Developing a National Mobile Crane Operator Demonstration of Skills Test (DOST)

Background Report

Understanding DOSTs and their Current Activities in Canada and Internationally

October 31, 2014

Please note that the following report is a working document. If a reader has information to add to the report or correction to the content, please contact the Skills Table at krista@apgst.ca

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Foreword

This Report is part of a national project, "Developing a National Mobile Crane Operator Demonstration of Skills Test (DOST)" , made possible through funding from Employment and Social Development Canada (ESDC). The overall project is managed by The Asia Pacific Gateway Skills Table (Skills Table), a non-profit, regional partnership between labour, business and education/training institutions. It is anticipated that the national DOST will complement the existing Red Seal Certification for mobile crane operators, and encourage and facilitate labour mobility across the country by using a nationally-consistent practical assessment.

CSA Group has been retained by Skills Table to conduct research and industry consultation activities in support of developing the DOST. CSA Group has undertaken research of existing mobile crane DOST activities and best practices to prepare this Industry Background Report. The results of this research will be shared with stakeholders across Canada and will be used as a basis to collect additional input from stakeholders on desired characteristics and components of a national mobile crane operator DOST.

The Skills Table and CSA Group worked in close partnership with the Canadian Hoisting and Rigging Council (CHRSC) on this part of the project. A CHRSC-Chaired Project Committee has been established to provide guidance and validation throughout this research. It is important to acknowledge and thank the members of this Project Committee and other stakeholders who have contributed to this project for their participation and sharing of expertise and suggestions.

Project Committee Members

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5. Ryan Burton, DLB Crane
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7. Dave Earle, Canadian Hoisting and Rigging Safety Council
8. Dean Frey, Apprenticeship and Trade Certification Commission, SK
9. Steve Fryer, Northern Crane Service
10. Daryl Harvey, CENOVUS
11. Lorne Kleppe, Manufacturers’ Health & Safety Association (MHSA)
12. Gunnar Mardon, Canadian Hoisting and Rigging Safety Council
13. Krista Bax, Asia Pacific Gateway Skills Table
Executive Summary
This summary provides an overview of the background research on mobile crane DOSTs and their best practices. It also includes a detailed jurisdictional inventory on the current mobile crane DOSTs activities in Canada. For further information, please review the full Mobile Crane Operator Industry Background Report.

This Executive summary includes:
• What is a DOST?
• Why does the Canadian crane industry want a common DOST across all jurisdictions?
• What are the benefits of a common DOST across all jurisdictions?
• Mobile Crane Operator Certification across Canada - Review of key program elements
• Where should a standardized DOST live?
• Developing a DOST: Best Practices
• What do other countries do?

What is a DOST?
Assessment is the process that measures fulfillment of requirements. Assessments are a key element of training and certification programs and can be in the form of theory or practical skills assessment. A demonstration of skills test is type of practical assessment that requires the candidate to perform a particular task or set of tasks in order to demonstrate competence. In these practical assessments, the candidate follows a set of instructions in order to complete a specific job, test it for functionality and explain the outcomes. The practical tasks are cross-referenced to the competencies and learning objectives. The assignment must be fair, valid, authentic and reliable as an assessment method as it makes the same demands of all candidates and is verified by an assessor.

Typically, a practical assessment is used as a “summative assessment” and successful completion forms the evidence that will be used to confirm that a candidate has met the requirements for the practical component of the assessment. They can also be used as part of a “formative assessment” as part of a strategy to allow candidates to practice and show practical skills prior to the final assessment.

Practical assessments can be completed through real work experience, or in some occupations, simulated exercises¹ may be used as an alternative. In high risk occupations such as crane operators, a practical assessment may be deemed essential before a candidate can operate a crane in the workplace.

¹ Use of high-fidelity simulations for training is widely recognized as having promise in the further improvement of training, and generally with respect to a notion that the progression from apprentice level to high proficiency levels can be accelerated. While simulators are not currently being used to assess competency for certification, there may be a need to consider simulators in the future.
Why does the Canadian crane industry want a common DOST across all jurisdictions?
Several, but not all, provinces in Canada offer mobile crane operator training programs that include the following components: theory testing, practical assessment through a DOST method, certification and Red Seal endorsement. While there is no practical assessment requirement in the mobile crane operator Red Seal endorsement, many provinces have incorporated a DOST into their training and certification activities because of the benefits of demonstrating skill competency to workplace safety and productivity, and the fact that there is an increased number of international jurisdictions that are trending towards including practical assessment as part of worker certification standards.

Approaches to DOSTs vary across the provinces and territories. For example, some provinces rely on a third-party to conduct practical assessments while other provinces assign the responsibility to the training schools. This variation in application creates challenges for the industry, certification programs and labour mobility. This fragmented approach to mobile crane operators DOST activities across Canada have the following impacts:

- **Restricted labour mobility of workers** – Available crane operators forego earning when they do not travel to another province for work due to jurisdictional or employer requirements to meet a specific DOST standard.
- **Liability for employers** – Employers in jurisdictions with compulsory practical assessment may have mitigated responsibility regarding liability for ensuring competency of crane operators.
- **Increased red tape for employers** – Employers are faced with the administrative burden of continually demonstrating a new workers’ competencies for those they do business with (e.g., insurers, clients, and jurisdictional authorities).
- **Additional costs for industry and jurisdictions** – Employers incur costs due to project delays because of an empty seat until an operator is available. Some provinces use resources for out of province credential assessment, taking away from other priority areas.
- **Increased safety risk on the worksite** – By not having to demonstrate their competencies in a consistent manner, crane operators may perform lifts incorrectly, putting other workers and the public at risk.

