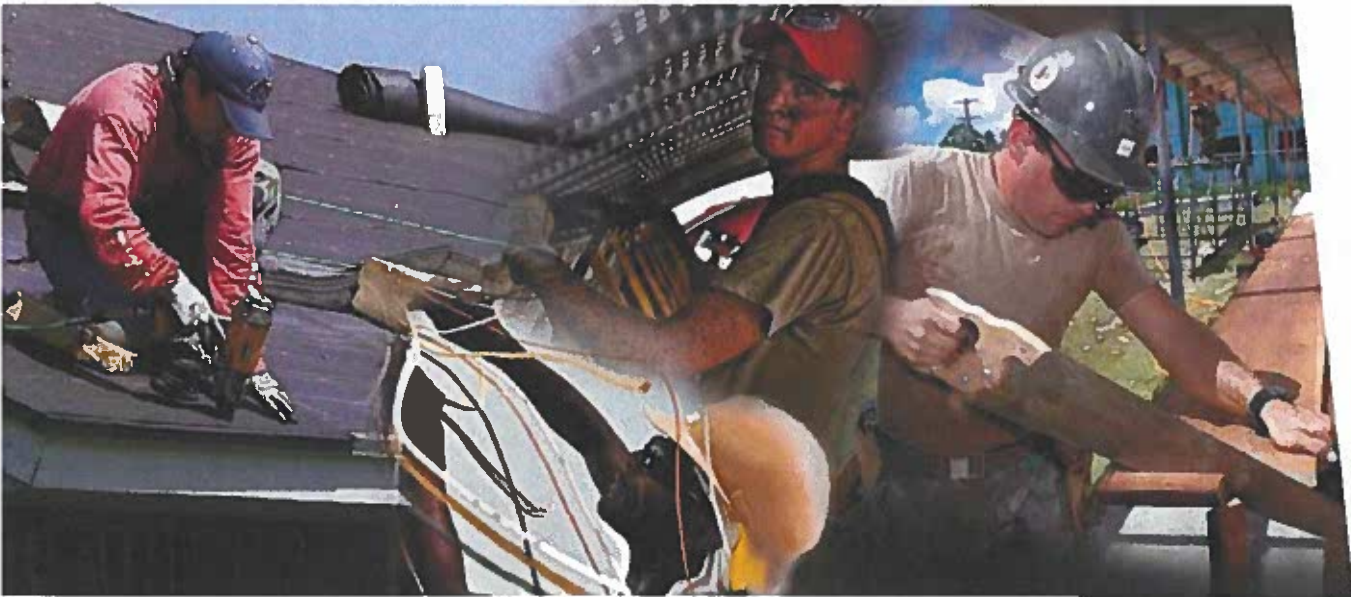




RESIDENTIAL BUILDING:

OPEN THE DOOR TO YOUR FUTURE
AND BUILD SOMETHING GREAT



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AN OVERVIEW

CAREER OPPORTUNITIES IN RESIDENTIAL BUILDING

Professional trades in the residential building industry aren't the skilled trades of yesterday. Students entering the Michigan job market have numerous opportunities available that don't require the time and financial investment (or debt) of a four-year college degree program. In fact, there are roughly 132 career choices in the home building industry. The opportunities are endless.

No other industry took a hit like the residential building industry during the last decade. The home building industry saw a job loss of 20% between 2000 and 2007. Those are employees that are not coming back into the industry. As if that hit wasn't hard, from December 2007 and lasting through June 2009, construction dropped 39,000 additional payroll jobs, falling another 23%. That total was a loss of 82,000 jobs, or a 40% drop.

Former Governor Snyder said, "Key priorities I have, for one, is focused on one huge national problem that we have, which is we don't have enough people going into the skilled trades, and we need to improve career tech education in our country. My commitment to you is we're going to be focused on being number one in developing and bringing back the skilled trades as an honorable career path with great opportunity." We are fortunate to have had a Governor who was committed to making skilled trades and career technical education his key priority in his second term. We are working to make sure Gov. Whitmer has the same goal.

