



National Craft Assessment and Certification Program S P E C I F I C A T I O N S

INDUSTRIAL CARPENTER V4

CARP27_04

Released June 2013

Focus Statement

An industrial carpenter erects concrete forms, plumb, level and to grade; places embeds; rigs large formwork; has a working knowledge of earthworks and reinforcement, may operate equipment needed to place concrete; reads and interprets construction drawings and operates measuring instruments.

Overview

- Two-hour closed-book examination
- May use a basic function, non-printing calculator
- No extra papers, books, notes or study materials are allowed
- The minimum passing score is 75
- A Performance Verification is available

Study Materials

All NCCER written assessments are referenced to NCCER's curriculum listed in the content. You may

Written Assessment Contents:

Content Domain	Number of Questions
Industrial Carpenter Fundamentals [00101-09, 00102-09, 27102-06, 27103-06, 27110-06]	33
Rigging [27301-07, 27302-07]	10
Concrete [27108-06, 27304-07, 27305-07]	15
Construction Drawings and Layout [27104-06, 27401-08]	12
Trenching and Foundations [27306-07, 27307-07]	13
Formwork [27308-07, 27309-07]	20
Total Number of Questions	103



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Learning Objectives related to Assessment:

	Industrial Maintenance Mechanic Fundamentals
Registry ID Number:	Module Title Objectives:
00101-09	Basic Safety Explain the idea of a safety culture and its importance in the construction crafts. Identify causes of accidents and the impact of accident costs. Explain the role of OSHA in job-site safety. Recognize hazard recognition and risk assessment techniques. Explain fall protection, ladder, stair, and scaffold procedures and requirements. Identify struck-by hazards and demonstrate safe working procedures and requirements. Identify caught-in-between hazards and demonstrate safe working procedures and requirements. Define safe work procedures to use around electrical hazards. Demonstrate the use and care of appropriate personal protective equipment (PPE). Explain the importance of hazard communications (HazCom) and Material Data Safety Sheets (MSDSs). Identify other construction hazards on your job site, including hazards material exposures, environmental elements, welding and cutting hazards, confined spaces, and fires.
00102-09	Introduction to Construction Math Add, subtract, multiply, and divide whole numbers, with and without a calculator. Use a standards ruler, a metric ruler, and a measuring tape to measure. Add, subtract, multiply, and divide fractions. Add, subtract, multiply, and divide decimals, with and without a calculator. Convert decimals to percentages and percentages to decimals. Convert fractions to decimals and decimals to fractions. Recognize some of the basic shapes used in the construction industry and apply basic geometry to measure them.
27102-06	Building Materials, Fasteners, and Adhesives Identify various types of building materials and their uses. Identify the safety precautions associated with building materials. Describe the proper method of storing and handling building materials. Calculate the quantities of lumber and wood products using industry-standard methods. Describe the fasteners, anchors, and adhesives used in construction work and explain their uses.
27103-06	Hand and Power Tools Identify the hand tools commonly used by carpenters and describe their uses. Use hand tools in a safe and appropriate manner. State the general safety rules for operating all power tools, regardless of type. State the general rules for properly maintaining all power tools, regardless of type. Identify the portable power tools commonly used by carpenters and describe their uses. Use portable power tools in a safe and appropriate manner.
27110-06	Basic Stair Layout Identify the various types of stairs. Identify the various parts of stairs. Interpret construction drawings of stairs. Calculate the total rise, number and size of risers, and number and size of treads required for a stairway. Lay out and cut stringers, risers, and treads.