What are the benefits of a common DOST across all jurisdictions?
In recent years, crane industry stakeholder groups have expressed support for harmonization of competency standards and a national DOST to provide benefits to industry, operators, and the public in terms of increased safety, reduced costs, and greater employer and worker mobility.

Developing a consensus amongst interested stakeholders on a mobile crane operator DOST that can be used by all provinces will potentially result in several benefits by addressing the concerns outlined above. Increased labour mobility, decreased red tape for employers, reduced costs for industry and jurisdictions, and, decreased safety risks on the worksite are possible benefits of a common, national DOST.
Mobile Crane Operator Certification across Canada - Review of key program elements
The result of a review of jurisdictional resources on Mobile Crane Operator Certification is provided below in Table ES1: Interjurisdictional Summary of DOST Program Criteria. An overview of the Mobile Crane Operator Trade program elements related to the DOST is summarized in Table ES2: Overview of the DOST-related program criteria per Ellis Chart (www.ellischart.ca).
<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>DOST currently exists in jurisdiction</th>
<th>DOST Req’d for Certification</th>
<th>At what stage is the DOST completed?</th>
<th>Who administers the assessment?</th>
<th>Is there a legislated requirement for 3rd party assessor?</th>
<th>What does the current overall model for a DOST look like?</th>
<th>How was the DOST built?</th>
</tr>
</thead>
<tbody>
<tr>
<td>NL</td>
<td>No</td>
<td></td>
<td>Note: some practical assessment criteria are included as part of apprenticeship program</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>NS</td>
<td>Yes</td>
<td>Yes</td>
<td>Practical assessment is required before Certificate of Competency (Note - certain crane classes require endorsements beyond C of C level. Endorsements have defined practical experience requirements beyond Certificate of Competency)</td>
<td>The practical skills assessment is administered by a provider approved by the Department of Labour and Advanced Education. Practical assessment exam curriculum is developed and administered by accredited providers (most assessors are also training providers and DOST may occur as element of accredited training curriculum, in some cases). There is no single provincial standard for the DOST.</td>
<td>No</td>
<td>Practical assessment test/curriculum is determined by provider and is required to include: Weight calculations; equipment inspection (pre-start), handling load, handling crane in an obstacle course type arrangement.</td>
<td>Practical assessment test/curriculum is developed and administered by accredited providers. There is no single provincial standard for the DOST.</td>
</tr>
<tr>
<td>PE</td>
<td>No</td>
<td></td>
<td>Note: Apprenticeship is administered via block training in NB and may include some practical assessment criteria. See NB program for details.</td>
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<tr>
<td>NB</td>
<td>Yes</td>
<td>Yes</td>
<td>Successful completion of practical assessment test is required prior to certification.</td>
<td>Practical assessment testing is typically completed as part of apprenticeship program.</td>
<td>No</td>
<td>Practical assessment includes three elements with pass criteria as stipulated per Board order GE001.1: hand signal practical assessment, load chart practical assessment, equipment operation practical assessment.</td>
<td>Not available</td>
</tr>
<tr>
<td>QC</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ON</td>
<td>Yes</td>
<td>Yes</td>
<td>Prior to issuance of C of Q (note: DOST is broken into two pieces. Hand signal/load chart piece administered before on-crane assessment)</td>
<td>Ontario offers split delivery of practical assessment criteria for hoisting engineers. The load chart and hand signal portion of the DOST are administered by the MTCU; Ontario College of Trades (or designate) administer the hands-on practical skills assessment.</td>
<td>No</td>
<td>Load calculation and hand signal assessments are completed in advance of the on-crane practical assessment. On-crane practical assessment portion of the DOST includes: perform a preoperational inspection of the crane, set up a crane, operate both hydraulic and conventional/lattice cranes, prepare a mobile crane for travel</td>
<td>Detailed information regarding the development methodology of the DOST is not available at this time. Recently, Ontario has completed a mapping exercise of the DOST against the 2013 NOA</td>
</tr>
<tr>
<td>MB</td>
<td>No</td>
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<tr>
<td>SK</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Certification includes written assessment criteria only. Practical performance criteria are assessed as part of the on-the-job apprenticeship requirements as overseen by the employer.</td>
<td></td>
</tr>
<tr>
<td>AB</td>
<td>Yes</td>
<td>Yes</td>
<td>Qualifying examination includes practical assessment test</td>
<td>Majority of operators certified in Alberta are certified through the apprenticeship programs. This is administered by the training providers. A pilot program for trade qualifiers has been recently completed. On-site trade qualifier assessment is provided by a third party under the pilot. As the outcome from the pilot, an RFP process is underway to determine who will deliver practical assessment on ongoing basis.</td>
<td>NOTE: Pilot program is complete and RFP underway to determine who will deliver practical assessment on ongoing basis</td>
<td>Ongoing assessments will be based on the model delivered via the pilot: • Hand Signals • On-Crane Practical Assessment - Crane Set-up - Target Course without a load - Target Course with a load</td>
<td>The pilot program was based on the model developed for BC</td>
</tr>
<tr>
<td>BC</td>
<td>Yes</td>
<td>Yes</td>
<td>Certificate of Qualification exam is required to be successfully completed before attempting the practical assessment.</td>
<td>3rd party assessor as covered by agreements with agreements in place with WorkSafeBC and the ITA</td>
<td>BC regulations require a separation between training providers and certification assessment providers.</td>
<td>Part 1 (Hand signals) and 2 (Load Chart &amp; Rigging) of the applied assessment are completed in advance (at the beginning of the assessment). The Load chart calculations are identical to calculations that would be made in the field using contemporary load charts. • On-Crane Practical Assessment - Crane Set-up - Target Course without a load - Target Course with a load</td>
<td>The BC DOST was developed through stakeholder consultations and based international best practices. Assessment criteria were integrated into the Canadian system to account for time-based/experience requirements. Each of the crane operator certificates is matched to an Apprenticeship Qualification in BC. The assessment tools utilized to provide this service was designed and developed by the crane industry through BCACS. BCACS has responsibility to monitor and provide quality control.</td>
</tr>
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<tr>
<td>NT</td>
<td>Yes</td>
<td>Yes</td>
<td>Practical examinations are required for Journeypersons in the Mobile crane operator trade. Mobile crane operator trade includes in-school practical assessment.</td>
<td>No information available at this time</td>
<td>No information available at this time</td>
<td>No information available at this time</td>
<td>No information available at this time</td>
</tr>
<tr>
<td>YT</td>
<td>Yes</td>
<td>Yes</td>
<td>(note: there are no Red Seal designated mobile crane trades in YK)</td>
<td>3rd party assessor delivers practical assessment</td>
<td>A separation between training providers and certification assessment exists. Administered through Yukon Workers’ Compensation Health and Safety Board.</td>
<td>Part 1 (Hand signals) and 2 (Load Chart &amp; Rigging) of the applied assessment are completed in advance (at the beginning of the assessment). The Load chart calculations are identical to calculations that would be made in the field using contemporary load charts. • On-Crane Practical Assessment - Crane Set-up - Target Course without a load - Target Course with a load</td>
<td>The program was based on the model developed for BC.</td>
</tr>
<tr>
<td>NU</td>
<td>No info available</td>
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</tbody>
</table>
Where should a standardized DOST live?
In Canada, there are 14 regulatory jurisdictions: one federal, ten provincial and three territorial. Each regulatory body determines which occupations are regulated and designates a body governing the profession/trade that has the authority to set entry requirements and standards of practice, to assess applicants’ qualifications and credentials, to certify, register, or license qualified applicants, and to discipline members of the profession/trade within their jurisdiction.