Professional trades are vital to our state's economy. They play an instrumental role in producing some of our state's most important products – homes being one of them. The members of the Home Builders Association of Michigan (HBA of MI) are feeling the direct impact of the labor shortage. As building permits and home values continue to rise, the immediate demand for skilled workers is increasing as well.

The HBA of Michigan released a report in 2017, "Where Will Ten Million Michiganders Live?" In the report they listed three cornerstones to help continue the return of homes being built. One of those cornerstones is building the workforce of tomorrow, today.

IT'S NEVER TOO EARLY TO BEGIN YOUR CAREER

Recent changes to the Michigan Merit Curriculum allow students to have the flexibility in their day to take Department of Education approved Career Technical Education courses, as long as schools offer approved CTE programs.

The skills learned in a Career and Technical Education (CTE) program creates the foundation needed for a career in residential building and the construction industry. Not only do the skills learned in a CTE program help you in that field, other skills are learned that will help you in life in general. You will learn leadership skills, working with a team, time management, organization skills and communications skills.

While this lays a good foundation for a great paying career, it also is an opportunity the construction industry needs to take advantage of in promoting the industry and the demand for qualified and skilled employees. This guide has been developed to identify career opportunities in residential building. The need for employees is expected to continue to be in high demand in Michigan. We hope you will take the time to familiarize students with the job profiles and available training for each position.

BUILD SOMETHING GREAT GUIDE

Each occupation description in this guide provides a job summary and shows the current wage range and projected employment growth through 2028. In each profile, education and training requirements are identified, along with the projected demand. Information in this guide has been provided from the state of Michigan and from the U.S. Bureau of Labor Statistics.

TRAINING ALTERNATIVES

While many Professional Trade occupations do not require a four-year degree, they do require some training. Currently, an applicant for a Residential Builder or Maintenance & Alteration Contractor license must complete 60 hours of approved pre-licensure education prior to taking the examination or submitting a license application to the Department of Licensing and Regulatory Affairs (LARA).

Some career technical education programs provided through the school system actually meet the requirement of 60 hours of approved pre-license education. Most will also have you graduating with your MIOSHA safety card.

All pre-licensure education courses must be approved by the Department of Licensing and Regulatory Affairs. A list of approved pre-licensure education courses is available on the Builders website at www.michigan.gov/builders under the Licensing Application and Forms section.

The 60 hours of approved pre-licensure courses must include at least six (6) hours in each subject below:

- 1) Business Management, Estimating, and Job Costing (6 hours)
- 2) Design and Building Science (6 hours)
- 3) Contracts, Liability, and Risk Management (6 hours)
- 4) Marketing and Sales (6 hours)
- 5) Project Management and Scheduling (6 hours)
- 6) The Michigan Residential Code (6 hours)
- 7) MIOSHA Construction Safety Standards (6 hours); and
- 8) The rest of the 18 hours may come from other topics on the approved course list.

SKILLED TRADE OCCUPATION JOB PROFILES

In this guide, we are shining a light on 16 occupations in the residential building industry. If you are able to enroll in a career and technical education program that allows you the opportunity to build a home, you will have the opportunity to learn some, if not all, of these trades.

In today's changing economy, employers are looking for an employee that has not only an education, but knowledge, skills and ability. Those who will have a competitive advantage will have a blend of education AND technical skills.

WHERE THE DATA COMES FROM

There is a wealth of information available for someone interested in any of these careers; unfortunately, it isn't in one place. We have taken the time to research those websites and compiled the information in one location. Many thanks go to the state of Michigan Bureau of Labor Market Information and Strategic Initiatives, and the U.S. Bureau of Labor Statistics.

ARCHITECTS

2019 MEDIAN WAGE

\$36.80 PER HOUR

Entry-Level Education

Bachelor's degree

Typical On the Job Training Needed

Internship/residency

Number of Jobs in Michigan, 2019

2,300

Real-time Job Growth Demand, Dec 2020

49

Forecasted Employment Growth through 2028

2.2%

WHAT ARCHITECTS DO

Architects plan and design houses, office buildings and other structures.

WORK ENVIRONMENT

Architects spend much of their time in offices, where they meet with clients, and consult with engineers and other architects. They also visit construction sites to review the progress of projects.

