

## L1 CONCRETE CONSTRUCTION

LEVEL 1



### Curriculum Notes

- 265.5 Hours (includes Core)
- Published: 2020
- A Spanish translation is available. Please see NCCER's online catalog for more information.
- Downloadable instructor resources that include module tests, PowerPoints®, and performance profile sheets are available at [www.nccer.org/irc](http://www.nccer.org/irc).

### PAPERBACK

Trainee Guide: \$69.99

### ISBN

978-0-13-686828-6

### MODULES

The modules listed below are included in the Trainee Guide. The following ISBNs are for ordering individual modules only.

#### Introduction to Concrete Construction

(10 Hours)

ISBN 978-0-13-686837-8

(Module ID 23101) Introduces the role of concrete in construction and identifies basic concrete properties and characteristics. Provides an overview of the concrete construction process, identifies opportunities available to concrete craftworkers, and describes the purpose and structure of apprenticeship programs.

#### Concrete Safety (7.5 Hours)

ISBN 978-0-13-686836-1

(Module ID 23102) Describes the role of OSHA in the workplace and presents safety hazards unique to the concrete construction environment, including the control of silica dust. Identifies and describes the PPE concrete craftworkers commonly require.

#### Fall Protection Orientation (8 Hours)

ISBN 978-0-13-530500-3

(Module ID 75901; from *Fall Protection Orientation*) Covers fundamental safety and hazard recognition concepts. Introduces the role of OSHA in regulating elevated work on the jobsite and the causes, costs, and consequences of falls. Presents proper use of fall protection equipment; safe use of stairs, ladders, and scaffolds; and guidelines for use of aerial lifts.

#### Concrete Tools and Equipment (12.5 Hours)

ISBN 978-0-13-686814-9

(Module ID 23104) Introduces trainees to a wide variety of both hand tools and powered equipment used in concrete construction, including screeds, floats, trowels, saws, grinders, and mixing equipment. Tips for the safe use of tools and equipment are also provided.

#### Preparing for Placement (15 Hours)

ISBN 978-0-13-686813-2

(Module ID 23105) Provides an overview of common concrete-construction tasks that take place before placement begins. Covers elevations and subgrade preparation, as well basic form types, joints, and pre-placement inspections.

#### Reinforcing Concrete (15 Hours)

ISBN 978-0-13-378679-8

(Module ID 27304; from *Carpentry Level Three*) Explains the selection and uses of different types of reinforcing materials. Describes requirements for bending, cutting, splicing, and tying reinforcing steel and the placement of steel in footings and foundations, walls, columns, and beams and girders.

#### Foundations and Slabs-On-Grade (20 Hours)

ISBN 978-0-13-378680-4

(Module ID 27307; from *Carpentry Level Three*) Covers basic site layout safety, tools, and methods; layout and construction of deep and shallow foundations; types of foundation forms; layout and formation of slabs-on-grade; and forms used for curbing and paving.

#### Vertical Formwork (22.5 Hours)

ISBN 978-0-13-378681-1

(Module ID 27308; from *Carpentry Level Three*) Covers the applications and construction methods for types of forming and form hardware systems for walls, columns, and stairs, as well as slip and climbing forms. Provides an overview of the assembly, erection, and stripping of gang forms.

#### Horizontal Formwork (15 Hours)

ISBN 978-0-13-378682-8

(Module ID 27309; from *Carpentry Level Three*) Describes elevated decks and formwork systems and methods used in their construction. Covers joist, pan, beam and slab, flat slab, composite slab, and specialty form systems and provides instructions for the use of flying decks, as well as shoring and reshoring systems.

#### Site Concrete (35 Hours)

ISBN 978-0-13-686806-4

(Module ID 23204) Describes the construction of various placements that are common to many building construction projects, including curbs and gutters, stairways and steps, walks, driveways, and patios.

#### Finishing Concrete (20 Hours)

ISBN 978-0-13-686809-5

(Module ID 23120) Identifies and describes how to apply basic concrete finishing techniques. Includes coverage of floating and troweling, edging, jointing, and various surface finishes.