A common, national mobile crane operator DOST could be adopted across individual jurisdictions. Inclusion of a practical assessment for Mobile Crane Operators within the Interprovincial Red Seal designated trade (or, alternatively, within a national standard of Canada) may create the framework for harmonized delivery of the DOST across jurisdictions.

Developing a DOST: Best Practices
Best practice models for assessment tools, including practical skills tests, include the following criteria:

- the assessment (observation) is **valid**, because it accurately reflects the objectives and content of the syllabus, and does not introduce bias or irrelevant demands. All dimensions of competency are addressed; competency in different contexts is demonstrated
- the assessment is **reliable** – it can be checked and confirmed by a second party
- the assessment is of the candidate’s own work – it is **authentic**
• the assessment is current – it is a reflection of what the candidate can do now, not at some time in the past
• the assessment allows candidates equal and frequent opportunity to show competence;
• it is efficient and cost-effective
• there is sufficient feedback about the result of the assessment

What do other countries do?
There has been extensive growth in the training, certification and assessment field in Canada and in countries such as US, UK, Australia and New Zealand, Japan. However, the requirements and processes behind these systems vary widely across jurisdictions. This move to greater oversight and consistency applies to many other skilled trades and occupations. Work is still needed in many jurisdictions to tighten requirements in the area of operator certification and licensing and to achieve greater harmonization of requirements and mutual recognition.

Highlights of mobile crane operator certification programs globally include:

• USA: In the USA, Occupational Safety and Health Administration (OSHA) regulations include requirements for qualification and certification of crane operators for construction. Accredited testing organizations administer written and practical tests for operator certification which different levels of certification based on equipment capacity and type. An operator will be deemed qualified to operate a particular piece of equipment if the operator is certified for that type and capacity of equipment or for higher-capacity equipment of that type. Certification issued by an accredited testing organization is portable and is valid for 5 years.

• Australia: Australia has moved to a national certificate based on model legislation accepted by all states. Most mobile crane operators train at a technical school and then take a written and practical test, followed by on the job training. The industry is working on developing a 3 year traineeship program. Tests must be re-taken every 5 years.

• Europe: In Denmark, the operators need to not only pass a written test but also a practical test (at the school or other site). The Netherlands has a certification program which is accredited to the ISO Standard 17024 for Personnel Certification bodies.

Language presents a serious problem in Europe for labour mobility. However, there is strong interest in the European crane industry for a standardized test which could be applied across Europe.

• New Zealand: In New Zealand there is a code of practice which has government support. The expectation is that employers should be able to provide evidence that their crane operators have the skills, knowledge and experience necessary to safely operate their cranes. This is driving a strong demand for training and assessment. There are certificates for mobile, crawler, tower and overhead cranes as well as for crane supervision, crane dispatch supervision and
advanced crane operation. Compliance with codes of practice is not mandatory; however, compliance with an approved code of practice may be used in Court as evidence of good practice as required per the Health and Safety Employment Act.

