Evaluating the competency level of a tower crane operator

In B.C., tower crane operators must be qualified and certified, which means they must be fully trained in all aspects of crane safety.

Employers and supervisors can use this guide to ensure provisional (in-training) tower crane operators are being instructed in and evaluated for the required competencies (skills and abilities). This guide can be used as a reference when completing the related resource, Supervision plan for tower crane operator training.

The competencies listed in this guide are aimed at ensuring safe operation of tower cranes. For detailed guidance on operator qualifications and competencies, see G14.34 of the Occupational Health and Safety (OHS) Guidelines.

As safety standards and operational techniques evolve, this guide will be reviewed and updated.

Common occupational skills

Competency (learning task)	Level 1: Basic competency (requires guidance)	Level 2: Developing competency (minimal guidance)	Level 3: Competent (independent)	Examples of acceptable evidence of training
Comply with regulations, standards, policies, and manufacturers' manuals.	Can identify the regulations, standards, etc., that apply to the task under supervision.	Refers to regulations, standards, etc., with minimal guidance, and applies them to the task.	Independently ensures compliance with regulations, standards, and policies, and refers to manuals as needed for complex operations.	Documentation of compliance checks, manual references, photos

Competency (learning task)	Level 1: Basic competency (requires guidance)	Level 2: Developing competency (minimal guidance)	Level 3: Competent (independent)	Examples of acceptable evidence of training
Maintain a safe working environment.	Describes basic safety measures (e.g., maintaining a safe work environment, identifying hazards, using controls, handling loads safely) under supervision.	Applies safety measures independently, but may require occasional guidance for complex tasks.	Independently ensures a safe working environment by securing loads, identifying potential hazards, following safety protocols, etc.	Safety logs, photos
Follow emergency procedures.	Understands basic emergency procedures (e.g., fire safety, first aid, fall protection, lockout) under supervision.	Applies emergency procedures with minimal guidance during drills or incidents.	Independently manages emergency situations, including fire safety, fall protection, and crane rescue operations.	Emergency drill logs, incident reports, photos
Be aware of energized systems.	Identifies basic limits of approach and operates crane near energized equipment under supervision.	Operates crane in proximity to energized systems with minimal guidance, and ensures compliance with safe limits of approach.	Independently operates crane in proximity to energized systems, mitigating risks and ensuring full compliance with safety standards.	Documentation of working near energized conductors, incident reports, safety inspections
Practise effective worksite communication.	Demonstrates basic hand signals and radio communication during crane operations under supervision.	Uses hand signals and radio communication with minimal guidance, coordinating with rigger(s) and other crane operators effectively.	Independently practises effective communication during crane operations using appropriate hand signals and radio communication with rigger(s) and other crane operators.	Communication logs, photos or videos of operations, radio-use logs

Crane inspection and maintenance

Competency (learning task)	Level 1: Basic competency (requires guidance)	Level 2: Developing competency (minimal guidance)	Level 3: Competent (independent)	Examples of acceptable evidence of training
Perform crane inspection and maintenance.	Assists in inspecting crane components under supervision. Helps with basic maintenance tasks, such as cleaning and lubrication, while identifying common issues.	Independently inspects crane components and performs basic tasks. Understands the inspection schedules (i.e., daily, periodic, and special inspections). Effectively maintains inspection records, and can identify a deficiency that may affect the safe operation of the crane.	Independently conducts inspections and maintenance of all crane components. Identifies, addresses, and documents issues, ensuring the crane is fully operational and safe.	Logs, training logs, checklists, inspection records

Rigging

Competency (learning task)	Level 1: Basic competency (requires guidance)	Level 2: Developing competency (minimal guidance)	Level 3: Competent (independent)	Examples of acceptable evidence of training
Identify types of slings and rigging hardware.	Recognizes basic slings and rigging hardware (e.g., wire rope slings, chain slings) under supervision.	Identifies a wider variety of slings and rigging hardware, and understands their uses with minimal guidance.	Independently identifies all types of slings and rigging hardware, and selects the appropriate ones for specific crane operations.	Checklists, photos, training logs

