

# Mobile Crane Operator Level 2

## Mobile Crane Operator

**Unit:** B1 Trade Math II

**Level:** Two

**Duration:** 14 hours

Theory: 14 hours

Practical: 0 hours

### Overview:

This unit, which builds on *A5 Trade Math I*, is designed to provide the apprentice with additional knowledge about trade math. The unit covers load weight, sling tension, multiple crane lift and load chart calculations.

<b>Objectives and Content:</b>	<b><u>Percent of Unit Mark (%)</u></b>
<b>1. Review unit <i>A5 Trade Math I</i>.</b>	<b>20%</b>
a. Relevant mathematical operations	
b. Trade-related calculations	
<b>2. Perform load weight calculations.</b>	<b>25%</b>
a. Weight of load	
b. Center of gravity	
<b>3. Perform sling tension calculations.</b>	<b>20%</b>
a. Equal sling lengths	
b. Unequal sling lengths	
c. Offset center of gravity	
<b>4. Perform multiple crane lift calculations.</b>	<b>25%</b>
a. Load weight distribution	
b. Placement of connection points	
c. Load hoisting sequence (which crane picks first)	
<b>5. Perform load chart calculations.</b>	<b>10%</b>
a. Net load	
b. Gross load	
c. Capacity percentage	
d. Manufacturer's de-rating	

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## Mobile Crane Operator

**Unit:** B2 Lift Planning II

**Level:** Two

**Duration:** 28 hours

Theory: 14 hours

Practical: 14 hours

### Overview:

This unit, which builds on *A7 Lift Planning I*, is designed to provide the apprentice with additional knowledge about lift planning. The unit covers lift plan considerations for specialty operations and emergency procedures.

<b>Objectives and Content:</b>	<b><u>Percent of Unit Mark (%)</u></b>
<b>1. Review unit <i>A7 Lift Planning I</i>.</b>	<b>35%</b>
<b>2. Describe lift plan considerations for specialty operations.</b>	<b>40%</b>
a. Operating near high voltage	
b. Multiple crane lifts	
c. Hoisting of personnel	
d. Other cranes operating within swing area	
e. Blind hoisting	
f. Precision lift	
g. Critical lift	
h. Load turning	
i. Volatile/Environmentally sensitive loads	
j. Special attachments	
<b>3. Describe emergency procedures.</b>	<b>25%</b>
a. Evacuation procedures	
b. Aerial EMT equipment	
c. Emergency rescue plan	
d. Emergency shutdown procedures	

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## Mobile Crane Operator

**Unit:** B3 Load Chart II

**Level:** Two

**Duration:** 35 hours

Theory: 28 hours

Practical: 7 hours

### Overview:

This unit, which builds on *A6 Load Chart I*, is designed to provide the apprentice with additional knowledge about load chart. The unit covers the use of complex load charts.

<b>Objectives and Content:</b>	<b><u>Percent of Unit Mark (%)</u></b>
<b>1. Review unit <i>A6 Load Chart I</i>.</b>	<b>60%</b>
a. Use of load charts	
b. Crane configuration	
c. Calculation of crane capacities	
d. LMI configuration	
<b>2. Describe and demonstrate the use of complex load charts.</b>	<b>40%</b>
a. Capacities based on crane configurations	
• Boom extensions	
• Counterweight configurations	
• Ball/Block selection	
• Specialty attachments	
• Hoisting mode	
• Pin and latch configurations	
b. Simultaneous use of multiple hoist lines	
• Permissible single line pull (PSLP)	
• Load on each line	
• Line loading vs. boom loading	
• Tandem hoist line considerations	
c. Effects of de-rating on crane capacity	
• Extreme cold weather	
• Wind	
• Marine charts	

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## Mobile Crane Operator

**Unit:** B4 Rigging II

**Level:** Two

**Duration:** 35 hours

Theory: 14 hours

Practical: 21 hours

### Overview:

This unit, which builds on *A9 Rigging I*, is designed to provide the apprentice with additional knowledge about rigging. The unit covers specialty rigging procedures.

<b>Objectives and Content:</b>	<b><u>Percent of Unit Mark (%)</u></b>
<b>1. Review unit <i>A9 Rigging I</i>.</b>	<b>70%</b>
a. Rigging hardware and tools	
b. Wire rope types and applications	
c. Rigging procedures for handling materials	
d. Reeving procedures	
<b>2. Describe and demonstrate specialty rigging procedures.</b>	<b>30%</b>
a. Rigging for multiple crane lifts	
b. Turning loads	
c. Transferring loads	
d. Rigging complex loads	
e. Complex spreader bar assemblies	
f. Engineered rigging drawings	
g. Specialty rigging equipment	
h. Machinery moving	
• Jacking operations	
• Skidding operations	
• Special considerations	

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## Mobile Crane Operator

**Unit:** B5 Mobile Crane Assembly, Disassembly and Transport

**Level:** Two

**Duration:** 21 hours

Theory: 7 hours

Practical: 14 hours

### Overview:

This unit, which builds on *A8 Crane Assembly, Disassembly and Transport*, is designed to provide the apprentice with additional knowledge about mobile crane assembly, disassembly and transport.

<b>Objectives and Content:</b>	<b><u>Percent of Unit Mark (%)</u></b>
<b>1. Review unit <i>A8 Crane Assembly, Disassembly and Transport</i>.</b>	<b>60%</b>
a. General requirements for transporting mobile crane equipment	
b. Procedures for assembly and disassembly of mobile cranes	
<b>2. Perform assembly and disassembly of mobile cranes.</b>	<b>40%</b>
a. Lattice boom	
• Boom assembly	
• Counterweight	
• Jib assembly	
b. Truck-mount	
• Outrigger boxes	
• Counterweight	
• Jib assembly	
c. Crawler	
• Track and car body assembly	
• Track extension procedures	

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## Mobile Crane Operator

**Unit:** B6 Mobile Crane Operation I

**Level:** Two

**Duration:** 42 hours

Theory: 14 hours

Practical: 28 hours

### Overview:

This unit, which builds on *A10 Hoisting Equipment Operation*, is designed to provide the apprentice with additional knowledge about mobile crane operation. The unit covers the roles and responsibilities of lift-area personnel, and advanced mobile crane operation.

<b>Objectives and Content:</b>	<b><u>Percent of Unit Mark (%)</u></b>
<b>1. Review unit <i>A10 Hoisting Equipment Operation</i>.</b>	<b>30%</b>
a. Pre-operational inspection and maintenance procedures	
b. Mobile crane setup	
c. Basic operational procedures specific to mobile crane	
d. Procedures for leaving mobile cranes unattended	
<b>2. Describe and demonstrate the roles and responsibilities of lift-area personnel.</b>	<b>20%</b>
a. Personnel	
• Crane operator	
• Rigger	
• Signal person	
• Crew foreman	
b. Others	
• Site supervisor	
• General Foreman	
• Employer	
• Crane owner	
• Safety personnel	
<b>3. Describe and perform advanced mobile crane operation.</b>	<b>50%</b>
a. Critical lift planning and procedures	
b. Multiple crane lift operations	
c. On rubber operations	
• Pick-and-carry	
• Static	
d. Jib and multiple hook combinations	
e. Precision hoisting operations	

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