- **Japan:** Japan has had mandatory licences for crane operators since 1947. The registered training provider grants a certificate of completion and the government Labour Bureau grants the licence after a test of both theory and practical skills.
0 Introduction

Overview of the Project

Over the years, the crane industry has consistently requested that a practical assessment be part of the Red Seal endorsement. Harmonization of the Demonstration of Skills Test (DOST) activities will increase labour mobility for operators, reduce red tape for employers, lower costs for industry and jurisdictions, and improve workplace safety for all. A harmonized DOST will complement the existing Red Seal National Occupational Analysis (NOA) for mobile crane operators. Input from crane stakeholders across Canada and existing DOST best practices will drive the development.

The key elements of the overall project include: research, stakeholder consultations, and the development and testing of a national mobile crane operator DOST. The timetable for the full project is from February 2014 to March 2016. The research phase was conducted over the summer of 2014. This project has been made possible by funding that the Asia Pacific Gateway Skills Table (Skills Table) has received from Employment and Social Development Canada (ESDC).

The Skills Table is working closely with the Canadian Hosting and Rigging Safety Council (CHRSC) and CSA Group to execute this first phase of the project. The CHRSC will provide guidance to the project via the CHRSC chaired Project Committee. The CHRSC is dedicated to the harmonization of hoisting and rigging standards across Canada. There is a growing consensus among crane industry stakeholder groups that harmonization would be beneficial to industry, operators, and the public in terms of increased safety, reduced costs, and greater employer and worker mobility.

The Canadian Council of Directors of Apprenticeship’s (CCDA) has a national initiative underway working on the harmonization of apprenticeship requirements for various trades including three crane operator trades. This project will leverage the CCDA initiative where possible and avoid duplication of efforts.

Problem Statement

Mobile crane operators are in high demand across the country. This occupation can lead to work in the construction of bridges, dams, mines, ports, oil and gas development, as well as the completion of transportation, infrastructure, and residential and commercial projects. All major capital projects in Canada involve crane operations at some stage of the development. Due to a shortage of crane operators, projects using these workers can be delayed and incur costly overruns.

Shortages in this industry have been well articulated in recent research from across Canada:

- Citizenship and Immigration Canada included crane operators as one of the 29 occupations that are given priority in the immigration application process because of short supply;
- Data from BuildForce indicates excess demand for mobile crane operators in many provinces;
- Alberta Apprenticeship and Industry Training Board has identified crane operators as one of their province’s most in-demand trades;
- The BC Career and Labour Market Forecast 2010 – 2020 estimates that retirements and job growth will create 453 job openings for crane operators between 2011 and 2016; and
• Direct union and employer feedback indicates that the supply of crane operators is currently at capacity, especially for mobile crane types.

The shortage of crane operators will be exacerbated because of two compounding phenomena: older average age and large number of new infrastructure projects. Furthermore, with the financial market’s return to stability and growth, many operators that have delayed retirement due to loss of savings may choose to exit the workforce and further impact supply.

Mobility in this industry has also changed significantly in the past 10 years. Work environments such as in BC (Kitimat Smelter expansion), Alberta (oil sands), Saskatchewan (mining, oil and gas), and Labrador (offshore oil and hydro development) are camp environments and a “fly in” and “fly out” workforce model is commonly utilized. Although crane operators comprise a small portion of the workforce on each job, it is important to recognize that when a crane does not operate, the rest of the site operations are significantly impacted, resulting in reduced productivity, and increased costs for the employer and for Canada’s economy.

The current labour market outlook for crane operators supports the need to improve labour mobility of the existing operator supply while ensuring safety standards are maintained, allowing for any certified crane operator to work on any worksite in Canada when they are required, with minimal or no red tape. This will ultimately result in better matching skills with the workforce demand and a more efficient labour market.

**Mobile Crane Operator DOST Activities**

Several, but not all, provinces in Canada offer mobile crane operator training programs that include the following components: theory testing, practical assessment through a DOST method, certification and Red Seal endorsement. While there is no practical assessment requirement in the mobile crane operator Red Seal endorsement, many provinces have incorporated a DOST into their training and certification activities because of the benefits of demonstrating skill competency to workplace safety and productivity, and the fact that there is an increased number of international jurisdictions that are trending towards including practical assessment as part of worker certification standards.

However, the approaches to DOSTs vary across the provinces and territories. For example, some provinces rely on a third-party to conduct practical assessments while other provinces assign the responsibility to the training schools. This variation in application creates challenges for the industry, certification programs and labour mobility. This fragmented approach to mobile crane operators DOST activities across Canada have the following impacts:

- **Restricted labour mobility of workers** – Available crane operators forego earning when they do not travel to another province for work due to jurisdictional or employer requirements to meet a specific DOST standard.
- **Increased liability for employers** - Employers in jurisdictions without compulsory practical assessment criteria bear increased liability for ensuring their workers’ competency
Increased red tape for employers – Employers are faced with the administrative burden of continually demonstrating a new worker’s competencies for those they do business with (e.g., insurers, clients, and jurisdictional authorities).

Additional costs for industry and jurisdictions – Employers incur costs due to project delays because of an empty seat until an operator is available. Some provinces use resources for out of province credential assessment, taking away from other priority areas.

