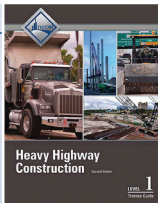


Heavy Highway Construction

L1 HEAVY HIGHWAY CONSTRUCTION

LEVEL 1



Curriculum Notes

- 232.5 Hours (includes Core)
- Revised: 2017, Second Edition
- Introduction to Basic Rigging (Module ID 00106) from Core is required for Level 1 completion.
- Downloadable instructor resources are available.

PAPERBACK

Trainee Guide: \$74.99

ISBN

978-0-13-498617-3

MODULES

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

Orientation to the Trade (7.5 Hours)

ISBN 978-0-13-448575-1

(Module ID 36101-17) Introduces the trainees to careers, equipment, and processes used in the construction of highways and bridges.

Identification of Equipment Used in Heavy Highway Construction (10 Hours)

ISBN 978-0-13-448579-9

(Module ID 36111-17) Describes the types of heavy equipment, utility equipment, and cranes used in the construction of bridges and highways. Trainees will be expected to recognize the equipment and describe its use.

Heavy Highway Construction Safety (5 Hours)

ISBN 978-0-13-448577-5

(Module ID 36110-17) Reviews the safety hazards and precautions associated with construction of highways and bridges. It also emphasizes the importance of following safety procedures in order to prevent accidents and injuries associated with working in hazardous places/conditions.

Work-Zone Safety (5 hours)

ISBN 978-0-13-340361-9

(Module ID 75104-13; from *Field Safety*) Introduces the signs, signals, and barricades found on various job sites, and covers highway work-zone safety requirements.

Soils (10 Hours)

ISBN 978-0-13-340328-2

(Module ID 22308-13; from *Heavy Equipment Operations Level Two*) Describes soil classification systems and explains how shrink and swell factors affect equipment selection. Discusses how soil conditions affect equipment performance and explains techniques for working with various types of soils.

Site Work (20 Hours)

ISBN 978-0-13-340326-8

(Module ID 22210-13; from *Heavy Equipment Operations Level Two*) Expands on information covered in Level 1 in relation to setting and interpreting grade stakes. Also provides information and instructions on controlling surface water and ground water on a job site, as well as the layout of foundations and laying of pipe.

Excavation Math (17.5 Hours)

ISBN 978-0-13-340323-7

(Module ID 22207-13; from *Heavy Equipment Operations Level Two*) Covers basic math skills required for site excavation work. Includes methods and practice in calculating the areas and volumes of various geometric shapes, as well as formulas and methods used to calculate cut and fill requirements on a job.

Interpreting Civil Drawings (20 Hours)

ISBN 978-0-13-340325-1

(Module ID 22209-13; from *Heavy Equipment Operations Level Two*) Explains how to read site plans to calculate cut and fill requirements. Provides instruction and practice in interpreting both roadway and construction site drawings used for excavation and grading work.

Rigging Practices (15 Hours)

ISBN 978-0-13-498801-6

(Module ID 38102; from *Basic Rigger*) Describes basic rigging and safety practices related to rigging activities. Describes the use and inspection of equipment and hardware used in rigging. Explains how to apply common hitches. Covers jacks and hoisting equipment.

Crane Safety and Emergency Procedures

(25 Hours)

ISBN 978-0-13-498819-1

(Module ID 21106; from *Mobile Crane Operations, Level One*) Covers safety standards and best safety practices relevant to the operation of cranes. Describes safety considerations related to power lines, weather conditions, and specific crane functions.

Basic Principles of Cranes (15 Hours)

ISBN 978-0-13-498816-0

(Module ID 21102 from *Mobile Crane Operations, Level One*) Introduces mobile crane equipment with an in-depth discussion of terminology and nomenclature. Explains the basic scientific principles associated with mobile crane operation.

Crane Communications (10 Hours)

ISBN 978-0-13-498800-9

(Module ID 53101; from *Signal Person*) Describes the communication process between the signal person and the crane operator. Covers electronic communications as well as the standard hand signals in 29 CFR 1926.

L2 HEAVY HIGHWAY CONSTRUCTION

LEVEL 2

Curriculum Notes

- 207.5 Hours
- Published: 2017
- Downloadable instructor resources are available.
- For more information, visit www.nccer.org/book-updates.

