



# **CANDIDATE HANDBOOK**

**Tower Crane Operator  
Self-Erect Crane Operator**



This candidate handbook contains important information about obtaining a Crane Operator Certification and a British Columbia crane operator designation. Please read it carefully.

For more information, contact BC Crane Safety.

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In British Columbia, an operator of a mobile crane, tower crane, self-erect, or boom truck must hold a valid crane operator credential as outlined in WorkSafeBC Occupational Health and Safety Regulation 14.34.1.

The BC Association for Crane Safety (BC Crane Safety) is the organization responsible for the overall administration of crane operator certification in British Columbia. We provide leadership for health and safety development within the crane hoisting industry; serve as an advisory body on regulatory and safety matters; work closely with industry, labour and government to develop and implement new standards of assessment and certification; and provide leadership in the establishment, maintenance and support of industry-specific assessment tools (theory and practical) which result in a BC Crane Operator designation.

While every effort has been made to ensure the accuracy and completeness of this handbook, BC Crane Safety is not liable for any errors or omissions. This handbook is intended only as a guide to the BC crane operator certification and licensing process. It is the responsibility of the operator to follow all applicable Occupational Health and Safety regulations and safe operating procedures. BC Crane Safety assumes no responsibility for any injuries or damages resulting from the use of any information in this handbook.

BC Crane Safety reserves the right to change or modify, without notice, any content in this handbook at any time. Current information is available online at [www.bccranesafety.ca](http://www.bccranesafety.ca).

This handbook has been developed to assist you with the certification process. If you have any questions or require further assistance, please call us at 604-336-4699 or email us at [info@bccranesafety.ca](mailto:info@bccranesafety.ca).

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## 1.0 Goals and Objectives of the BC Crane Operator Certification Scheme

BC Crane Safety provides leadership for health and safety development within the crane hoisting industry. The BC Crane Operator Certification Scheme (the Scheme) provides the framework under which an individual can become certified for a specific crane classification and obtain a BC crane operator designation.

The Scheme has been designed to:

- Provide a consistent and updatable framework within which operators, employers and regulatory authorities can structure a safe and productive work environment
- Promote competence and skill levels across a range of crane types
- Provide an accessible means for those interested in the industry to obtain the certifications required to start or expand their career path
- Provide a standard that results in the recognition of the competency of BC certified operators in other jurisdictions in Canada and internationally

## 2.0 Program Development

BC Crane Safety works closely with industry, labour, and government to implement new standards of assessment and certification that make for a safer workplace. More information is available on the [About BC Crane Safety](#) page on our website.

Subject matter experts (SMEs) from the crane industry were involved in every stage of the theory exam development process, lending their expertise to writing, validating, and reviewing exams. All approved exam questions are stored in a bank from which exam forms are generated. Every applicable crane operator knowledge competency is tested on every exam.

Item analysis reports are reviewed on an ongoing basis to monitor exam performance, and candidates are encouraged to complete and submit exam feedback forms. This way, we can ensure that our exams are maintained to the highest standards.

## 3.0 Non-Discrimination Policy

BC Crane Safety does not discriminate against candidates based on colour, race, religion, gender, age, national origin, or sexual orientation.

## 4.0 BC Crane Operator Scheme – Paths to Certification

The paths to certification for the Tower Crane Operator and Self-Erect Crane Operator and all the relevant information for the different designations and steps involved can be found on the BC Crane Safety website.

The information included here is for those who are pursuing crane operator certification as a Tower Crane Operator (available as an apprenticeship) or Self-Erect Crane Operator.

#### **4.1 Register with BC Crane Safety**

The first step is to register on the website at [www.bccranesafety.ca](http://www.bccranesafety.ca). All crane operators working in British Columbia must be registered with BC Crane Safety.

#### **4.2 Register as an Apprentice with ITA (Optional)**

If your intended designation is available as an apprenticeship and you select the apprenticeship route, then you must [register as an apprentice with the Industry Training Authority \(ITA\)](#). The ITA outlines the rights and responsibilities of both the apprentice and the sponsor/employer. Find out more about the benefits of apprenticeship on the ITA website.

