CONSTRUCTION CAREERS GUIDE

BUILDING FUTURES

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01 WHY CONSTRUCTION?

Think of the many buildings and houses, highways and bridges that are all around you, the man-made structures that you live in, work in, and travel on every day of your life. Skilled workers are needed for all of these construction projects and their work makes a big difference to our everyday lives.

A career in construction can be very rewarding and provides you with a good wage and benefits. But it's not for everyone. Do you like working with your hands? Do you enjoy working outside? Are you curious about how structures are put together? There are many things to consider when choosing a career.

Like other fields, construction requires specific skills, has a unique work environment and its own career ladder. This guidebook briefly explains these and other aspects of construction careers to help you decide if construction is a good career choice for you.

John Santos / Carpenter Apprentice / TF Green

02 IS ALL CONSTRUCTION THE SAME?

When most people think of construction, they think of the houses being built or renovated around their neighborhoods. **Residential construction** companies work on houses - remodeling, renovating and building new homes. Residential builders represent a wide range of companies – from a lone carpenter working for him or herself to large firms with several work crews. You may have a friend or family member that does home repairs, builds decks, or paints houses; they are all a part of the residential construction industry.

Look around you as you walk through downtown. In Providence you will see impressive multi-story office buildings, a large shopping mall, government buildings, banks, apartment complexes, university buildings, and more. These large, complex structures were built by **commercial construction** companies. Commercial projects are more complicated, expensive, and fast-paced than residential construction. In most commercial construction projects, all the various building trades (carpenters, iron workers, painters, bricklayers, laborers, sheetmetal workers, electricians, etc.) will have a role completing the project.

Besides buildings, there are other structures that we use every day that have been built by the construction industry. Highways, streets, bridges, and tunnels are the work of **heavy and highway construction** companies. Work on these construction projects takes place outside and may happen at night to avoid rush hour traffic. In Rhode Island, there are several companies that specialize in highway work.

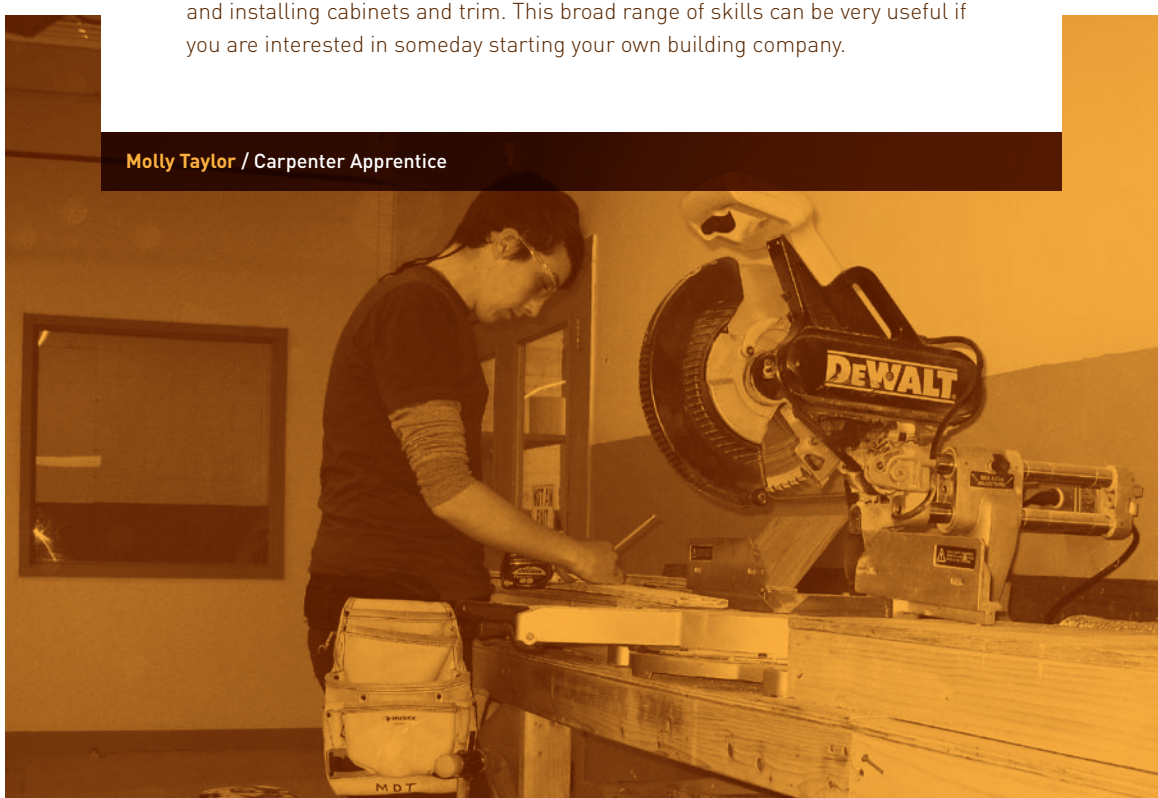
03 WHAT IS THE DIFFERENCE BETWEEN UNION AND NON-UNION?

