

## Construction and Extraction

### Cement Masons and Concrete Finishers

***Cement Masons and Concrete Finishers*** all work with concrete, one of the most common and durable materials used in construction. Once set, concrete - a mixture of Portland cement, sand, gravel, and water - becomes the foundation for everything from decorative patios and floors to huge dams or miles of roadways. Cement masons and concrete finishers lay, smooth and finish surfaces of poured concrete, such as floors, walks, sidewalks, roads, or curbs using a variety of hand and power tools. They also align the forms that hold the concrete for sidewalks, curbs, or gutters and patch voids. Some may direct the casting of the concrete and supervise laborers who use shovels or special tools to spread it. Cement masons and concrete finishers use tools such as the rake, hand or power trowel, saw, hand or power screed, and float in addition to shovels. They use a special tool called a "groover" to make joints or grooves at specific intervals that help control cracking in the concrete.

Cement masons and concrete finishers sometimes color concrete surfaces, expose aggregate (small stones) in walls and sidewalks, or fabricate concrete beams, columns, and panels. For color, they use colored premixed concrete. For a coarse, nonskid finish, masons brush the surface with a broom or stiff-bristled brush. For a pebble finish, they embed small gravel chips into the surface. They then wash any excess cement from the exposed chips with a mild acid solution.

Aside from finishing surfaces their responsibilities include mixing cement, sand, and water to produce concrete, grout, or slurry and monitoring how the wind, heat, or cold affect the curing of the concrete throughout the entire process. They must inspect equipment, structures, or materials to identify the cause of errors or other problems. They should have a thorough knowledge of concrete characteristics so that, by using sight and touch, they can determine what is happening to the concrete and take measures to prevent defects.

Specialized cement masons and concrete finishers include segmental pavers who lay out, cut, and install pavers - flat pieces of masonry made from compacted concrete or brick. This masonry is typically installed in patios, sidewalks, plazas, streets, crosswalks, parking lots, and driveways. Installers usually begin their work by preparing a base that has been graded to the proper depth and filled and leveled with a layer of sand. Installers then place the pavers in a pattern, normally by hand but sometimes by machine. Sand is then added to fill the joints between the pavers.

Cement masons and concrete finishers often have variable schedules and work overtime, with premium pay, because once concrete has been placed, the job must be completed quickly. The work is fast paced and strenuous, and requires continuous

physical effort. Because most finishing is done at floor level, workers must bend and kneel often. Many jobs are outdoors, and work is generally halted during inclement weather. The work, either indoors or outdoors, may be in areas that are muddy, dusty, or dirty. To avoid chemical burns from uncured concrete and sore knees from frequent kneeling, many workers wear kneepads. Workers usually wear water-repellent boots while working with wet concrete. A work week of 40 hours is the most common, although the number of hours can be increased or decreased by outside factors, such as the need to coordinate work with other jobs being done on the construction site.

## **Education/Training**

### *How to Obtain:*

Generally a High School Diploma or equivalent is needed, and many workers also have a technical certificate from a vocational school, or through an Associate's degree program. Many individuals learn on the job as helpers or laborers. Another option is to join an apprenticeship program, which typically lasts between 3 and 4 years and includes about 144 hours of classroom work. The curriculum includes:

- Introduction to the industry and trade history
- Identification and proper use of tools
- Material composition and mixes
- Repair and restoration
- Scaffolding and OSHA Safety Courses
- Blueprint reading
- First-aid and CPR Certification

Apprenticeship programs can be found through organizations such as the International Masonry Institute, The Operative Plasterers' and Cement Masons' International Association (OPCMIA) and the National Concrete Masonry Association (NCMA).

Certification is not necessary but is offered by various organizations and is sometimes pursued for higher level, less hands-on positions or for career advancement. NCMA certification includes the Certified Concrete Masonry Testing Technician (CCMTT) Certification Program, Certified Consultant of Concrete Masonry (C3M) Certification Program and the Certified SRW Installer (CSRWI) Certification Program. Each requires that a course be taken followed by the passing of a written exam. Course prices vary by local course sponsors. Additionally, some schools offer technical or Associates degrees with an emphasis in specific areas.

The American Concrete Institute (ACI) offers certification in up to 17 certification programs designed to form a minimum qualification for personnel employed within the concrete construction industry. ACI Certification programs are ADA compliant. Individuals with disabilities requiring special accommodations must contact the ACI Certification Department for further information on how to proceed. ACI certification

programs are conducted at the local level by ACI sponsoring groups which are each granted a geographical jurisdiction. Within their jurisdiction, the local sponsoring group is responsible for conducting the certification examinations and training courses.

*Requirements for certification include:*

- Completing required and optional courses
- Knowledge of basic concrete technology
- Knowledge of concrete materials and mix proportioning
- Passing a written examination

*More Information on Certification and Apprenticeship Programs:*

- American Concrete Institute (ACI):  
[http://www.concrete.org/CERTIFICATION/CERT\\_SPON.HTM](http://www.concrete.org/CERTIFICATION/CERT_SPON.HTM)
- The National Concrete Masonry Association (NCMA):  
<http://www.ncma.org/development/certifications/Lists/Certification%20Programs/AllItems.aspx>
- The Operative Plasterers' and Cement Masons' International Association (OPCMIA):  
[http://www.opcmia.org/index.php?option=com\\_content&task=view&id=24&Itemid=53](http://www.opcmia.org/index.php?option=com_content&task=view&id=24&Itemid=53)
- The International Masonry Institute:  
<http://www.imiweb.org/training/certifications/index.php>

*Average Costs:*

Apprenticeship programs generally do not charge the apprentice for classroom instruction, provided the apprentice maintains employment with a contractor affiliated with the apprenticeship program, throughout the apprenticeship period of 3 to 4 years. Concrete finisher certification exams cost between \$195 and \$225, in addition to the cost of any exam study aids.