

Crane Testing Study Guide

The Office of State Fire Marshal is pleased to welcome you to the Connecticut crane industry. We are proud to be one of less than a dozen agencies in the country to regulate cranes and crane operators. You, as a crane operator in today's high technology industry, bear a tremendous responsibility to perform your job safely. It is our prime objective through our regulatory program to assist in operating cranes both efficiently and safety. The following items establish the common foundation of material which all crane operators must know in order to be licensed by the State of Connecticut. This list is meant to serve as a study guide and a general overview of crane operations. However, as a crane operator, you must not only be well trained in operations, but it is essential that you also know the particular machine you are operating. It is therefore imperative that you study the literature provided by the manufacturer prior to operating a particular crane.

FOR THE WRITTEN TEST THE CRANE OPERATOR MUST BE ABLE TO:

- Determine weight of loads by use of simple mathematics and unit weights.
- Know basic rigging:
 - Hardware - wedge sockets, shackles, clips, thimbles, eyebolts, etc.
 - Wire rope - parts of, inspection
 - Different types of slings - effects of sling angle
 - Effects of center of gravity when rigging a load
 - Types of hitches to hold and control loads
- Safety rules - do's and don'ts
- Crane definitions: rated strength, ultimate strength, etc.
- Crane hand signals:
- Crane inspection: pre operation, daily, etc.
- Describe how to preplan a crane lift.
- Crane Load Charts: know how to use and interpret to determine capacity, understand structural strength vs. stability, determine hook height at various radiuses, pick and carry capacities if any.
- Quadrants of operation and their adverse effects: "working over side," "over rear" or 360°
- Know how to change boom sections (lattice boom cranes)
- Operating procedure near power lines and safe working distance
- Know general safety rules - effects of side load, two blocking, shock and dynamic loading, swing out, consideration of weather conditions, items which could cause reductions in rated capacity, net capacity versus gross capacity, proper rope reeving, and other items which could cause crane failure.

FOR THE PRACTICAL TEST THE CRANE OPERATOR MUST BE ABLE TO:

- Perform crane inspection(s).
- Know what required maintenance must be performed.
- Set up crane, use of tape measure to determine radius.
- Be able to answer questions pertaining to the crane or its attachments.
- Perform all functions with a load: hoist load, lower, boom up or down, swing, extend and retract boom (if applicable) and stop as directed.
- Know how to perform a corrective action when necessary to control load.
- Operate from hand signals or two way radios.
- Explain procedure for preplan of a lift.
- Answer questions pertaining to safe crane operation.

SUGGESTED TECHNICAL READING/STUDY MATERIAL:

Mobile Craning Today

38 Commercial Road, Toronto, Ontario, Canada MUG 124

Telephone - 416-425-8710

Mobile Crane Manual - Construction Safety Assoc. of Ontario

21 Voyager Court South, Etobicoke, Ontario, Canada M9W 5M7

Telephone: 1-800-781-2726

Bob's Rigging & Crane Handbook

948 River Ridge Road, Boone, North Carolina 28607

Telephone - 704-264-2718 - FAX - 704-264-0787

ASME/ANSI B30 STANDARDS American Society of Mechanical Engineers,

22 Law Drive, Box 2900, Fairfield, New Jersey 07007-2900

Telephone - 1-800-843-2760 - FAX - 973-882-1717

OSHA Regulations (CFR) 1926.550 Construction 1910.180 General Industry Local OSHA
Area Offices