Most commercial and highway construction companies in Rhode Island hire union affiliated workers while residential construction is more often non-union. There are several differences in the work environments between building companies that hire union workers and those that don't. These differences may also be important to your career choice.

A union company's workers are represented by a trade union, an organization of workers who come together to achieve common goals such as improved working conditions. The leadership of the trade union negotiates labor contracts with employers on behalf of union members. Negotiated contracts might include terms for wages, work hours, complaint procedures, rules governing hiring, firing and promotion of workers, benefits, and workplace safety policies. As a union worker, you are bound by the terms of the contract. Neither workers nor employers can make changes to a signed contract by themselves, both sides must agree.

Union affiliated workers often have very specialized skills even within one trade. For instance, one union carpenter may focus only on metal framing and sheetrock, and another primarily on building acoustical ceilings. By specializing in one aspect, workers become more productive for a construction company. However, by being employed by a variety of companies over their careers, union workers have the opportunity to learn a broad range of skills within their trade.

Non-unionized construction workers usually work for smaller residential companies where the employer alone determines wages, benefits and other work policies. Non-union craftsmen might work for the same company throughout their career and learn a broad range of skills. For example, working for a small home builder, a carpenter might be involved in every part of a project, such as reading blueprints and ordering materials; framing the walls and roof; installing doors, windows, and flooring; taping and painting drywall; and installing cabinets and trim. This broad range of skills can be very useful if you are interested in someday starting your own building company.



Molly Taylor / Carpenter Apprentice

04 WHAT IS THE WORK ENVIRONMENT LIKE?

Most employees in this industry work an eight hour day, five days a week. But there can be opportunities for overtime. Construction workers might work evenings, weekends, and holidays to finish a job or take care of an emergency. You should also expect layoffs, especially during New England winters. Workers must contend with all kinds of weather as much of the work is done outside or in partially enclosed structures. Heavy rain, snow, or wind may halt construction work and workers do not get paid if they cannot work due to the weather.

Workers in this industry need physical stamina and coordination because the work often requires long periods of standing, bending, stooping, and working in cramped quarters. Construction workers need to lift and carry heavy objects. Being able to work with others is also critical, as much of the work is done in teams or pairs.

Construction workers often work with potentially dangerous tools and equipment in a clutter of building materials and loud noises. Sometimes they work on temporary scaffolding or at great heights. Consequently, construction workers have more risk of injury than workers in other jobs. Safety on the job is extremely important and training includes courses in safety procedures and practices. Construction workers need to wear protective equipment and clothing to ensure their safety on the job.