KNOWLEDGE, SKILLS AND ABILITIES

ANALYTICAL SKILLS are a must to understand the content of designs and the context in which they were created. For example, architects must understand the locations of mechanical systems and how those systems affect building operations.

COMMUNICATION SKILLS are used by architects to share their ideas, both in oral presentations and in writing, with clients, other architects, and workers who help prepare drawings. Many also give presentations to explain their designs.

CREATIVITY is used by architects when designing houses, buildings, and other structures. Therefore, the final product should be attractive and functional.

ORGANIZATIONAL SKILLS are used by architects when managing contracts. Therefore, they must keep records related to the details of a project, including total cost, materials used, and progress.

TECHNICAL SKILLS are needed when using computer-aided design and drafting (CADD) technology to create plans as part of integrated building information modeling (BIM).

VISUALIZATION SKILLS are used by architects to see how the parts of a structure relate to each other. They also must be able to visualize how the overall building will look once completed.

CEMENT MASONS AND CONCRETE FINISHERS

2019 MEDIAN WAGE

\$23.11 PER HOUR

Entry-Level Education

Less than High School

Typical On the Job Training Needed

Moderate-term on-the-job training

Number of Jobs in Michigan, 2019

5,270

Real-time Job Growth Demand, Dec 2020

32

Forecasted Employment Growth through 2028

6.2%

WHAT CEMENT MASONS AND CONCRETE FINISHERS DO

Cement masons pour, smooth, and finish concrete floors, sidewalks, roads, and curbs. Using a cement mixture, terrazzo workers create durable and decorative surfaces for floors and stairways.

WORK ENVIRONMENT

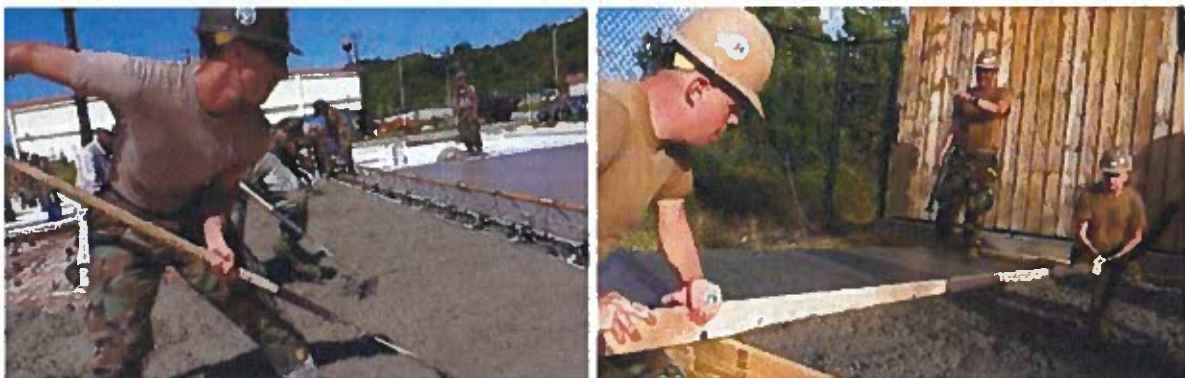
Concrete and terrazzo work is fast paced and strenuous and often involves kneeling, bending, and reaching. Because many jobs are outdoors, work generally stops in wet weather. Most work is full time.

KNOWLEDGE, SKILLS AND ABILITIES

COLOR VISION is needed by terrazzo workers to determine small color variances when setting terrazzo patterns. Because these patterns often include many different colors, terrazzo workers must be able to distinguish between colors for the best looking finish.

PHYSICAL STAMINA is needed by cement masons and terrazzo workers. They must be able to spend a lot of time kneeling, bending and reaching.

PHYSICAL STRENGTH is needed by cement masons and terrazzo workers. They often must lift heavy materials. For example, many jobs require workers to be able to lift and carry 50 pound bags of gravel and sand.



