

**Prerequisites:** This course shall have no formal pre-requisite. The individual should have no history of a disabling medical condition, which may be sufficient reason for disqualification.

**Course Length:** 5-6 hours – Course length shall vary depending on the number of delegates. Total course time includes breaks.

**Class Size:** The maximum number of delegates that may be trained and tested per instructor shall be thirty-five (35) in the classroom session and twenty (20) in the practical session. A second instructor shall be added for the practical session once the participation exceeds twenty (20) and exercises will be divided into groups.

#### **Course Objective**

- Provide delegates assigned to crawler crane duties the necessary skills to safely perform their jobs.
- Provide delegates with recommended practices and guidelines to perform safely while working with crawler cranes.
- Delegates should be able to demonstrate the necessary skills during practical examination and demonstrate knowledge during written examination.

#### **Course Design**

- Power Point© / Lecture / Audio Video / Visual Aids
- Demonstrations
- Practical Exercises

#### **Successful Course Completion**

- Requires a minimum score of 75% or better.
- Delegates will have no more than thirty (30) minutes to complete the exam.
- Grades shall be calculated by dividing the number of questions answered correctly by the total number of exam questions.
- Successful completion of practical session is mandatory.

#### **Course Content Summary**

- Classroom
- Practicals

**Breaks:** 10 minutes (approximately every hour)

**Lunch:** 1 Hour (if applicable)

## **Course Outline**

### **Crane Requirements**

- Definitions
  - Crawler Crane
  - Competent Person
  - Qualified Person
  - Qualified Crane Operator
  - Qualified Inspector
  - Qualified Rigger
- Video – “Basic Rigging Concepts”

### **Crane Components**

- Body of Crane
- Boom Types
  - Lattice
  - Box
- Boom Components
  - Boom/Jib
  - Head Sheave Assembly
  - Structural Integrity
    - Boom Bolts
    - Pin Connectors
  - Pendants
  - Back Stops
  - Common Safety Limit Devices
    - Boom-hoist limit
    - Load hoist limits
    - Boom stops
    - All locking devices
    - Anti-two block devices
  - Hoist Equipment
    - Main/Auxiliary Hoist
    - Blocks/Hooks
      - Hoist Lifting Capacity
    - Wedge sockets
- Video – Drums, Blocks, Sheaves, and Wire Rope

### **Crane Inspection**

- Inspection Categories
  - Frequent
  - Periodic
- Inspection categories

- Each Shift
- Monthly
- Annual
- Recordkeeping

#### Crane Maintenance

- Maintenance Procedures
- Wire Rope Construction/Handling
- Loading Wire Rope on Crane Drum
- Wire Rope Inspection/Replacement Guidelines
- Sheave Inspection

#### Crane Operations

- Lift Capacity
- Boom Angles
- Load Radius
- Load Charts
- Swing Control
- Swing Brake and Locking Device
- General
- Power Plant Control
- Control Forces and Movements
- Engine Clutch
- Resistors
- Switches
- Lift Capacity Chart and Examples
- Boom Deflection

#### Crane Safety

- Load Limiting Factors
- Power Line Safety
  - Power Line Safety (up to 350 kV)—Assembly and Disassembly
  - Power Line Safety (up to 350 kV)—Equipment Operations
  - Table A—Minimum Clearance Distances
  - Power Line Safety (all voltages)—Equipment Operations Closer Than the Table A Zone
- Crane/Rigging Lift Plan
- Personal Protective Equipment
- Accidents
- Access
- Ground Support
- Leveling
- Clearance/Barricades

- Areas of Operation
- Position of the Load
- Cranes in Motion
- Two-Blocking
- Wind
- Load Weight
- Stability
- Signal Person

### Hand Signals

### Practical Session

Practical training shall utilize a crawler crane, various slings, loads & rigging techniques.

Practical shall verify the following:

- Select and wear appropriate PPE during practical training
- Select the appropriate hardware/rigging gear to complete required lifts
- Conduct proper pre-use inspection of crane and rigging gear
- Effectively control the crawler crane operations and use operating indicators
- Accelerate, decelerate, and swing crawler crane in a smooth safe manner
- Verify the load is not swinging prior to landing the load
- Respond to standardized hand signals from signal person
- Keep the hook clear of riggers while the slings are disconnected
- Verify slings are properly connected/free before continuing operation
- Ensure overall safety of the rigging team during crane operations
- Place the hook in a bucket (verify depth position)
- Store hardware/rigging gear properly following its use

### Training Center Provided Material

- PPE

### Delegate Requirements

- Must possess good physical health as the practical training is physical demanding.
- Must provide a Crawler Crane
- Rigging Gear (if onsite)

### Reference Material / Documents

OSHA 29 CFR 1926 Subpart CC: Cranes and Derricks in Construction

OSHA 29 CFR 1910.180: Crawler Locomotive and Truck Cranes

ASME B30.5: Mobile and Locomotive Cranes