Jackie Chea / Painter Apprentice / Brown University Faunce House

Building Futures / Pre-Apprentice Training Program

05 WHAT SKILLS AND KNOWLEDGE ARE IMPORTANT?

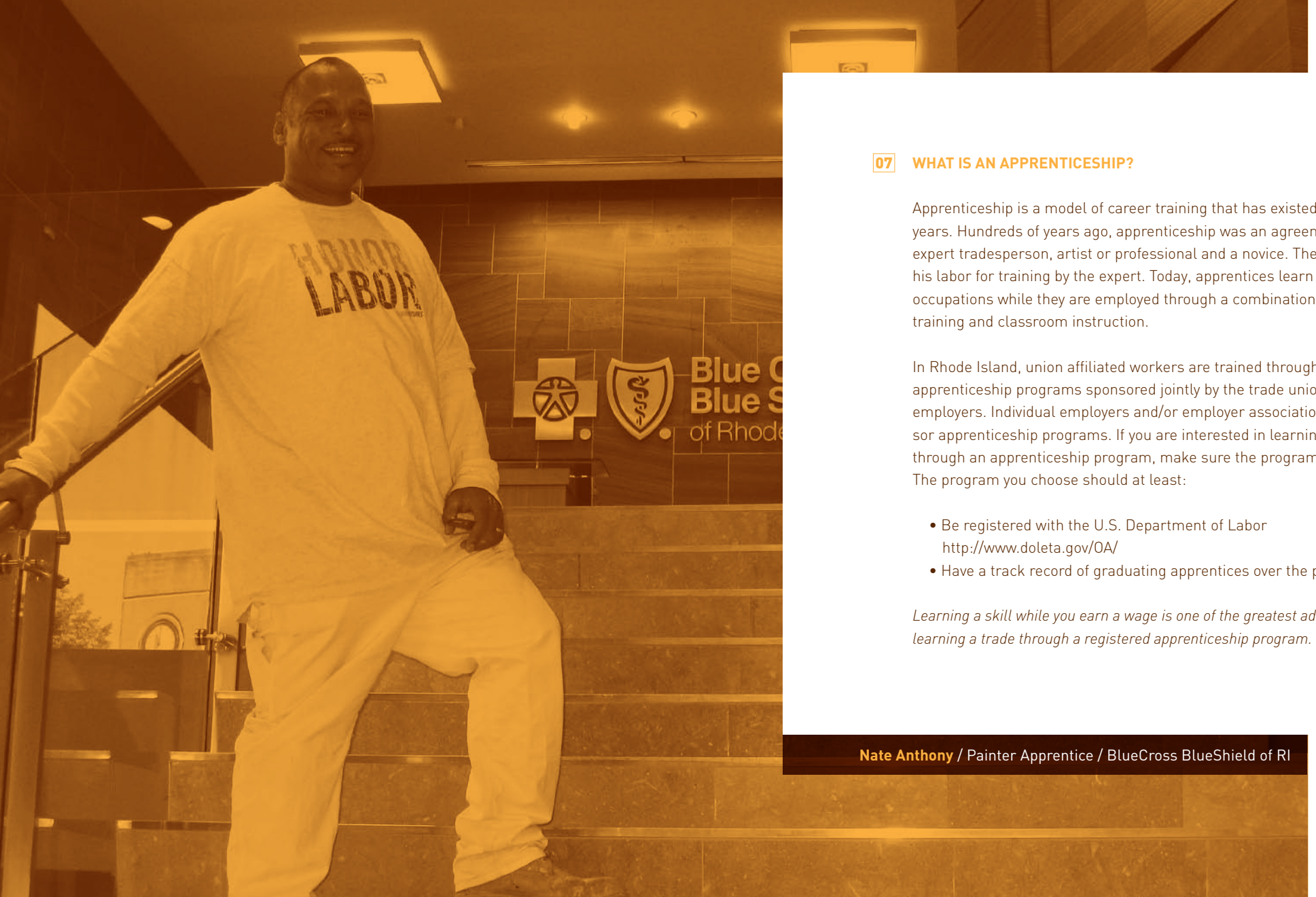
While there are certainly differences in each of the building trades, there are general skills that cross over all construction jobs. Below is a list of general skills and knowledge important to careers in the building trades.