EXCAVATING & LOADING MACHINE & DRAGLINE OPERATORS

2019 MEDIAN WAGE

\$20.38 PER HOUR

Entry-Level Education

High School Diploma or equivalent

Typical On the Job Training Needed

Moderate-term on-the-job training

Number of Jobs in Michigan, 2019

1,350

Real Time Job Growth Demand, Dec 2020

8

Forecasted Employment Growth through 2028

3.5%

WHAT MACHINE OPERATORS DO

Construction equipment operators drive, maneuver, or control the heavy machinery used to construct roads, bridges, buildings and other structures.

WORK ENVIRONMENT

Construction equipment operators work in nearly every weather condition. Some operators work in remote locations on large construction projects, such as highways and dams, or in factories or mines.

KNOWLEDGE, SKILLS AND ABILITIES

HAND-EYE-FOOT COORDINATION is needed. Workers should have steady hands and feet to guide and control heavy machinery precisely, sometimes in tight spaces.

MECHANICAL SKILLS will be used by construction equipment operators to perform basic maintenance on the equipment they operate. As a result, they should be familiar with hand and power tools and standard equipment care.



CONSTRUCTION LABORERS

2019 MEDIAN WAGE	\$18.53 PER HOUR
Entry-Level Education	Less than High School
Typical On the Job Training Needed	Short-term on-the-job training
Number of Jobs in Michigan, 2019	25,730
Real Time Job Growth Demand, Dec 2020	1415
Forecasted Employment Growth through 2028	4.8%

WHAT CONSTRUCTION LABORERS DO

Construction laborers and helpers perform many basic tasks that require physical labor on construction sites.

Construction laborers perform a variety of construction related activities during all phases of construction. However, the main task laborers perform is preparing and cleaning up construction sites. Although most laborers are generalists – such as those who install barricades, cones, and markers to control traffic patterns – many others specialize. Construction laborers use a variety of tools and equipment.

Helpers assist construction craft workers, such as electricians and carpenters, with a variety of tasks. They may carry tools and materials or help set up equipment.

WORK ENVIRONMENT

Most construction laborers and helpers do physically demanding work. Some work at great heights or outdoors in all weather conditions. They must use earplugs around load equipment and wear gloves, safety glasses, and other protective gear.

KNOWLEDGE, SKILLS AND ABILITIES

COLOR VISION is needed as laborers and helpers may need to be able to distinguish colors to do the job.

MATH SKILLS are used by laborers and some helpers to perform basic math calculations to do their job. They often help with measuring on jobsites or they may be part of a surveying crew.

MECHANICAL SKILLS are needed as laborers frequently are required to operate and maintain equipment, such as jackhammers.

PHYSICAL STAMINA helps when laborers and helpers perform strenuous tasks throughout the day.

PHYSICAL STRENGTH is needed when laborers and helpers lift heavy materials or equipment.

CONSTRUCTION MANAGERS

2019 MEDIAN WAGE

\$46.48 PER HOUR

Entry-Level Education

Bachelor's Degree

Typical On the Job Training Needed

Moderate-term on-the job training

Number of Jobs in Michigan, 2019

5,090

Real Time Job Growth Demand, Dec 2020

299

Forecasted Employment Growth through 2028

2.7%

WHAT CONSTRUCTION MANAGERS DO

Construction managers manage the activities or residential construction projects from start to finish. They are usually employed by medium to large homebuilders.

THEIR RESPONSIBILITIES COULD INCLUDE:

- Providing advice to senior management
- Making sure the home is built within budget and on schedule
- Encouraging and motivating employees, subcontractors and suppliers
- Cultivating good customer service relations
- Complying with all government regulations related to home building
- Managing relationships with other builders operating in the same subdivision
- Regularly comparing actual costs to projected costs
- Establishing working relationships with suppliers
- Preparing progress reports and issuing progress schedules to clients

WORK ENVIRONMENT

Many construction managers work from a main office, but most work out of a field office at the construction site, where they monitor the project and make daily decisions about construction activities. For those managing multiple projects, frequent travel between sites is required.