PAPERBACK

Trainee Guide: \$99.99

ISBN

978-0-13-498811-5

MODULES

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

Introduction to Earthmoving (12.5 Hours)

ISBN 978-0-13-292310-1

(Module ID 22201-12; from *Heavy Equipment Operations Level One*) Provides a broad introduction to the process of planning and executing earthmoving activities on various types of construction projects. The use of heavy equipment such as bulldozers, scrapers, excavators, and loaders is explained.

Finishing and Grading (25 Hours)

ISBN 978-0-13-377955-4

(Module ID 22307-14; from *Heavy Equipment Operations Level Three*) Provides training on common types of equipment and instruments used for finish grading; materials and methods used to stabilize soils and control soil erosion; and finishing and grading methods used for various applications.

Trenching and Excavating (15 Hours)

ISBN 978-0-13-378678-1

(Module ID 27306-14; from *Carpentry Level Three*) Provides an introduction to working in and around excavations, particularly in preparing building foundations. Describes types and bearing capacities of soils; procedures used in shoring, shielding, and sloping trenches and excavations; trenching safety requirements, including recognition of unsafe conditions; and mitigation of groundwater and rock when excavating foundations.

Plant Operations (7.5 Hours)

ISBN 978-0-13-448584-3

(Module ID 36107-17) Explains the operation of plants used to manufacture concrete and asphalt paving and describes the different types aggregates.

Continued on following page

Heavy Highway Construction Level 2 (continued)

Paving (12.5 Hours)

ISBN 978-0-13-448586-7

(Module ID 36108-17) Describes paving operations, paving equipment, recycling processes, and quality control requirements for both concrete and hot-mix asphalt paving.

Horizontal Formwork (15 Hours)

ISBN 978-0-13-378682-8

(Module ID 27309-14; 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.

Vertical Formwork (22.5 Hours)

ISBN 978-0-13-378681-1

(Module ID 27308-14; 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.

Reinforcing Concrete (15 Hours)

ISBN 978-0-13-378679-8

(Module ID 27304-14; 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.

Working with Concrete (15 Hours)

ISBN 978-0-13-448582-9

(Module ID 36112-17) Introduces the trainees to the safety concerns associated with concrete, as well as concrete testing, concrete admixtures, and the proper procedure for placing concrete.

Trade Drawings One (12.5 Hours)

ISBN 978-0-13-215103-0

(Module ID 30108-11; from *Ironworking Level One*) Identifies the materials used in steel-framed buildings. Explains how to read basic structural blueprints.

Structural Ironworking One (7.5 Hours)

ISBN 978-0-13-215104-7

(Module ID 30109-11; from *Ironworking Level One*) Identifies the types of construction that utilize structural steel, the components of the structures, and the process involved in erecting a steel structure. Explains the principles of structural stresses and the requirements of bolted connections.

Bridge Construction (20 Hours)

ISBN 978-0-13-448588-1

(Module ID 36201-17) Describes the common types of bridges, along with the components that make up the substructure and superstructure of a bridge. The module also discusses the types of materials used in bridge construction, presents basic surveying equipment and practices, and explains how to interpret bridge drawings.

Bridge Foundations (10 Hours)

ISBN 978-0-13-448591-1

(Module ID 36202-17) Describes the types of footings used to support bridges, as well as various types of piles and pile-driving methods. Safety practices associated with pile driving on land and in marine environments are also covered, along with environmental protection issues.

Bridge Formwork (22.5 Hours)

ISBN 978-0-13-448593-5

(Module ID 36203-17) Describes the forms used to fabricate concrete walls, columns, footings, pile caps, and other bridge structures. This module covers site-built and manufactured forming systems and includes instructions for cleaning and storing forms.

Hydroblasting



20 Hours
Revised: 2012, Second Edition
Module ID 43101-12

PAPERBACK

ISBN

Trainee Guide: \$29.99

978-0-13-294870-8

- Downloadable instructor resources are available.

Includes the newest waterjet safety technologies, methods, and equipment. Also provides expanded information on shrouds, shielding, chocking, and grounding.