

Trade Profile

Tower Crane Operator



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RED SEAL

TRADE PROFILE

Tower Crane Operator



STRUCTURE OF THE TRADE PROFILE

This profile has two sections that provide a snapshot of the trade's description, and all trade activities as they are organized in the Red Seal Occupational Standard:

Description of the Tower Crane Operator trade: an overview of the trade's duties, work environment, job requirements, similar occupations and career progression

Task Matrix: a chart which outlines graphically the major work activities, tasks and sub-tasks of this trade

Major Work Activity (MWA): the largest division within the standard that is comprised of a distinct set of trade activities

Task: distinct actions that describe the activities within a major work activity

Sub-task: distinct actions that describe the activities within a task

A complete version of the occupational standard, which provides additional detail for the trade activities, skills and knowledge can be found at www.red-seal.ca.

Description of the Tower Crane Operator Trade

“Tower Crane Operator” is this trade’s official Red Seal occupational title approved by the CCDA. This standard covers tasks performed by tower crane operators.

Tower crane operators operate tower cranes to lift, move, position and place materials and equipment. They perform pre-operational inspections. They calculate the crane’s lifting capacities according to the crane’s load chart and determine load weight, participate in setting up and dismantling cranes, and position and stabilize the crane before the lift. Tower crane operators work with other workers to make sure the load is placed exactly where they need it. They also perform regular inspections and do minor repairs and maintenance on the equipment.

Tower crane operators work in the heavy industrial, commercial, residential and civil sectors. They may be employed by construction, surface mining, shipbuilding, offshore drilling rigs, railway and crane rental companies. They work outdoors in all kinds of weather, at heights and in noisy environments. Tower crane operators may be required to work in remote job sites.

Tower cranes are used for specific worksite requirements, as they have a smaller footprint compared to mobile cranes and are productive on sites where they will be used for a lengthy period. Some tower cranes are constructed by bolting a base to a specially made concrete pad or a ballasted base, and then erecting a tower (mast) of latticed steel up from it. Engineered counterweights are used to provide stability. On a hammerhead crane, a boom or jib extends horizontally across the top of the crane. A crane cab where the operator sits is installed where the mast and boom meet. Some cranes may have remote control stations and cabs. Luffing tower cranes have a jib that can be raised and lowered. Self-erecting cranes are set on retractable outriggers for support, have a mast and boom, and they are designed to be more mobile and versatile on job sites.

The key attributes for tower crane operators are that they should be mechanically inclined, comfortable with working at heights and have good hand-eye coordination, hearing, vision and math skills. Safety is the number one priority for tower crane operators; they need to work cautiously and with extreme precision to ensure the safety of others. Communication skills are very important to effectively communicate with site personnel, supervisors, riggers, signallers and other tradespeople. Physical fitness and good balance are important as the job requires them to climb up great heights and the operation of some cranes and the handling of accessories are physically demanding. Operators need to be able to cope with the stress and long working hours that can be inherent in this type of work.

The skills of tower crane operators are transferable to operating other types of cranes and heavy equipment. With experience, tower crane operators may move into careers such as business owners, supervisors, trainers, crane erectors and job coordinators. As with other trades, the ability to mentor apprentices is extremely important to pass on the skills, knowledge and expertise of the trade.

Tower Crane Operator

Task Matrix and Weightings

A – Performs common occupational skills

11 %

Task A-1 Performs safety-related functions 69 %	A-1.01 Maintains safe work environment	A-1.02 Uses personal protective equipment (PPE) and safety equipment	A-1.03 Uses documentation
Task A-2 Uses communication and mentoring techniques 31%	A-2.01 Uses communication techniques	A-2.02 Uses mentoring techniques	

B – Inspects and maintains crane

21%

Task B-3 Performs pre-operational checks and regular inspections 49%	B-3.01 Inspects structural components	B-3.02 Inspects mechanical components	B-3.03 Inspects lines, wire ropes and hoisting system components
	B-3.04 Inspects hydraulic system components	B-3.05 Inspects electrical system components	B-3.06 Inspects support components
	B-3.07 Inspects track (rail) travel components	B-3.08 Inspects cab components	B-3.09 Inspects safety and access components
	B-3.10 Completes inspection documentation		

Task B-4 Performs continual checks 28%	B-4.01 Monitors weather conditions	B-4.02 Monitors site conditions	B-4.03 Monitors lines, wire ropes and hoisting system components
	B-4.04 Monitors equipment performance and conditions	B-4.05 Monitors structural and support components	
Task B-5 Performs minor crane maintenance 23%	B-5.01 Maintains mechanical components	B-5.02 Lubricates wire ropes and crane components	

C – Performs crane set-up, hoisting calculations and lift planning

23%

Task C-6 Participates in tower crane assembly, disassembly and transportation 27%	C-6.01 Participates in crane assembly	C-6.02 Participates in crane disassembly	C-6.03 Transports self-erecting tower crane
	C-6.04 Participates in assembly and disassembly of self-erecting tower cranes		
Task C-7 Participates in tower crane climbing and reconfigurations 35%	C-7.01 Participates in bottom-climbing procedures	C-7.02 Participates in top-climbing procedures	C-7.03 Participates in crane reconfiguration
	C-8.01 Determines load weights	C-8.02 Interprets load charts	C-8.03 Plans work procedures
Task C-8 Plans lifts 38%	C-8.04 Prepares for specialty lifts		

D – Performs rigging

17%

<p>Task D-9 Inspects, maintains and stores rigging equipment 46%</p>	<p>D-9.01 Identifies deficiencies in slings and hardware</p>	<p>D-9.02 Lubricates slings and hardware</p>	<p>D-9.03 Stores rigging equipment</p>
<p>Task D-10 Follows rigging procedures 54%</p>	<p>D-10.01 Selects required rigging equipment and configuration</p>	<p>D-10.02 Rigs load</p>	<p>D-10.03 Monitors rigging</p>

E – Operates crane

28%

<p>Task E-11 Performs pre-lift (warm-up) activities 23%</p>	<p>E-11.01 Performs function test</p>	<p>E-11.02 Confirms limits</p>	
<p>Task E-12 Operates tower cranes 37%</p>	<p>E-12.01 Moves trolley in and out</p>	<p>E-12.02 Booms (luffs) up and down</p>	<p>E-12.03 Swings (slews) jib</p>
	<p>E-12.04 Hoists load</p>	<p>E-12.05 Travels crane</p>	<p>E-12.06 Performs functions simultaneously</p>
<p>Task E-13 Performs specialty tower crane operations 22%</p>	<p>E-13.01 Participates in multi-crane lifts</p>	<p>E-13.02 Operates in multi-crane site</p>	<p>E-13.03 Hoists personnel</p>
<p>Task E-14 Shuts down and secures tower cranes 19%</p>	<p>E-14.01 Secures crane while leaving controls (short-term)</p>	<p>E-14.02 Secures crane while out of service</p>	