KNOWLEDGE, SKILLS AND ABILITIES

- Familiar with all home building trades
- Ability to plan, schedule and organize
- Ability to motivate and lead staff
- Ability to work within timelines
- Problem solving skills
- Communication skills

GLAZIERS

2019 MEDIAN WAGE

\$21.36 PER HOUR

Entry-Level Education

High School Diploma or equivalent

Typical On the Job Training Needed

Apprenticeship

Number of Jobs in Michigan, 2019

1,520

Real Time Job Growth Demand, Dec 2020

37

Forecasted Employment Growth through 2028

6.0%

WHAT GLAZIERS DO

Glaziers install windows, skylights, and other glass products in storefronts and buildings. In homes, glaziers install or replace windows, mirrors, shower doors, and bathtub enclosures. They fit glass for tabletops and display cases.

WORK ENVIRONMENT

As in many other construction trades, the work is physically demanding.

KNOWLEDGE, SKILLS AND ABILITIES

BALANCE is needed to minimize the risk of falling, glaziers need a good sense of balance while working on ladders and scaffolding.

HAND-EYE COORDINATION is a must. Glass must be precisely cut. As a result, a steady hand is needed to achieve a cut of the correct size and shape.

PHYSICAL STAMINA is needed as glaziers must be on their feet and move heavy pieces of glass most of the day. They need to be able to hold glass in place until it can be fully secured.

PHYSICAL STRENGTH helps when glaziers have to lift heavy pieces of glass for hanging.

CARPENTERS

2019 MEDIAN WAGE

\$22.41 PER HOUR

Entry-Level Education

High School Diploma or equivalent

Typical On the Job Training Needed

Apprenticeship

Number of Jobs in Michigan, 2019

20,480

Real Time Job Growth Demand, Dec 2020

261

Forecasted Employment Growth through 2028

2.8%

WHAT CARPENTERS DO

Carpenters are one of the most versatile construction occupations, with workers usually doing many different tasks. Residential carpenters typically specialize in new-home, townhome, and condominium building and remodeling. As part of a single job, they might build and set forms for footings, walls, and slabs, and frame and finish exterior walls, roofs, and decks. They also frame interior walls, build stairs, and install drywall, crown molding, doors, and cabinets. In addition, residential carpenters may tile floors and lay wood floors and carpet. Fully trained construction carpenters can easily switch from new home building to remodeling.

WORK ENVIRONMENT

Because carpenters are involved in many types of construction, from building highways and bridges to installing kitchen cabinets, they work both indoors and outdoors. Carpenters may work in cramped spaces, with frequent lifting, standing, and kneeling. Those who work outdoors are subject to various weather conditions.

KNOWLEDGE, SKILLS AND ABILITIES

BUSINESS SKILLS are needed by self-employed carpenters that will be used in bidding new jobs, tracking inventory, and planning work assignments.

DETAIL ORIENTED qualities are needed when making precise measurements, for example, reducing gaps between windows and frames, limiting any leaks around the window.

MANUAL DEXTERITY is needed for hand-eye coordination when using tools in order to avoid injury.

MATH SKILLS are used daily to calculate volume and measure materials to be cut.

PHYSICAL STAMINA is needed to lift heavy tools and materials while standing, climbing, or bending for long periods.

PHYSICAL STRENGTH is needed for lifting and holding heavy tools and materials.

PROBLEM SOLVING SKILLS come in handy as every construction job is different, so carpenters must adjust project plans accordingly.

DRYWALL AND CEILING TILE INSTALLERS, AND TAPERS

2019 MEDIAN WAGE

\$20.63 PER HOUR

Entry-Level Education

Less than High School

Typical On the Job Training Needed

Moderate-Term on-the-job training

Number of Jobs in Michigan, 2019

1,250

Real Time Job Growth Demand, Dec 2020

39

Forecasted Employment Growth through 2028

-2.5%

WHAT DRYWALL AND CEILING TILE INSTALLERS DO

Drywall and ceiling tile installers hang wallboards to walls and ceilings and install ceiling tile inside buildings. Tapers prepare the wallboards for painting, using tape and other materials. Many workers do both installing and taping.

WORK ENVIRONMENT

Drywall and ceiling tile installers and tapers spend most of the day standing, bending, or stretching.

KNOWLEDGE, SKILLS AND ABILITIES

MATH SKILLS are used by drywall and ceiling tile installers and tapers on every job. They must be able to estimate quantity of materials needed and measure accurately when cutting panels.