Whether an operator chooses the trainee/challenge path or the registered apprenticeship path, they need to have a BC Crane Operator – Provisional designation to operate a crane.

#### **4.3 Apply for a BC Crane Operator – Provisional Designation (Formerly Level B)**

A BC Crane Operator – Provisional designation (formerly Level B) is required during your entire training period. The application form must be completed in collaboration with your employer. A Provisional designation is issued for one year, with up to three one-year renewals, upon application. The trainee must have a valid crane employer to be eligible to apply for and work under as a Provisional operator.

#### **4.4 Work Under Supervision Until Competent**

As soon as you are registered with BC Crane Safety, you will have access to an [online logbook](#) where you record your work experience. Your sponsor/employer approves your logbook entries as you progress and, at the end of your training period, signs off on your logbook. This confirms that you have the required number of operating hours and have the relevant experience. Operators who are challenging for the credential need to follow the ITA process and fill in and submit an ITA challenge package. This applies to the Tower Crane credential.

The trainee/registered apprentice must be under a minimum of indirect supervision for non-critical lifts and direct supervision for critical lifts, [as defined by WorkSafeBC](#). The employer must ensure a plan is in place for supervision and assign a supervisor who is qualified to supervise crane operations.

#### **4.5 Experience**

Certification exams, Certificate of Qualification, and Inter-Provincial Red Seal are designed for operators who are trained and who currently work in crane operations.

## 4.6 Complete the BC Crane Operator Assessment

The BC Crane Operator Assessment consists of a theory exam (or multiple exams) and a practical test designed to evaluate an operator's crane-handling skills. The operator must successfully pass the theory exam(s) before being permitted to take the practical test.

Registered apprentices typically write the theory exam(s) as they progress through their apprenticeship. Trainees that are not registered apprentices must register for and write the theory exam(s) through the challenge process.

After successfully completing both the theory and practical portions of the assessment, you will be designated a BC Crane Operator – Full Scope for the relevant crane classification.

## 5.0 Documenting Hours

Both trainees and certified operators must document their hours in their BC Crane Safety online logbook and have entries approved by the sponsor/employer as they progress. These entries confirm operating hours and relevant experience.

## 6.0 Challenging the Exams

Experienced operators who intend to challenge the exams must also hold a Provisional designation if they want to operate a crane until a Full Scope designation is obtained.

## 7.0 Privacy Policy – Candidate Records

BC Crane Safety has in place a Personal Information Protection policy that is designed to safeguard the personal information entrusted to us. A copy of that policy is available by request via [info@bccranesafety.ca](mailto:info@bccranesafety.ca) or by calling our office via the number provided in the front matter of this document.

## 8.0 Assessment Methods

### 8.1 Assessment Criteria – Theoretical

Each designated crane classification has a corresponding BC Crane Operator standard. Each standard specifies in detail the competency areas and related tasks that are required in order to obtain the Crane Operator designation for that classification. The designations are laddered. This means that if an operator has obtained a Tower Crane designation, they can operate a self-erect crane without any further qualification.

There are three written exams related to the respective Tower Crane Operator or Self-Erect Crane Operator designations available:

1. Common Core (required for all classifications)
2. Tower Crane
3. Self-Erect Crane (currently forms part of the practical test)

The Common Core topics are included as Appendix A and the Tower Crane topics are included as Appendix B of this document. Self-Erect Crane topics are included as Appendix C.

## **8.2 Theory Exams**

Theory exams for Common Core and Tower Crane are currently administered by the Industry Training Authority (ITA). The Self-Erect Crane theory exam currently forms part of the practical test for this classification. There are different paths to certification for trainees, apprentices, and challengers. Information and links to the required applications can be found through the BC Crane Safety website.

## **8.3 Practical Test**

After passing all the required theory exams, the final step is a practical test on the appropriate crane classification. The practical test must be administered by a certified Practical Examiner. The application for a tower crane or self-erect crane practical test must be approved by BC Crane Safety and the results of the exam must be submitted to BC Crane Safety before credentials will be issued. Links to the relevant application forms are found through the BC Crane Safety website.