Competency (learning task)	Level 1: Basic competency (requires guidance)	Level 2: Developing competency (minimal guidance)	Level 3: Competent (independent)	Examples of acceptable evidence of training
Inspect slings and rigging hardware.	Assists in inspecting slings and hardware for wear and damage under supervision.	Inspects slings and hardware for basic wear and damage, and identifies when equipment needs to be replaced or repaired. Both activities are done with minimal guidance.	Independently performs detailed inspections of slings and hardware. Ensures compliance with safety standards, and identifies any potential issues before they affect operations.	Inspection records, training logs, photos of damaged equipment
Maintain and store slings and rigging hardware.	Assists in maintaining and storing slings and hardware according to basic safety guidelines under supervision.	Maintains and inspects slings and hardware with minimal guidance, and ensures they are kept in good working condition and stored safely.	Independently performs the process of maintaining and storing slings and hardware. Ensures that safety standards are upheld, and that equipment is ready for use when required.	Training logs, inspection records, photos or videos
Perform rigging.	Assists in performing basic rigging operations under supervision, focusing on safety and load balance.	Performs rigging with minimal guidance and ensures that loads are properly secured and balanced during lifting.	Independently performs all rigging tasks. Ensures safety, load stability, and compliance with industry standards throughout the operation.	Training logs, photos or videos of rigging operations, site- or equipment-specific assessments

Common crane operations

Competency (learning task)	Level 1: Basic competency (requires guidance)	Level 2: Developing competency (minimal guidance)	Level 3: Competent (independent)	Examples of acceptable evidence of training
Interpret operating manuals.	Understands basic operating instructions from the crane manual under supervision.	Independently interprets routine instructions from the crane manual, such as operational limits and safety guidelines, but may require guidance for complex operations.	Fully interprets all sections of the operating manual, and applies relevant information to ensure safe and efficient crane operations.	Records of operating-manual excerpts reviewed, training logs, feedback forms
Perform a pre-operational inspection.	Assists in conducting a basic pre-operational inspection (e.g., checking fluid levels, inspecting wire ropes, testing safety devices) under supervision.	Performs pre-operational inspections and functional tests, and ensures that all control and safety devices are tested and operational. Both activities are done with minimal guidance.	Independently and thoroughly conducts pre-operational inspections. Ensures that the crane is safe and all controls and safety devices are tested.	Equipment logbooks and maintenance logs that have identified defects or deficiencies leading to a crane being taken out of service
Perform operations and hoisting techniques.	Assists in performing basic crane operations and hoisting techniques (e.g., lifting and lowering loads) under supervision.	Performs routine crane operations and hoisting techniques, and ensures efficiency, safety, and stability of the load throughout operations. Both activities are done with minimal guidance.	Independently operates the equipment in a proper, safe, controlled, and smooth manner in accordance with the manufacturer's specifications.	Crane operation logs, hoisting technique documentation, photos

Competency (learning task)	Level 1: Basic competency (requires guidance)	Level 2: Developing competency (minimal guidance)	Level 3: Competent (independent)	Examples of acceptable evidence of training
Monitor conditions.	Assists in monitoring basic operational conditions (e.g., wind speed, weather) under supervision.	Independently monitors operational conditions during crane use and adjusts operations as needed, but may require confirmation during changing or adverse conditions.	Independently monitors all operational and environmental conditions, and makes proactive adjustments to always ensure safe crane operations.	Condition-monitoring logs, reports, incident logs
Shut down and secure a crane.	Assists in performing basic shutdown and securing procedures under supervision. Understands simple steps like turning off the power, ensuring freedom to slew, and securing the hook.	Independently performs most shutdown and securing procedures for short-term periods, and ensures the crane is stable.	Independently secures the crane for both short-term and extended shutdowns. Follows manufacturer's specifications, and ensures no load on hook, jib angle, etc. Completes housekeeping tasks and performs a post-operational inspection to confirm the crane is fully secured.	Shutdown logs, crane operation records, post-operational inspection reports