PHYSICAL STAMINA is needed as installers and tapers constantly lift and move heavy materials into place. Workers should be in good physical shape.

PHYSICAL STRENGTH

is required since standard drywall sheets can weigh up to 50 to 100 pounds. Drywall and ceiling tile installers often must lift heavy panels over their heads to secure into the ceiling.



INSULATION WORKERS – FLOOR, CEILING AND WALL

2019 MEDIAN WAGE	\$24.50 PER HOUR
Entry-Level Education	Less than high school
Typical On the Job Training Needed	Apprenticeship
Number of Jobs in Michigan, 2019	570
Real Time Job Growth Demand, Dec 2020	15
Forecasted Employment Growth through 2028	4.0%

WHAT INSULATION WORKERS DO

Insulation workers install and replace the materials used to insulate buildings to help control and maintain the temperatures in the building.

WORK ENVIRONMENT

Insulation workers generally work indoors in residential and industrial settings. They spend most of their workday standing, bending, or kneeling, often in confined spaces.

KNOWLEDGE, SKILLS AND ABILITIES

DEXTERITY is needed so you can work in confined spaces while maintaining coordination and control of tools and materials. You often reach above your head to fit and fasten insulation in place.

MECHANICAL SKILLS are needed while using a variety of hand and power tools to install insulation. Those who apply foam insulation, for example, must be able to operate a compressor and sprayer to spread the foam onto walls or across attics.

PHYSICAL STAMINA is needed while you are spending most of the day standing, stretching, and bending. Workers should be able to stay physically active without getting tired.

HEATING, AIR CONDITIONING, AND REFRIGERATION MECHANICS AND INSTALLERS

2019 MEDIAN WAGE

\$22.85 PER HOUR

Entry-Level Education

Postsecondary non-degree award

Typical On the Job Training Needed

Long-term on-the-job training

Number of Jobs in Michigan, 2019

9,010

Real Time Job Growth Demand, Dec 2020

284

Forecasted Employment Growth through 2028

8.0%

WHAT HVAC INSTALLERS DO

Heating, air conditioning, and refrigeration mechanics and installers –often called HVACR technicians – work on heating, ventilation, cooling and refrigeration systems that control the temperature and air quality in buildings.

WORK ENVIRONMENT

HVACR technicians work in residential homes, schools, hospitals, office buildings, or factories. Their worksite may be very hot or cold because the heating and cooling systems they must repair may not be working, and because some parts of these systems are located outdoors. Irregular hours and working in cramped spaces are common.

KNOWLEDGE, SKILLS AND ABILITIES

Candidates familiar with computers and electronics and those with good troubleshooting skills will have the best job opportunities as employers continue to have difficulty finding qualified technicians to work on complex new systems.



PLUMBERS, PIPEFITTERS AND STEAMFITTERS

2019 MEDIAN WAGE	\$31.61 PER HOUR
Entry-Level Education	High School Diploma or equivalent
Typical On the Job Training Needed	Apprenticeship
Number of Jobs in Michigan, 2019	12,180
Real Time Job Growth Demand, Dec 2020	141
Forecasted Employment Growth through 2028	7.4%

WHAT PLUMBERS, PIPEFITTERS, AND STEAMFITTERS DO

Plumbers, pipefitters, and steamfitters install and repair pipes that carry liquids or gases into and out of businesses, homes and factories. They install pipes and fixtures, study blueprints and follow state and local building codes, determine the amount of material and type of equipment needed, inspect and test installed pipe systems and pipelines, troubleshoot systems that are not working and replace worn parts.

WORK ENVIRONMENT

Plumbers, pipefitters, and steamfitters work where there are pipes or septic systems. They often must lift heavy materials, climb ladders, and work in tight spaces. Some plumbers travel to a variety of worksites every day. A few work outdoors, even in bad weather.

KNOWLEDGE, SKILLS AND ABILITIES

Business skills are used by plumbers who own their own business. They must be able to direct workers, bid on jobs, and plan work schedules.

Customer-service skills are needed when working with customers on a regular basis, so they should be polite and courteous.