	Build a small stair unit with a temporary handrail.
	Rigging
Registry ID Number:	Module Title Objectives:
27301-07	<p>Rigging Equipment</p> <p>Perform a safety inspection on hooks, slings, and other rigging equipment.</p> <p>Select, inspect, use, and maintain special rigging equipment including:</p> <ul style="list-style-type: none"> · Block and tackle · Chain hoists · Come-alongs · Jacks · Tuggers <p>Tie knots used in rigging.</p>
27302-07	<p>Rigging Practices</p> <p>Determine the weight load.</p> <p>Interpret a load chart.</p> <p>Determine the center of gravity of a load.</p> <p>Properly attach rigging hardware for routine lifts.</p> <p>Use and interpret hand signals.</p> <p>Perform sling tension calculations.</p> <p>Identify requirements for an engineered lift.</p>
	Concrete
Registry ID Number:	Module Title Objectives:
27108-06	<p>Introduction to Concrete and Reinforcing Materials</p> <p>Identify the properties of cement.</p> <p>Describe the composition of concrete.</p> <p>Perform volume estimates for concrete quantity requirements.</p> <p>Identify various types of footings and explain their uses.</p> <p>Identify the parts of various types of forms.</p> <p>Explain the safety procedures associated with the construction and use of concrete forms.</p> <p>Erect, plumb, and brace a simple concrete form with reinforcement.</p>
27304-07	<p>Reinforcing Concrete</p> <p>Describe the applications of reinforcing bars, the uses of reinforced structural concrete, and the basic processes involved in placing reinforcing bars.</p> <p>Read and interpret bar lists and describe the information found on a bar list.</p> <p>List the types of ties used in securing reinforcing bars.</p> <p>Demonstrate the proper use of common ties for reinforcing bars.</p> <p>Describe methods by which reinforcing bars may be cut and bent in the field.</p> <p>Use the tools and equipment needed for installing reinforcing bars.</p> <p>Safely use selected tools and equipment to cut, bend, and install reinforcing materials.</p> <p>Explain the necessity of concrete cover in placing reinforcing bars.</p> <p>Explain and demonstrate how to place bars in walls columns, beams, girders, joists, and slabs.</p> <p>Identify lapped splices.</p>
27305-07	<p>Handling and Placing Concrete</p> <p>Recognize the various equipment used to transport and place concrete.</p> <p>Describe the factors that contribute to the quality of concrete placement.</p> <p>Demonstrate the correct methods for placing and consolidating concrete into forms.</p> <p>Demonstrate how to use a screed to strike off and level concrete to the proper grade in a form.</p> <p>Demonstrate how to use tools for placing, floating, and finishing concrete.</p>

	Determine when conditions permit the concrete finishing operation to start.
	Name the factors that affect the curing of concrete and describe the methods used to achieve proper curing.
	Properly care for and safely use hand and power tools used when working with concrete.
	Drawings and Layout
Registry ID Number:	Module Title Objectives:
27104-06	Reading Plans and Elevations
	Describe the types of drawings usually included in a set of plans and list the information found on each type.
	Identify the different types of lines used on construction drawings.
	Identify selected architectural symbols commonly used to represent materials on plans.
	Identify selected electrical, mechanical, and plumbing symbols commonly used on plans.
	Identify selected abbreviations commonly used on plans.
	Read and interpret plans, elevations, schedules, sections, and details contained in basic construction drawings.
	State the purpose of written specifications.
	Identify and describe the parts of a specification.
	Demonstrate or describe how to perform a quantity takeoff for materials.
27401-08	Site Layout One: Distance Measuring and Leveling
	Describe the major responsibilities of the carpenter relative to site layout.
	Convert measurements stated in feet and inches to equivalent measurements stated in decimal feet, and vice versa.
	Use and properly maintain tools and equipment associated with taping.
	Use manual or electronic equipment and procedures to make distant measurements and perform site lay-out tasks.
	Determine approximate distances by pacing.
	Recognize, use, and properly care for tools and equipment associated with differential leveling.
	Use a builder's level and differential leveling procedures to determine site and building elevations.
	Record site layout data and information in field notes using accepted practices.
	Check and/or establish 90-degree angles using the 3-4-5 rule.
	Trenching and Foundations
Registry ID Number:	Module Title Objectives:
27306-07	Trenching and Excavating
	Identify the different types, bearing capacities, and classifications of soils.
	State the purpose of soil density (compaction) tests.
	Explain the safety considerations for trenches and deep excavations.
27307-07	Foundations and Slab-on-Grade
	Establish elevations.
	Identify various types of footing and foundations.
	Select the appropriate footing for a foundation.
	Lay out and construct a selected footing and foundation using an established gridline.
	Install templates, keyways, and embedments.
	Form and strip pier foundation forms and prepare for resetting at another location.
	Identify the different classes of slabs-on-grade.
	Identify edge forms and explain their purpose.
	Construct and disassemble edge forms.
	Install vapor barrier, reinforcement, and control joints.
	Establish finish grade and fill requirements.

Formwork	
Registry ID Number:	Module Title Objectives:
27308-07	Vertical Formwork
	Explain safety procedures associated with using concrete wall forms.
	Explain safety procedures associated with using concrete wall forms.
	Identify the components of each type of vertical forming system.
	Erect, plumb, and brace a selected wall.
	Recognize various types of manufactured forms.
	State the differences in construction and use among different types of forms.
	Erect, plumb, and brace a column form.
	Erect, plumb, and brace a stair form.
	Locate and install bulkheads and embedded forms.
27309-07	Horizontal Formwork
	Identify the safety hazards associated with elevated deck formwork and explain how to eliminate them.
	Identify the different types of elevated decks.
	Identify the different types of flying form systems.
	Identify different types of handset form systems.
	Erect, plumb, brace, and level different types of handset deck form systems.
	Install edge forms, blockouts, embedments, and construction joints.
	Identify typical bridge and culvert form systems.