Increased safety risk on the worksite – By not having to demonstrate their competencies in a consistent manner, crane operators may perform lifts incorrectly, putting other workers and the public at risk.

In recent years, crane industry stakeholder groups have expressed support for harmonization of competency standards and a national DOST to provide benefits to industry, operators, and the public in terms of increased safety, reduced costs, and greater employer and worker mobility.

Developing a consensus amongst interested standards on a mobile crane operator DOST that can be used by all provinces will potentially result in benefits to all – from the worker, employer and to the provincial training authority.

1 Scope/Overview of Harmonization Activities in Canada

Scope of Project
This scope of this report includes background research on DOSTs and their best practices. It also includes a detailed jurisdictional inventory on the current mobile crane DOSTs activities in Canada.

Harmonization Activities in Canada
In Canada, federal initiatives actively support efforts on harmonization, labour mobility and issues facing both domestic and foreign-trained apprentices. The federal government work with the provinces and territories to harmonize apprenticeship training and certification includes a focus to examine the use of practical tests as a method of assessment in certain skilled trades.

At the present time, each province and territory has its own set of regulations for crane operators. However, provinces, territories and the federal government collaborate through the Interprovincial Standards Red Seal Program to ensure labour mobility in skilled trades and to create standards of excellence. Tradespersons are able to obtain a Red Seal endorsement on their provincial/territorial certificates by successfully completing an interprovincial Red Seal examination. Mobile crane (lattice friction boom and hydraulic) operators are two of the 55 Red Seal designated trades. As a designated trade, there are National Occupational Analysis (NOA) foundation documents that map out the scope of the trade in each jurisdiction and identifies the elements of the trade that are common to all jurisdictions. The NOA details tasks and sub tasks performed by workers in the trade. These are developed with the involvement of industry representatives.

While the requirements for designated mobile crane Red Seal Trades include an Interprovincial theory examination, there is no corresponding practical assessment for mobile crane operators aligned with
the Red Seal scheme. Eligibility for challenging the Red Seal exam is determined by each province/territory apprenticeship authority.

The Interprovincial Standards Red Seal Program acknowledges competence of journeypersons with the endorsement with a key intent to ensure recognition of their certification throughout Canada without further examination.

Under the amended Chapter 7 of the Agreement on Internal Trade, provinces and territories are obligated to recognize trade certificates of qualification with or without a Red Seal Endorsement. However, where a non-Red Seal endorsed certification is determined to not cover equivalent scope, a province or territory may declare an “exception” to labour mobility and require additional training or assessment before a tradesperson can work in the jurisdiction.

The key participants in the Red Seal Program are the Canadian Council of Directors of Apprenticeship (CCDA), the Interprovincial Alliance of Apprenticeship Board Chairs and Employment and Social Development Canada (ESDC).

This project is aligned with the current strategic focus of CCDA to promote the harmonization of inter-jurisdictional processes and requirements for skilled trades training, certification and standards. The objective of the CCDA Harmonization Project is to make apprenticeship training and certification requirements more consistent. It is focusing on 10 targeted Red Seal trades within the next two years, including both mobile crane operator trades (Mobile Crane Operator and Mobile Crane Operator (Hydraulic)).

Recommendations have been developed for both the Carpenter and Mobile Crane Operator trades including making the sequencing of curriculum and total training hours (both in-school and on-the-job) more consistent, and ensuring that jurisdictions use the most recent version of the National Occupational Analysis. For the Mobile Crane Operator trades, recommendations also propose use of consistent trade names and weight restrictions/equipment classifications. Section 4.1.1 of this report provides greater detail on the findings of the CCDA Phase One harmonization project.

2 DOST as an element of Trade Certification

**DOST /Practical assessments and other standards and conditions of training and licensing for specific trades**

Assessment is the process that measures fulfillment of requirements. Assessments are a key element of training and certification programs. Practical assessments usually take the form of requiring the candidate to perform a particular task or set of tasks in order to demonstrate competence. In a practical assessment the candidate follows a set of instructions in order to complete a specific job, test it for functionality and explain the outcomes. The practical tasks are cross-referenced with the competencies and learning objectives. The assignment must be **fair, valid, authentic and reliable** as an assessment method as it makes the same demands of all candidates and is verified by an assessor. A practical assessment is used as a “summative assessment” and their successful completion forms the evidence that will be used to confirm that a candidate has met the requirements for the practical component of
The assessment. They can also be used as part of a “formative assessment” as part of a strategy to allow candidates to practice and show practical skills prior to the final assessment.

Practical assessments can be completed through real work experience, or in some occupations, simulated exercises\(^2\) may be used as an alternative. In high risk occupations such as crane operators, a practical assessment may be deemed essential before a candidate can operate a crane in the workplace.

**Other types of assessment instruments**

The choice of assessment method is determined by the suitability of the method to its purpose. Assessments methods include: spoken, written or practical. The ability to perform tasks is best assessed by undertaking tasks that allow observation of performance. However, a variety of methods may be valuable so that assessment decisions are based on as much relevant information as the assessor is able to collect. Well developed and designed practical assessments allow candidates to demonstrate their competency and enable assessors to make sound professional judgments.