Mechanical skills are used by plumbers, pipefitters, and steamfitters. They use a variety of tools to assemble and repair pipe systems. Choosing the right tool and successfully installing, repairing, or maintaining a system is crucial to their work.

Physical strength is needed by plumbers, pipefitters, and steamfitters. They need to be strong enough to lift and move heavy pipe.

Troubleshooting skills are needed by plumbers, pipefitters, and steamfitters to find, diagnose, and repair problems. For example, pipefitters must be able to perform pressure tests to pinpoint the location of a leak.

ROOFERS

2019 MEDIAN WAGE

\$20.35 PER HOUR

Entry-Level Education

Less than High School

Typical On the Job Training Needed

Moderate-term on-the-job training

Number of Jobs in Michigan, 2019

2,790

Real Time Job Growth Demand, Dec 2020

84

Forecasted Employment Growth through 2028

6.0%

WHAT ROOFERS DO

Roofers typically do the following:

- Inspect problem roofs to determine the best way to repair them
- Measure roof to calculate the quantities of materials needed
- Replace damaged or rotting joists or plywood
- Install vapor barriers or layers of insulation
- Install shingles, asphalt, metal, or other materials to make the roof watertight
- Align roofing materials to fit around walls or vents
- Cover exposed nail or screw heads with roofing cement or caulk to prevent leakage

WORK ENVIRONMENT

Roofing work can be hot and physically demanding. It involves heavy lifting, as well as climbing, bending, and kneeling. Roofers work outdoors in all types of weather, particularly when making repairs. However, they rarely install roofs when it rains or when it is very cold.

KNOWLEDGE, SKILLS AND ABILITIES

BALANCE is required as roofing is often done on steep slopes at significant heights. Good balance is required to avoid falling.

PHYSICAL STAMINA allows roofers to have the endurance to perform strenuous duties throughout the day. They may spend hours on their feet, bending and stooping, often in hot temperatures, with few breaks.

PHYSICAL STRENGTH is needed to lift and carry heavy materials. Bundles of shingles can weigh 60 pounds or more.

CARPET INSTALLERS

2019 MEDIAN WAGE	\$18.30 PER HOUR
Entry-Level Education	Less than High School
Typical On the Job Training Needed	Short-term on-the-job Training
Number of Jobs in Michigan, 2019	1,050
Real Time Job Growth Demand, Dec 2020	10
Forecasted Employment Growth through 2028	-2.1%

WHAT CARPET INSTALLERS DO

This occupation is also referred to as floor covering installers. They mainly install, repair and replace floor-covering materials such as underlayment, carpet, vinyl, resilient tile and ceramic tile.

WORK ENVIRONMENT

As one would guess, a floor cover installer spends a great deal of time bent over and on their knees. Depending on what materials they are installing, different tools will be used.

KNOWLEDGE, SKILLS AND ABILITIES

A floor covering installer will need to be able to:

- Read and interpret drawings and specifications
- Inspect and prepare subfloors for covering
- Determine where to place any necessary seams or joints, and estimate the quantity of material required
- Measure and cut floor covering materials to fit around permanent obstructions
- Lay and tack down or glue a foam or rubber pad over floors to be carpeted
- Sew carpet seams together or use special heat tape to join carpet pieces
- Stretch carpet and fasten it with a tackless strip around perimeter of the room, or by gluing it to the floor
- Install vinyl flooring and resilient tiles by applying adhesive to the subfloor, laying the covering, and rolling it with a roller
- Install ceramic tiles
- Remove existing floor coverings and contaminants if necessary

You will need to be in good physical health, including good vision and spatial awareness. You will also need manual dexterity and motor coordination. Mathematical ability is a must, as are communication skills and interpersonal skills.

ELECTRICIANS

2019 MEDIAN WAGE

\$29.54 PER HOUR

Entry-Level Education

High School Diploma or equivalent

Typical On the Job Training Needed

Apprenticeship

Number of Jobs in Michigan, 2019

22,380

Real Time Job Growth Demand, Dec 2020

260

Forecasted Employment Growth through 2028

5.5%

WHAT ELECTRICIANS DO

Electricians install and maintain electrical power, communications, lighting, and control systems in homes, businesses, and factories.