The practical test consists of two parts:

1. Hand signals
2. On-crane practical assessment
  - a. Hazard assessment
  - b. Pre-operational inspection
  - c. Crane setup
  - d. Crane operation – with and without load

The practical test takes approximately 2.5 hours to complete. The practical test examiner will come to your job site but the operator is responsible for providing the crane.

## **9.0 Scoring**

Theory exams are scored by computer. Practical test results are scored by an independent third-party assessor.

## **10.0 Retest Policy**

Should you require a retest on a practical exam, please refer to the retest form available from Fulford Certification. Information on rewriting the theory exam is available on the ITA website.

## **11.0 Suspension of Right to Operate**

The suspension of right to operate is under the jurisdiction of WorkSafeBC and enforced in accordance with regulations on the job site.



## **12.0 Renewal**

A BC Crane Operator's status must be renewed.

Please note: A new renewal policy is scheduled to take effect in 2025. Further details will be provided as the implementation date approaches.

## **13.0 Appeal**

The appeal process is managed by the Quality Management Committee subgroup, The Assessment Review Panel. For more information on the appeal process, please contact BC Crane Safety via email or phone.

## **14.0 Forms**

Please refer to the BC Crane Safety website for the most current forms.

## **15.0 Crane Operator Designation**

When all the requirements for a specified Crane Operator designation have been met, the operator's status will be upgraded to BC Crane Operator – Full Scope in the BC Crane Safety compliance verification system.

## Appendix A Common Core TOS

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| <b>Competency</b>  |
| <b>A SAFETY</b><br><b>(approximately 13%)</b>  |
| A1 Comply with regulations, policies, and manufacturers' manuals   |
| A2 Maintain a safe working environment   |
| A3 Follow emergency procedures   |
| A4 Be aware of power line hazards  |
| A5 Practice effective worksite communications  |
| <b>B TYPES AND TERMINOLOGY</b><br><b>(approximately 5%)</b>  |
| B1 Define types of cranes and classifications  |
| B2 Use crane terminology   |
| <b>C SYSTEMS AND COMPONENTS</b><br><b>(approximately 10%)</b>  |
| C1 Describe the components and functions of carrier systems, outrigger systems, and turntable assemblies |
| C2 Describe the components and functions of power plants and drive systems                               |
| C3 Describe the components and functions of pneumatic systems, hydraulic systems, and electrical systems |
| C4 Describe the components and functions of steering systems and braking systems                         |
| C5 Describe the components and functions of hoisting systems and attachments                             |
| C6 Describe the functions of safety components, devices, and aids  |
| <b>D WIRE ROPE AND RIGGING</b><br><b>(approximately 22%)</b>   |
| D1 Specify types of wire rope and their uses   |
| D2 Follow wire rope installation procedures  |
| D3 Inspect wire rope, slings, and rigging hardware   |
| D4 Specify types of slings, rigging hardware, and their uses   |
| D5 Use rigging techniques  |
| D6 Maintain and store wire rope, slings, and rigging hardware  |

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| <b>Competency</b>                                    |
| <b>E LIFT PLANNING<br/>(approximately 28%)</b>       |
| E1 Follow site assessment procedures                 |
| E2 Determine load weights                            |
| E3 Determine crane lifting capacity                  |
| E4 Determine rigging requirements                    |
|  |
| <b>F CRANE APPLICATIONS<br/>(approximately 12%)</b>  |
| F1 Interpret operator manuals                        |
| F2 Perform a pre-operational inspection              |
| F3 Perform a pre-operational setup                   |
| F4 Demonstrate hoisting techniques                   |
| F5 Operate a 20-80 tonne telescoping boom crane      |
| F6 Operate a tower crane                             |
| F7 Leave a crane unattended                          |
|  |
| <b>G TRANSPORTING A CRANE<br/>(approximately 7%)</b> |
| G1 Define Commercial Transport Regulations           |
| G2 Prepare a crane for travel                        |
| G3 Prepare a crane for transport                     |
| G4 Assemble and disassemble a crane                  |
|  |
| <b>H CRANE MAINTENANCE<br/>(approximately 3%)</b>    |
| H1 Use tools for basic crane maintenance             |
| H2 Perform basic crane maintenance                   |