The Alliance of Sector Council’s *Setting the Standard* guideline on accepted principles and recommended practices for National Occupational Standards (NOS), Certification Programs and Accreditation Programs, provides the following examples of other types of assessment methods:

- Portfolio assessment – an organized collection of materials showing the candidates work
- Feedback – direct feedback from employers, peers
- Interview – structured against competency profile
- Work simulations – good for evaluating on the job performance, critical thinking, communication skills
- Examinations – written and oral
- Self-assessment – through questionnaire
- Supervisor evaluation – ratings performed by supervisor for each competency
- Prior learning assessment and recognition – systematic process for documenting knowledge and skills – focused on learning not experience
- Foreign credential recognition – verification of education and training to ensure it is equal to standards required for domestic workers

**Relationship between DOST and Personnel Certification Programs**

\(^2\) Simulations are popularly defined as “a partial representation of reality which selects crucial characteristics of a real situation and makes a replica of them, within an environment or place which is basically risk free”. For decades, simulators have been used to significantly improve training of pilots in both military and commercial sector. Today there is consensus among researchers that serious games, synthetic environments and virtual reality trainers can be used to very good effect in training in various industry/sector applications. Use of high-fidelity simulations for training is widely recognized as having promise in the further improvement of training, and generally with respect to a notion that the progression from apprentice level to high proficiency levels can be accelerated. While simulators are not currently being used to assess competency for certification, there may be a need to consider simulators in the future.
National and international guidance exists for the development and operation of Personnel Certification Programs. ISO 17024 is a good example of standardized requirements for Personnel Certification Program. Within a PC program a DOST would be part of the examination development. The overall steps in developing a PC Program are outlined below:

- **Scheme Development:** A multi-stakeholder committee of experts works to identify the scope and requirements of the certification program, including the description of the minimally qualified candidate. A job analysis and work model expansion is conducted to further refine the necessary qualifications, body of knowledge, and base-line competency requirements for the job type. The resulting test blueprint, along with the test definition, outlines the knowledge, skills and abilities an individual will need to be able to demonstrate in order to become certified. The committee reviews and modifies the scheme on an annual basis to help ensure that it remains relevant to the needs of the market.

- **Examination Development:** Working with subject matter experts, and using standard psychometrics, certification organizations facilitate the development of the written and/or practical examination(s). When successfully completed, these examinations demonstrate that an applicant meets the requirements of the scheme. The examination is piloted to provide statistical information that will be used to establish the item set and appropriate pass / fail levels that provide confidence that the minimum score reflects the level of knowledge necessary for an individual to be determined qualified to conduct their work responsibilities. Certification examinations are proctored in a secure manner.

- **Certification of Candidates:** The certifying body validates that an applicant meets the criteria of the program, has successfully passed the required examination(s), agrees to adhere to any additional requirements pertaining to the use and maintenance of the designation, and confers the certification to successful applicants. The names of certified individuals are added to a public registry. Applicants who are not successful are provided with guidance for re-exam and/or re-application.

- **Program Maintenance:** The certifying body oversees that the requirements for the maintenance of an individual’s certification continue to be met; be it proof of continuing professional development and/or re-examination and re-certification over a determined period of time as defined in the scheme document. Processes are designed and implemented on a customized basis to address the complexities of each program’s maintenance requirements.

- **Program Management:** Program administration and operating procedures should adhere to the international ISO 17024 standard for certifying bodies in addition to ISO 9000.

### 3 DOST development: methodology and best practices

#### 3.1 Methodology

In recent decades, considerable work has been done by crane industry stakeholders to develop effective performance standards for those who work in and around cranes and to provide fair, valid and reliable assessments of the operators’ knowledge and skills. The goal of these initiatives is to create workplaces where crane and crane-related risks are reduced, performance records are improved, training is effective and overall safety is improved. Also, the initiatives ensure that the training,
assessments and certification reflect the current state of equipment, technology and standards.

There has been extensive growth in the training, certification and assessment field in Canada and in countries such as US, UK, Australia and New Zealand, Japan. However, the requirements and processes behind these systems vary widely across jurisdictions. This move to greater oversight and consistency applies to many other skilled trades and occupations. Work is still needed in many jurisdictions to tighten requirements in the area of operator certification and licensing and to achieve greater harmonization of requirements and mutual recognition.

**Best Practices for Developing Assessment Programs**

A review of literature has identified a number of guidance documents on how to develop assessment tools. For the development of any assessment program, The Alliance of Sector Council’s document, *Setting the Standard*, provides the following guidance:

- Assessment should be derived from the learning objectives or certification scheme requirements and follow psychometric principles (reliable and valid);
- Qualifications of those involved in the development of the test should be appropriate to the content;
- Criteria setting (scoring to assess pass/fail) with input from representative stakeholders;
- Assessment blueprint should be reviewed to ensure it is fair, reliable and valid;
- Pilot testing with representative stakeholders is recommended;
- Documentation defined;
- Language considerations and accuracy or translation should be considered;
- Ongoing process for maintenance and updating in alignment with certification scheme and NOS;
- Standardized procedure for administration of assessment (preparing candidate, assessor qualifications, site requirements for test, accommodation of special needs, scheduling);
- Role of assessment exceptions (grandfathering, prior learning assessment and recognition and foreign credentials);
- Certificate issuing (process and documentation);
- Reassessment procedure established;
- Procedures and requirements for recertification; and
- Complaints/appeals procedure.