- Use power and hand tools
- Measure accurately
- Use math to solve problems
- Manage time and materials
- Use logic and reasoning
- Have good hand/eye coordination and manual dexterity
- Lift heavy objects
- Communicate effectively (verbally and in writing)
- Know and follow safety regulations

06 WHAT TRAINING IS NEEDED?

Construction work requires highly skilled crafts people. Most often these skills are learned through a combination of formal or informal on-the-job training and classes offered by employers or trade unions. Some vocational schools (Moto-ring Technical Training Institute, New England Institute of Technology, New England Construction Training Academy) and community colleges (Community College of Rhode Island) also offer courses in various trades, especially the licensed trades. Of course, there are fees associated with attending these schools.

The most time honored and cost effective way to train for a skilled construction trade is through a registered apprenticeship program.



07 WHAT IS AN APPRENTICESHIP?

Apprenticeship is a model of career training that has existed for hundreds of years. Hundreds of years ago, apprenticeship was an agreement between an expert tradesperson, artist or professional and a novice. The novice exchanged his labor for training by the expert. Today, apprentices learn highly skilled occupations while they are employed through a combination of on-the-job training and classroom instruction.

In Rhode Island, union affiliated workers are trained through formal registered apprenticeship programs sponsored jointly by the trade unions and multiple employers. Individual employers and/or employer associations also sponsor apprenticeship programs. If you are interested in learning (and earning) through an apprenticeship program, make sure the program is of high quality. The program you choose should at least:

- Be registered with the U.S. Department of Labor http://www.doleta.gov/OA/
- Have a track record of graduating apprentices over the past 3-5 years

Learning a skill while you earn a wage is one of the greatest advantages of learning a trade through a registered apprenticeship program.

Nate Anthony / Painter Apprentice / BlueCross BlueShield of RI

08 WHAT ARE THE REQUIREMENTS TO GET INTO AN APPRENTICESHIP?

To join a construction trade apprenticeship program, you must successfully complete an application process. Though each trade has its own application process, most require a candidate to pass an entrance exam, an interview and a drug test. Each trade also has specific times of the year when they accept applications. In addition, there are several general requirements that you must meet in order to join a skilled trade apprenticeship.

General Requirements To Enter Apprenticeships:

- Be 18 years of age or older
- Have a high school diploma or G.E.D. certificate
- Have a valid driver's license and reliable transportation
- Be a citizen or authorized to work in the US
- Be in good physical condition
- Possess strong basic math skills
- Be able to communicate in English

Building Futures / Pre-Apprentice Training Program

09 WHAT ARE THE DIFFERENT CONSTRUCTION TRADES?

Federal and state agencies now recognize over 1,000 careers in a variety of industries that have registered apprenticeships. In Rhode Island, there are many registered apprenticeship programs in the construction industry. The following table provides a brief description of 17 jointly sponsored (managed jointly by employers and labor unions) apprenticeship programs in the state's construction trades.

TRADE	GENERAL TASKS
Boilermakers	Assemble, erect, and maintain boilers, tanks, pressure vessels, heat exchangers, pollution control systems, furnaces, condensers, and water towers.
Bricklayers & Tile Setters	Bricklayers build interior and exterior walls and other structures out of brick, block, stone, and marble. Tile Setters specifically lay and grout tile of all types to floors, interior and exterior walls, and ceilings.
Carpenters	Build, repair and install cabinets, doors, windows, framing, floors, paneling, molding, and dry wall used in buildings. Construct forms for pouring concrete, building wooden bridges, piers, and trestles, installing tunnel bracing, and driving piles.
Cement Masons & Plasterers	Cement masons finish exposed concrete surfaces of freshly poured floors, walls, sidewalks, foundations, dams, parking garages and lots, runways, warehouses, and roads. Plasterers apply plaster, cement or acrylic material to interior and exterior walls and ceilings.
Electrical Workers	Assemble, install, maintain and test electrical equipment and wiring systems in residential, commercial, and industrial settings such as new wiring, power and controls to motors, HVAC and other equipment, light fixtures, fire alarms, traffic signals, outdoor lighting, process controls, and energy management.
Elevator Constructors	Install and replace elevators, escalators, dumbwaiters, moving walkways and similar equipment in new and old construction. Service, maintain, and repair this equipment.
Glaziers	Select, cut, assemble, and install all kinds of glass, build and install metal sash and moldings using aluminum or steel framing, apply weather seals and hardware.
Heat & Frost Insulators	Apply insulation materials to pipes, tanks, boilers, ducts, refrigeration equipment and other surfaces requiring the control of temperatures.
Ironworkers	Erect, assemble, or install fabricated structural metal products, usually large metal beams used in the construction of industrial, commercial or large residential buildings. Erect steel framework on bridges, storage tanks, and overhead crane runways.