Residential electricians install wiring and troubleshoot electrical problems in peoples' homes. Those who work in new-home construction install outlets and provide access to power where needed. Those who work in maintenance and remodeling typically repair and replace faulty equipment.

WORK ENVIRONMENT

Electricians work indoors and outdoors, in nearly every type of facility. Almost all electricians work full time, which may include evenings and weekends.

KNOWLEDGE, SKILLS AND ABILITIES

BUSINESS SKILLS are needed by self-employed electricians so they can bid on new jobs, track inventory, and plan payroll and work assignments.

COLOR VISION is a must as electricians identify wires by color.

CRITICAL THINKING SKILLS are used when electricians perform tests and use the results to diagnose problems. For example, if an outlet isn't working, they must use a multimeter to check the voltage, amperage, or resistance to determine the best course of action.

CUSTOMER-SERVICE SKILLS are needed as you deal with people on a regular basis. As a result, electricians should be friendly and be able to address the customers' questions.

TROUBLESHOOTING SKILLS are used by electricians daily. They find, diagnose, and repair problems. For example, if a motor stops working, they perform tests to determine the cause and failure and then, depending on the results, fix or replace the motor.

COST ESTIMATOR

2019 MEDIAN WAGE

\$29.53 PER HOUR

Entry-Level Education

Bachelor's Degree

Typical On the Job Training Needed

Moderate-Term On-the-Job Training

Number of Jobs in Michigan, 2019

6,910

Real Time Job Growth Demand, Dec 2020

150

Forecasted Employment Growth through 2028

3.6%

WHAT COST ESTIMATORS DO

Estimators analyze costs and prepare estimates on residential construction projects. They are typically employed by homebuilders, suppliers and contractors. Possible career path options include senior management, supervisory positions and inspectors.

WORK ENVIRONMENT

An estimator spends most of his/her time reading and interpreting working drawings for new home construction. They prepare, update and maintain job specifications. They calculate quantities of building materials required to complete the job. They set up cost monitoring and reporting systems and procedures. They need to be able to prepare cost statements at regular intervals.

KNOWLEDGE, SKILLS AND ABILITIES

- Numerical and analytical ability
- Knowledge of computers/spreadsheets
- Knowledge of drafting
- Complete understanding of construction procedures
- Organizational skills
- Negotiation skills
- Communication skills
- Interpersonal skills

PAINTERS, CONSTRUCTION, AND MAINTENANCE

2019 MEDIAN WAGE	\$18.25 PER HOUR
Entry-Level Education	Less than High School
Typical On the Job Training Needed	Moderate-term on-the-job training
Number of Jobs in Michigan, 2019	4,560
Real Time Job Growth Demand, Dec 2020	140
Forecasted Employment Growth through 2028	-0.7%

WHAT PAINTERS, CONSTRUCTION, & MAINTENANCE WORKERS DO

Painters do more than paint. Before they even pick up a paint brush they have to typically do the following:

- Cover floors and furniture with drop cloths and tarps to protect surfaces
- Remove fixtures such as pictures, doorknobs, or electrical switch covers
- Put up scaffolding and set up ladders
- Fill holes and cracks with putty, plaster, or other compounds
- Calculate the area to be painted and determine the amount of paint needed
- Apply primers or sealers for desired color and appearance
- Apply paint or other finishes, using hand brushes, rollers or sprayers

WORK ENVIRONMENT

Painting requires a lot of climbing, bending, kneeling, and stretching.

KNOWLEDGE, SKILLS AND ABILITIES

COLOR VISION is needed so painters can identify and differentiate between subtle differences in color of paints.

CUSTOMER-SERVICE SKILLS are an important skill for workers who paint the inside and outside of residential homes. In those situations they often interact with clients. They must communicate with the client, listen to what the client wants, and select colors and application techniques that satisfy the client.

ATTENTION TO DETAIL is needed by painters when creating or painting edges, because minor flaws can be noticeable.

PHYSICAL STAMINA allows painters to stay physically active for many hours, because they spend most of the day standing with their arms extended.