Assessment strategies and tools need to be developed in consultation with industry. The following key principles should apply to the process:

- accessible, equitable and fair
- confidentiality of information
- consensus based decision making
- impartiality and independence
- openness and transparency
- representative (inclusive)
- voluntary participation
Principles and Best Practices for DOST Development

While the methodology associated with the development of practical tests has advanced considerably in recent years, there is limited scientific literature on this subject. However, a review of literature has identified a number of guidance documents from countries such as the UK and Australia.

Any practical skills test should allow for the collecting of evidence of practical skills. Both competence checklists and practical assignments allow observation of performance – meaning that assessment takes place whilst the activity is being done. Observation of performance is always preferable, provided that certain conditions are met. These are outlined below:

- the assessment (observation) is **valid**, because it accurately reflects the objectives and content of the syllabus, and does not introduce bias or irrelevant demands. All dimensions of competency are addressed – competency in different contexts is demonstrated;
- the assessment is **reliable** – it can be checked and confirmed by a second party;
- it is **authentic** – the assessment is of the candidate’s own work;
- the assessment is **current** – it is a reflection of what the candidate can do now, not at some time in the past;
- the assessment allows candidates equal and frequent opportunity to show competence;
- it is **efficient** and **cost-effective**;
- there is **sufficient feedback** about the result of the assessment.

Many of the best practice documents provide recommended step by step processes for the development of DOSTs. The following is an example of one process flow chart:

```
state purpose of document
review related literature
identify major practical skill areas for assessment
isolate performance objectives
develop table of specifications
generate practical skill test items
write test form/outline/checklist
preliminary exercise to validate test
revised test to produce test form
pilot test DOST
administer revised test for content validation
final DOST assembly (resources, checklist, etc.)
execute final DOST
review/finish DOST
```
3.2 What are the national and international best practices for DOSTs?

As noted above, there is little scientific literature available on the validity and reliability of various DOSTs or practical tests. Some small studies have shown that the use of a validated test will help to improve the practical aspect of a trade.

Australia operates a skills-assessment service, specializing in assessments for people with trade skills gained overseas, for migration purposes or skills recognition. However, they do not publish any detailed content on what is included in the various practical assessments. The assessments are done by a qualified tradesperson from the applicant’s trade. Assessment may involve technical review, practical demonstration of skills and/or gathering evidence from any nominated employers. For crane operators, Australia has moved to a national certificate based on model legislation accepted by all states. Most mobile crane operators train at a technical school and then take a written and practical test, followed by on the job training. The industry is working on developing a 3 year traineeship program. Tests must be re-taken every 5 years.

The literature does provide some examples of different crane certification programs around the world. However, very little information is available on the development of the practical test. For example in Denmark, the operators need to not only pass a written test but also a practical test (at the school or other site). The Netherlands has a certification program which is accredited to the ISO Standard 17024 for Personnel Certification Bodies.

Language presents a serious problem in Europe for labour mobility. However, there is strong interest in the European crane industry for a standardized test which could be applied across Europe.

In New Zealand there is a code or practice which has government support. The expectation is that employers should be able to provide evidence that their crane operators have the skills, knowledge and experience necessary to safely operate their cranes. This is driving a strong demand for training and assessment. There are certificates for mobile, crawler, tower and overhead cranes as well as for crane supervision, crane dispatch supervision and advanced crane operation.

Japan has had mandatory licences for crane operators since 1947. The registered training provider grants a certificate of completion and the government Labour Bureau grants the licence after a test of both theory and practical skills.
4. Detailed Jurisdictional Comparison

4.1 Overview of Trade in Canada

In Canada, there are 14 regulatory jurisdictions: one federal, ten provincial and three territorial. Each regulatory body determines which occupations are regulated and designates a body governing the profession/trade that has the authority to set entry requirements and standards of practice, to assess applicants’ qualifications and credentials, to certify, register, or license qualified applicants, and to discipline members of the profession/trade within their jurisdiction.

Differences exist across jurisdictions as to which trades are compulsory (regulated) and which are voluntary. Furthermore, jurisdictions vary on use of trade and sub-trade names and designations. While national standards exist in the form of Red Seal designated trades, even jurisdictions with Red Seal endorsement may have classifications for trades that do not directly map to the Red Seal trades.

In the case of national and provincial/territorial classifications for mobile crane operators, wide variation exists between jurisdictions.

There are two Red Seal Designated Trades for Mobile Crane Operators

- Mobile Crane Operator: Designated as a trade in all provinces;
- Mobile Crane Operator (Hydraulic): Designated as a trade in BC; designated as a sub-trade in NB, SK and AB.

While the Red Seal features common outcome standards, differences exist in jurisdictional apprenticeship training and certification requirements for Red Seal designated trades (i.e. differing on-the-job (OTJ) experience and in-class technical training requirements; divergences in weight restrictions and equipment classifications).

Detailed Jurisdictional Profiles

A detailed review the jurisdictional Crane Operator certification programs organized by region, is provided in the Appendices:

- Appendix A – Jurisdictional Profile: Newfoundland and Labrador
- Appendix B – Jurisdictional Profile: Nova Scotia
- Appendix C – Jurisdictional Profile: Prince Edward Island
- Appendix D – Jurisdictional Profile: New Brunswick
- Appendix E – Jurisdictional Profile: Quebec
- Appendix F – Jurisdictional Profile: Ontario
Appendix G – Jurisdictional Profile: Manitoba
Appendix H – Jurisdictional Profile: Saskatchewan
Appendix I – Jurisdictional Profile: Alberta
Appendix J – Jurisdictional Profile: British Columbia
Appendix K – Jurisdictional Profile: Northwest Territories
Appendix L – Jurisdictional Profile: Yukon Territory
Appendix M – Jurisdictional Profile: Nunavut

The jurisdictional overview provided includes the publically available resources at the time of publication of this report. The jurisdictional profiles will be further updated as this information is obtained.