TRADE	GENERAL TASKS
Laborers	Dig trenches, mix and place concrete, erect scaffolds, set braces to support the sides of excavations, clean and prepare construction sites, do demolition, lay underground pipe, and tend or assist other crafts. At hazardous waste sites, they safely identify, pack, and transport asbestos, lead, radioactive waste, and other harmful materials.
Operating Engineers	Operate and maintain heavy construction equipment such as bulldozers, backhoes, cranes, excavators, loaders, pile drivers, paving machines and hoists. Use this equipment to excavate, move, or grade earth, crush stone, erect structural steel, and pour concrete or other paving materials.
Painters & Tapers	Painters apply coats of paint, varnish, staining, enamel, or lacquer to decorate and protect interior or exterior surfaces of buildings, bridges and other structures. Tapers apply joint compound and tape to drywall to seal joints producing smooth surfaces on walls and ceilings.
Plumbers & Pipe Fitters	Plumbers repair, install, or alter the water, waste disposal, drainage, and gas systems in homes and commercial and industrial buildings. Install plumbing fixtures – bathtubs, toilets, sinks, showers – and appliances such as dishwashers and water heaters. Pipefitters repair and install both high and low pressure pipe systems that are used in manufacturing, in the generation of electricity, and in heating and cooling buildings and the automatic controls that are used to regulate these systems.
Roofers	Apply roofing material such as fiberglass, slate, tile, and cedar or composite material such as felt or rubber membrane to ensure buildings are watertight.
Sheet Metal Workers	Build and install a wide variety of products by cutting and shaping sheets of steel, aluminum, copper and other alloys. Fabricate and install heating and cooling components, work in industrial plants and build specialty fabrication.
Sprinkler Fitters	Install all types of fire protection systems, including the layout and installation of underground fire mains. Read blue prints and layout and install hangers and overhead piping in all types of buildings and all types of construction.
Teamsters	Operate industrial trucks or tractors equipped to move materials around a warehouse, storage yard, factory, construction site, or similar location. Deliver building materials such as lumber, concrete, and steel to construction sites.

Timothy Sanders / Laborer Apprentice / Brown University Creative Arts Building

10 WHERE CAN THE JOB LEAD? (CAREER LADDER)

In larger construction companies, there are many opportunities to advance on the job. Below are some examples of where a construction career ladder can lead you.

Apprentice

When you start out in a construction trade, you will begin working and learning as an Apprentice. The Apprentice's role is to be the learner and as you learn your pay and benefits increase until you become a Journeyman. You are not expected to know all the skills of the trade when you begin working your first year, 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 while on the job, Apprentices also attend classroom courses.

Journeyman

After completing required classes and three to five years (depending on the trade) of on-the-job training, you will graduate to Journey level status. Along with increased pay, a Journey level worker takes on the responsibility of training new Apprentices. Since Journeymen are seasoned workers, they are expected to use correct building techniques, demonstrate quality workmanship and share industry knowledge with their co-workers.

Foreman

Foremen are successful and experienced Journeymen who have been asked by a Contractor to take on supervisory responsibilities within a trade. To become a Foreman, a Journey level worker must demonstrate leadership, organizational skills and time management. A Foreman oversees the work of Journeymen and Apprentices on his or her crew, making sure that the tasks they are responsible for are completed on schedule and with high quality workmanship. Ensuring that their crews meet safety standards and comply with company policies is another critical part of a Foreman's work.

