning-by-working," through company on-the-job training programs; by attending trade or vocational/technical schools; through management or labor sponsored trainee programs; or a combination of the above. It is generally accepted that the more formalized training programs give more comprehensive skill training. Recommended high school courses include English, mathematics, blueprint reading, and general shop.

SHEET METAL WORKER

The sheet metal worker works from sketches, blueprints, or verbal instructions necessary to make products, and then installs a wide variety of articles made from sheets of steel, aluminum, copper, and other materials. They apply shop mathematics to lay out the work to be performed. A sheet metal worker uses hand or power-operated tools such as shears, breaks (for bending), and shape the metal. They build the heating, air conditioning, ventilation, and exhaust system ducts in commercial buildings and homes. These workers make a very wide variety of metal fittings and equipment for the construction industry.

WORKING CONDITIONS

Sheet metal workers do a great deal more shop work than other construction trades. They usually spend most of the day at one work site when a project is in progress, moving to another site when it is completed. Sheet metal workers must always be careful because of the tools and sharp edges of the metal with which they work.

APTITUDE AND INTEREST

Those interested in becoming sheet metal workers should enjoy working with their hands. They must be able to follow instructions and work closely from shop drawings and blueprints.

EDUCATION AND TRAINING

To become a skilled sheet metal worker training is essential. It can be acquired informally through "learning-by-working," through company on-the-job training programs; by attending trade or vocational/technical schools; through management or labor sponsored trainee programs; or a combination of the above. It is generally accepted that the more formalized training programs give more comprehensive skill training. Recommended high school courses include English, general math, geometry, trigonometry, mechanical drawing, physics, and general science. Computer literacy is becoming more important as both layout and Computer Numeric Controlled Machinery (CNC) operation is facilitated by computers.

SURVEYOR/FIELD ENGINEER

A field engineer or surveyor normally supervises a crew of workers known as a survey party. Within the typical survey party is a rodman who holds the leveling staff while measurements of distance and elevation are made; a chainman who helps measure distances with a surveyor chain or other device; an instrument man who adjusts and reads instruments for measurement (level, transit, laser, calculators/field computers, etc.); and a party chief who directs the work. Frequently the party chief and field engineer or surveyor is one in the same. Before any other work begins on a jobsite, a survey party must first establish legal boundaries of the land upon which the work will be done. After the job begins, the survey party measures and records distances and elevations that tell the contractor exactly where a new structure or system will be located. This can be critical to proper construction. Each member of the survey crew must perform his or her duty with patience and precision.

WORKING CONDITIONS

Those who work on a survey party should enjoy outdoor work as nearly all their time is spent in the field. Field conditions vary depending upon what is being surveyed and the area where the survey is being conducted. Survey party members can work on bridges, tall buildings, tunnels, and in dense forests, city streets, mountains, and deserts. A great deal of walking is necessary, and some climbing may be required – while carrying survey equipment. Most survey work is done in the summer, but it is not unusual for a survey party to work during the winter months.

EDUCATION AND TRAINING

For a party chief a high school diploma with emphasis on sciences and math should be considered the absolute minimum. Mechanical drawing and geometry should be considered as essential classes; algebra and trigonometry are important. While some members of the survey party can perform their task without any additional education, further training such as a two-year degree in surveying, mapping, or landscape architecture is clearly recommended for advancement. Modern surveying requires the use of lasers and computer-aided measurement instruments. The ability to read and understand blueprints is essential to the field engineer/surveyor.

Source: Associated General Contractors of New Hampshire