#### Curing and Protecting Concrete (10 Hours)

ISBN 978-0-13-686827-9

(Module ID 23108) Describes the essential concrete curing and protection process. Introduces various approaches to curing and the primary factors that significantly affect the resulting strength and durability of the placement.

## L2 CONCRETE CONSTRUCTION

LEVEL 2

### Curriculum Notes

- 147.5 Hours
  - 177.5 hours with electives
- Published: 2020
- Downloadable instructor resources that include module tests, PowerPoints®, and performance profile sheets are available at [www.nccer.org/irc](http://www.nccer.org/irc).

### PAPERBACK

Trainee Guide: \$99.99

### ISBN

978-0-13-689832-0

### MODULES

The modules listed below are included in the Trainee Guide. The following ISBNs are for ordering individual modules only.

#### Properties of Concrete (15 Hours)

ISBN 978-0-13-689826-9

(Module ID 23212) Presents the many possible components of concrete, including the desirable properties of the chosen aggregate and water. Includes a review of chemical and mineral admixtures, fibers, and special types of concrete. Also covers the basics of concrete testing.

#### Estimating Concrete Quantities (12.5 Hours)

ISBN 978-0-13-689821-4

(Module ID 23202) Reviews basic mathematical calculations for area and volume as well as metric conversions to prepare trainees for the module topic. A review of drawings and their interpretation is also provided, along with guidance for estimating the volume of concrete needed in placements of various shapes.

#### Tilt-Up Wall Systems (17.5 Hours, Elective)

ISBN 978-0-13-378684-2

(Module ID 27310; from *Carpentry Level Three*) Describes how tilt-up concrete construction is used and how tilt-up panels are formed, erected, and braced. Covers the installation of rebar and types of embedments used to lift and brace the panels. Also covers methods used to create architectural and decorative treatments.

#### Paving (12.5 Hours, Elective)

ISBN 978-0-13-448586-7

(Module ID 36108; from *Heavy Highway Level Two*) Describes paving operations, paving equipment, recycling processes, and quality control requirements for both concrete and hot-mix asphalt paving.

#### Architectural Finishes (22.5 Hours)

ISBN 978-0-13-689831-3

(Module ID 23205) Identifies and describes various architectural finishes and how they are applied. Covers the coloration of concrete surfaces and how to use form liners and stamps to create texture. Provides detailed guidance on the creation of exposed aggregate finishes.

#### Industrial Floors (27.5 Hours)

ISBN 978-0-13-689822-1

(Module ID 23206) Presents this key segment of concrete flatwork and the characteristics of industrial floors while explaining how industrial-class floors are created, including pre-placement considerations.

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## Concrete Construction Level 2 (Continued)

### **Superflat Floors** (20 Hours)

ISBN 978-0-13-689825-2

(Module ID 23207) Describes random-traffic and defined-traffic superflat floors and the flat and level characteristics that set them apart from other slabs. Provides insight into the finishing process and describes how various floor-measurement instruments are used to document the results.

### **Surface Treatments** (15 Hours)

ISBN 978-0-13-730570-4

(Module ID 23208) Provides detailed coverage of the many methods used to prepare a concrete surface to meet a specific surface profile, from detergent scrubbing to rotomilling. Also identifies and describes how to apply shakes, protective sealants and coatings, and self-leveling toppings and underlayments.

### **Troubleshooting and Quality Control** (15 Hours)

ISBN 978-0-13-689843-6

(Module ID 23220) Defines quality control and discusses fresh-concrete troubleshooting and problem resolution. Provides detailed coverage of concrete field tests and specimen preparation according to ASTM standards.

### **Concrete Repair** (20 Hours)

ISBN 978-0-13-689836-8

(Module ID 23210) Provides an overview of the concrete repair process, focusing on repairing concrete with concrete. Explains how hidden concrete faults and embedments are located and how to properly prepare reinforced concrete for placement of the repair material. Coverage of pre-placement and post-placements inspections is also provided.