## Appendix B Tower Crane TOS

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| <b>Competency</b>   |
| <b>I LIFT PLANNING – HAMMERHEAD TOWER CRANE</b><br>(approximately 24%)      |
| I1 Conduct a site assessment for a hammerhead tower crane                   |
| I2 Use a crane capacity chart for a hammerhead tower crane                  |
| <b>J HAMMERHEAD TOWER CRANE OPERATIONS</b><br>(approximately 16%)           |
| J1 Interpret operating manuals for a hammerhead tower crane                 |
| J2 Perform a pre-operational inspection for a hammerhead tower crane        |
| J3 Perform a pre-operational setup for a hammerhead tower crane             |
| J4 Perform hoisting techniques for a hammerhead tower crane                 |
| J5 Operate a hammerhead tower crane   |
| J6 Leave a hammerhead tower crane unattended                                |
| <b>K LIFT PLANNING – LUFFING TOWER CRANE</b><br>(approximately 16%)         |
| K1 Conduct a site assessment for a luffing tower crane                      |
| K2 Use a crane capacity chart for a luffing tower crane                     |
| <b>L LUFFING TOWER CRANE OPERATIONS</b><br>(approximately 18%)              |
| L1 Interpret operating manuals for a luffing tower crane                    |
| L2 Perform a pre-operational inspection for a luffing tower crane           |
| L3 Perform a pre-operational setup for a luffing tower crane                |
| L4 Perform hoisting techniques for a luffing tower crane                    |
| L5 Operate a luffing tower crane  |
| L6 Leave a luffing tower crane unattended                                   |
| <b>M SPECIALIZED OPERATIONS</b><br>(approximately 18%)                      |
| M1 Operate a crane with a suspended work platform                           |
| M2 Perform engineered lifts   |
| M3 Perform multiple crane lifts   |
| <b>N CLIMBING CRANES</b><br>(approximately 8%)                              |
| N1 Follow assembly and raising procedures for a bottom climbing tower crane |
| N2 Follow assembly and raising procedures for a top climbing tower crane    |

## Appendix C Self-Erect Crane TOS

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|--|
| <b>Competency</b>  |
| <b>A SAFETY<br/>(approximately 14%)</b>  |
| A12 K Demonstrate knowledge of self-erect crane specific PPE   |
| A13 K Demonstrate knowledge of regulations, standards and documentation relevant to self-erect crane operations  |
| A14 K Demonstrate knowledge of regulations and protocols for operating a self-erect tower crane in proximity to power lines, cable hazards, and high and low voltage equipment |
| <b>B COMMUNICATIONS<br/>(approximately 11%)</b>  |
| B12 K Demonstrate knowledge of self-erect crane hand signals   |
| B13 K Demonstrate knowledge of self-erect crane radio protocols and vocabulary   |
| <b>C CRANES<br/>(approximately 12%)</b>  |
| C15 K Demonstrate knowledge of self-erect crane applications   |
| C16 K Demonstrate knowledge of self-erect crane types and configurations   |
| C18 K Demonstrate knowledge of components and their functions for different types of self-erect cranes   |
| C20 K Demonstrate knowledge of drives, controls and safety devices for self-erect cranes   |
| <b>I MAINTENANCE AND SERVICE<br/>(approximately 6%)</b>  |
| I12 K Demonstrate knowledge of daily and monthly inspections for self-erect cranes   |
| I13 K Demonstrate knowledge of annual and special inspection requirements for self-erect cranes  |
| <b>M SELF-ERECT CRANE OPERATIONS<br/>(approximately 57%)</b>   |
| M9 K Demonstrate knowledge of hoisting and rigging for self-erect cranes   |
| M10 K Demonstrate knowledge of self-erect crane load charts and load calculations  |
| M11 K Demonstrate knowledge of how weather conditions affect self-erect crane operations   |
| M12 K Demonstrate knowledge of a self-erect crane operator's duties and responsibilities   |
| M13 K Demonstrate knowledge of protocols for leaving a self-erect crane unattended   |
| M14 K Demonstrate knowledge of protocols for operating a self-erect crane on a multi-crane site  |

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