Superintendent

Large construction sites generally have one or more Superintendents, a position a step above that of Foreman. Superintendents usually oversee all of the Foremen from the different trades and their crews. The responsibilities of a Superintendent vary from company to company. For instance, some may only supervise one trade, and others are responsible for managing how the different trades work together for the overall project.

Project Manager

The Project Manager's main role is to oversee an entire construction project from start to finish and ensure that a project is completed on time, within budget and according to specifications. If there is a problem with the project, it is the Project Manager's responsibility to pinpoint the problem and

determine a cost effective solution. Sometimes the roles of the Project Manager and Superintendent are very similar, depending on the type of project being constructed. Often a Project Manager is responsible for the budget and costs of a project, and the Superintendent is responsible for coordinating the actual work of the project.

Contractors/Business Owners

Contractors are business owners who bid on part or all of a construction project. If their bid is successful, they are hired to build all or part of the project. Contractors provide the tools and materials to complete the project within the terms of their contract. They are responsible for the management of the project, hiring crafts people, and maintaining payroll for all of their workers. They must also provide for project management, insurance, billing, and collection of funds related to their portion of a job.

Training Instructor

Training Instructors work in the classroom and teach the skills necessary for Apprentices to broaden their skills and knowledge of the trade. Training Instructors are seasoned Journey level workers who teach the latest technologies and methods to Apprentices and other Journeymen to ensure they are up-to-date on the latest advances in the construction field.

Other jobs in the construction field

In addition to skilled crafts people, there are other professions related to construction that generally require a college degree. A few of them are listed below.

Architects

Architects plan, design and review the construction of buildings and other structures. Architects use their creativity to design functional spaces for living and working. They develop innovative ways of using existing buildings and creating new ones. Buildings must be functional, safe, and economical and must suit the needs of the people who use them. Architects consider all these factors when they design buildings and other structures.

There are three main steps in becoming an architect. First is college to attain a professional degree in architecture. Second is work experience through an internship, and third is passing the Architect Registration Exam to become licensed.

Engineers

Engineers design things. These might be roads, buildings, airports, tunnels, dams, bridges, or water supply and sewage systems. The infrastructure for transportation, energy, industry and commerce is the result of engineering. They must consider many factors in their designs, from the cost of the project to making sure the structure will stay intact during bad weather. There are many specialties within engineering, such as civil, structural, construction, environmental, water and marine, and transportation.

Engineers usually start their careers with a bachelor's or graduate degree in an engineering specialty. They work for contractors, utility companies, government agencies, or as consultants. It is important for engineers to keep current with rapidly changing technology through continuing education.

Brown University / Faunce House Restoration Project

Construction Managers
Construction managers plan, direct, and coordinate a wide variety of construction projects, including the building of all types of residential, commercial, and industrial structures, roads, bridges, wastewater treatment plants, schools and hospitals. Construction managers may oversee an entire project or just part of one. They schedule and coordinate all design and construction, including the hiring, coordinating and oversight of specialty trade contractors. Construction managers don't do any actual hands-on building themselves, they work for a company that specializes in construction management.

For construction manager jobs, many employers now prefer to hire individuals who have a bachelor's degree in construction management as well as work experience. Practical construction experience is also very important, whether gained through an internship, a cooperative education program, or a job in the construction trades.

Surveyors
Surveyors measure and record property boundaries and the topography of the land where construction projects will be built. This measurement and the recorded data are called a "survey." Surveys are used to establish legal boundaries, prepare maps, subdivide land into lots, and stake development sites. Surveyors also measure and chart the depths of underground areas, the ocean floor, the atmosphere, and outer space.