Lift planning

Competency (learning task)	Level 1: Basic competency (requires guidance)	Level 2: Developing competency (minimal guidance)	Level 3: Competent (independent)	Examples of acceptable evidence of training
Determine load weights.	Assists in basic calculations using a scientific calculator to determine load weights for simple objects. Can identify unit measurements and perform basic conversions under supervision.	Independently calculates load weights for both basic and standard crane loads. Can apply simple formulas with minimal guidance. Considers external factors when calculating load weights.	Independently determines accurate weights for all crane loads using formulas and crane force/exertion concepts. Verifies engineer's drawings and other documents.	Load calculation records, engineered drawings, records of assessment, use of appropriate formulas
Use a crane capacity chart.	Assists in identifying the basic elements in a crane capacity chart (e.g., net weight, gross weight) under supervision. Can locate basic information on the chart, but requires guidance.	Independently establishes the hook radius and identifies the key elements with minimal guidance. Can locate information in the crane capacity chart and verify the manufacturer's specifications.	Independently establishes the hook radius and identifies and interprets all elements in the crane capacity chart (load weight, gear capacity, etc.), including advanced configurations. Ensures all lifts comply with manufacturer's specifications.	Crane capacity chart calculations, load weight verifications, capacity chart logs, and other training documents

Specialized operations

Competency (learning task)	Level 1: Basic competency (requires guidance)	Level 2: Developing competency (minimal guidance)	Level 3: Competent (independent)	Examples of acceptable evidence of training
Perform engineered lifts.	Assists in describing and performing the procedure for an engineered lift. Identifies components of the lift plan, and follows basic safety instructions under direct supervision.	Describes and performs an engineered lift with minimal guidance. Reviews the lift plan and communication responsibilities. Moves the load safely to the intended destination.	Independently describes, reviews, and executes an engineered lift in a safe and efficient manner. Ensures compliance with regulations, manufacturer's recommendations, and the lift plan. Moves the load to its intended destination.	Lift plan reviews, communication logs, post-lift evaluations, safety assessments, photos or videos of the lifting process

Critical lifts

Competency (learning task)	Level 1: Basic competency (requires guidance)	Level 2: Developing competency (minimal guidance)	Level 3: Competent (independent)	Examples of acceptable evidence of training
Perform critical lifts.	Assists in identifying and performing the procedure for a critical lift. Identifies components of the lift plan, documents basic steps, and follows safety instructions under direct supervision.	Prepares critical lift plans. Documents effective pre-lift meetings and communicates critical lift procedures. Establishes and maintains effective communication throughout the process with minimal guidance. Direct supervision is required for all provisional operators.	Independently prepares and performs critical lifts. Completes all necessary documentation. Conducts pre-lift meetings and ensures clear and effective communication at every stage. Performs the lift in accordance with regulatory requirements. Direct supervision is required for all provisional operators.	Critical lift plan reviews, pre-lift meeting notes, post-lift evaluations, risk assessments, photos or videos of the lift process, and safety checklists

Resources

To ensure alignment with industry standards and safety protocols, this guide was developed based on the following resources:

- Tower Crane Operator Program Outline (SkilledTradesBC)
- BC Crane Operator – Provisional Designation (BC Crane Safety)
- Section 14.34 of the OHS Regulation and G14.34 of the OHS Guidelines (WorkSafeBC)

For more information

To speak with an occupational health and safety consultant, contact our Prevention Information Line at 604.276.3100 or toll-free 1.888.621.7233 (1.888.621.SAFE). Hours of operation are Monday to Friday, 8:05 a.m to 4:30 p.m.