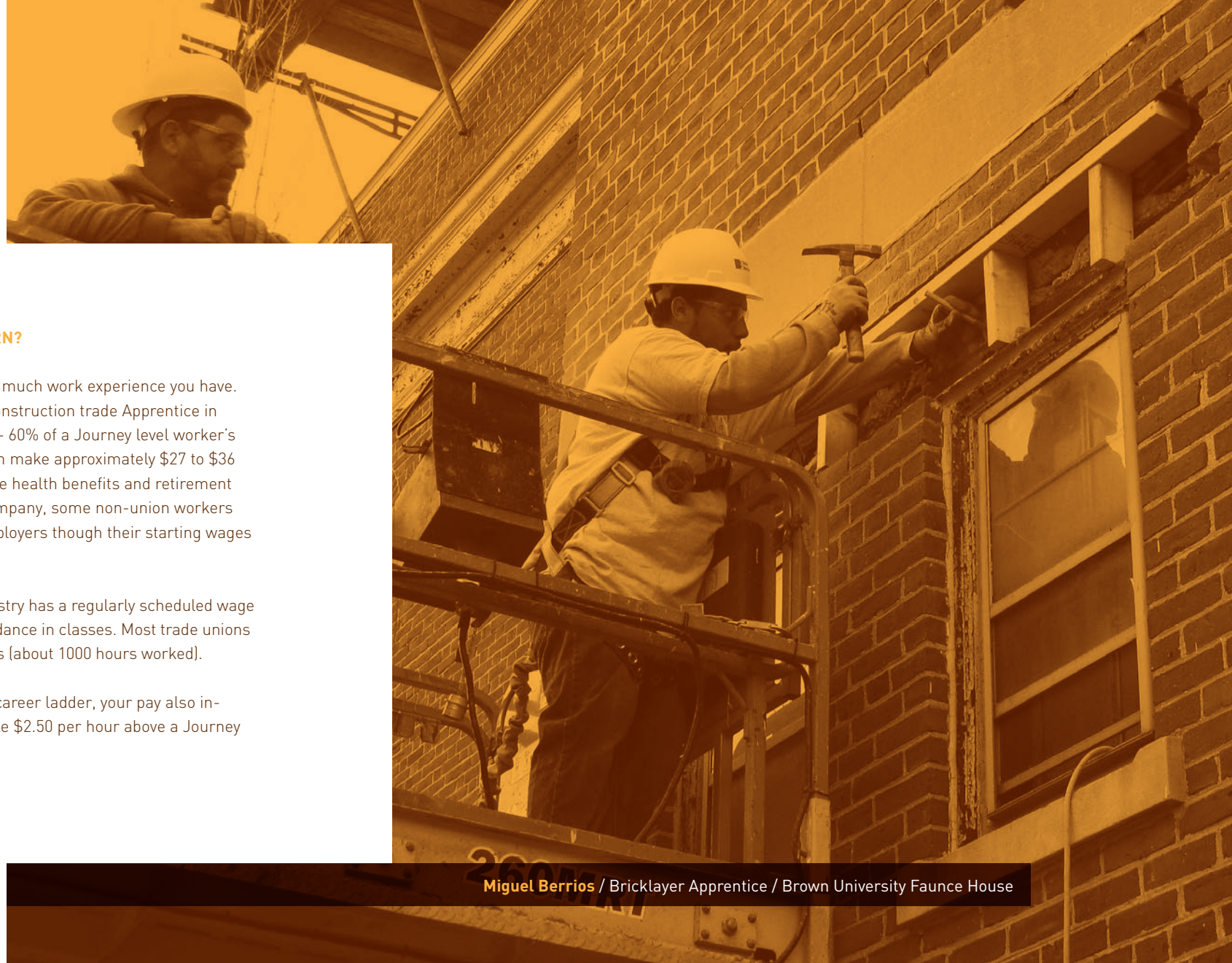
Because of the competitiveness of the Land Surveyor job market in recent years, employers prefer to hire workers with a 2 or 4-year Land Surveyor degree. Land Surveyors are also required to become licensed through the National Council of Examiners for Engineering and Surveying (NCEES).

11 WHAT DO CONSTRUCTION WORKERS EARN?

Like other occupations, wages vary by how much work experience you have. The average starting wage of a first year construction trade Apprentice in Rhode Island is about $15.00 per hour, 50 – 60% of a Journey level worker's wage. Depending on the trade, Journeymen make approximately $27 to $36 per hour. In addition, all union workers have health benefits and retirement packages. Depending on the size of the company, some non-union workers also have health care provided by their employers though their starting wages are somewhat lower.

The unionized side of the construction industry has a regularly scheduled wage increase based on hours worked and attendance in classes. Most trade unions provide wage increases at 6 month intervals (about 1000 hours worked).

As you work your way up the construction career ladder, your pay also increases. Foremen, for example, might make $2.50 per hour above a Journey level worker's wage.



Miguel Berrios / Bricklayer Apprentice / Brown University Faunce House

12 WHAT IS THE JOB FORECAST?

In 2008, there were over 20,000 construction workers in Rhode Island, a slight decrease since the year before. Even though construction lost workers between 2007 and 2008, the RI Department of Labor and Training expects the field to expand from 2006 to 2016.

Employment is expected to grow faster in commercial than residential construction over the next decade. Construction of all types of healthcare facilities will be needed, especially to meet the needs of the growing elderly population. Replacing and renovating older schools and retrofitting public buildings to meet new energy efficiency ("green") standards will also create construction jobs.

In addition, employment in heavy and highway construction is projected to increase due to growth in new highway, bridge, and street construction, as well as in maintenance and repairs to prevent further deterioration of the nation's existing highways and bridges.

13 BUILDING FUTURES PRE-APPRENTICESHIP PROGRAM

Work in the construction industry isn't for everyone. It's physically demanding and often dangerous. Much of the work is outside in all types of weather. But you learn a skill, make a good wage and have the satisfaction of seeing finished buildings that you helped construct. If a career in construction sounds like a good fit for you, the Building Futures Pre-Apprenticeship Program might be the place to start.

Building Futures helps prepare unemployed and low-income Rhode Island residents for successful careers in the building trades. Our program consists of a multi-week evaluation and preparation process that includes testing and assessment, support to help you overcome barriers to employment, career counseling to help determine your interest in and readiness for entering a construction apprenticeship program, and workshops on financial literacy, labor history and job survival. For those with little or no construction experience, we provide a four-week hands-on training in the basic skills needed across all construction trades. We also have a GED program for those without a high school diploma or GED certificate.

When you successfully complete our pre-apprenticeship program, we will help you enter a construction trade apprenticeship. The support of our staff continues through your apprenticeship years, linking you to services when needed or helping to sort out issues at work.

If you are interested in finding out more about the Building Futures Pre-Apprenticeship Program, visit our website at www.bfri.org or call us at 401-919-5919.

Brandon Reid & Leron Gomes / Pipefitter Apprentices / TF Green Sky Bridge

14 WHERE TO GO FOR MORE INFORMATION

*For specific information regarding each trade, please visit the O*NET (Occupational Information Network) website.*

Boilermakers	http://online.onetcenter.org/link/summary/47-2011.00
Bricklayers	http://online.onetcenter.org/link/summary/47-2021.00
Carpenters	http://online.onetcenter.org/link/summary/47-2031.01
Cement Masons & Plasterers	http://online.onetcenter.org/link/summary/47-2051.00
Electrical Workers	http://online.onetcenter.org/link/summary/47-2111.00
Elevator Constructors	http://online.onetcenter.org/link/summary/47-4021.00
Glaziers	http://online.onetcenter.org/link/summary/47-2121.00
Heat & Frost Insulators	http://online.onetcenter.org/link/summary/47-2132.00
Ironworkers	http://online.onetcenter.org/link/summary/47-2221.00
Laborers	http://online.onetcenter.org/link/summary/53-1021.00
Operating Engineers	http://online.onetcenter.org/link/summary/47-2073.00
Painters & Tapers	http://online.onetcenter.org/link/summary/47-2141.00
Plumbers & Pipe Fitters	http://online.onetcenter.org/link/summary/47-2152.02
Roofers	http://online.onetcenter.org/link/summary/47-2181.00
Sheet Metal Workers	http://online.onetcenter.org/link/summary/47-2211.00
Sprinkler Fitters	http://online.onetcenter.org/link/summary/47-2152.01

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Dana McCutcheon / Painter Apprentice / Brown University Faunce House