The result of a review of jurisdictional resources on Mobile Crane Operator Certification is provided below in *Interjurisdictional Summary of DOST Program Criteria*. An overview of the Mobile Crane Operator Trade program elements related to the DOST is summarized in *Overview of the DOST-related program criteria per Ellis Chart* (www.ellischart.ca)

Note: For further details on the Ellis Chart, see section 4.1.2.
### Interjurisdictional Summary of DOST Program Criteria

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>DOST currently exists in jurisdiction</th>
<th>DOST Req’d for Certification</th>
<th>At what stage is the DOST completed?</th>
<th>Who administers the assessment?</th>
<th>Is there a legislated requirement for 3rd party assessor?</th>
<th>What does the current overall model for a DOST look like?</th>
<th>How was the DOST built?</th>
</tr>
</thead>
<tbody>
<tr>
<td>NL</td>
<td>No</td>
<td></td>
<td>Note: some practical assessment criteria are included as part of apprenticeship program</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NS</td>
<td>Yes</td>
<td>Yes</td>
<td>Practical assessment is required before Certificate of Competency (Note - certain crane classes require endorsements beyond C of C level. Endorsements have defined practical experience requirements beyond Certificate of Competency)</td>
<td>The practical skills assessment is administered by a provider approved by the Department of Labour and Advanced Education. Practical assessment exam curriculum is developed and administered by accredited providers (most assessors are also training providers and DOST may occur as element of accredited training curriculum, in some cases). There is no single provincial standard for the DOST.</td>
<td>No</td>
<td>Practical assessment test/curriculum is determined by provider and is required to include: Weight calculations; equipment inspection (pre-start), handling load, handling crane in an obstacle course type arrangement.</td>
<td>Practical assessment test/curriculum is developed and administered by accredited providers. There is no single provincial standard for the DOST.</td>
</tr>
<tr>
<td>PE</td>
<td>No</td>
<td></td>
<td>Note: Apprenticeship is administered via block training in NB and may include some practical assessment criteria. See NB program for details.</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Jurisdiction</td>
<td>DOST currently exists in jurisdiction</td>
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</tr>
<tr>
<td>NB</td>
<td>Yes</td>
<td>Yes</td>
<td>Successful completion of practical assessment testing is typically completed as part of apprenticeship program.</td>
<td>No</td>
<td>Practical assessment includes three elements with pass criteria as stipulated per Board order GE001.1: hand signal practical assessment, load chart practical assessment, equipment operation practical assessment.</td>
<td>Not available</td>
<td>Not available</td>
</tr>
<tr>
<td>QC</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ON</td>
<td>Yes</td>
<td>Yes</td>
<td>Prior to issuance of C of Q (note: DOST is broken into two pieces. Hand signal/load chart piece administered before on-crane assessment)</td>
<td>Ontario offers split delivery of practical assessment criteria for hoisting engineers. The load chart and hand signal portion of the DOST are administered by the MTCU; Ontario College of Trades (or designate) administer the hands-on practical skills assessment.</td>
<td>No</td>
<td>Load calculation and hand signal assessments are completed in advance of the on-crane practical assessment. On-crane practical assessment portion of the DOST includes: perform a preoperational inspection of the crane, set up a crane, operate both hydraulic and conventional/lattice cranes, prepare a mobile crane for travel</td>
<td>Detailed information regarding the development methodology of the DOST is not available at this time. Recently, Ontario has completed a mapping exercise of the DOST against the 2013 NOA</td>
</tr>
<tr>
<td>MB</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>DOST currently exists in jurisdiction</td>
<td>DOST Req’d for Certification</td>
<td>At what stage is the DOST completed?</td>
<td>Who administers the assessment?</td>
<td>Is there a legislated requirement for 3rd party assessor?</td>
<td>What does the current overall model for a DOST look like?</td>
<td>How was the DOST built?</td>
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</tr>
<tr>
<td>SK</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Certification includes written assessment criteria only. Practical performance criteria are assessed as part of the on-the-job apprenticeship requirements as overseen by the employer.</td>
<td></td>
</tr>
<tr>
<td>AB</td>
<td>Yes</td>
<td>Yes</td>
<td>Qualifying examination includes practical assessment test</td>
<td>Majority of operators certified in Alberta are certified through the apprenticeship programs. This is administered by the training providers. A pilot program for trade qualifiers has been recently completed. On-site trade qualifier assessment is provided by a third party under the pilot. As the outcome from the pilot, an RFP process is underway to determine who will deliver practical assessment on ongoing basis.</td>
<td>NOTE: Pilot program is complete and RFP underway to determine who will deliver practical assessment on ongoing basis</td>
<td>Ongoing assessments will be based on the model delivered via the pilot:  • Hand Signals  • On-Crane Practical Assessment  - Crane Set-up  - Target Course without a load  - Target Course with a load</td>
<td>The pilot program was based on the model developed for BC</td>
</tr>
<tr>
<td>BC</td>
<td>Yes</td>
<td>Yes</td>
<td>Certificate of Qualification exam is required to be successfully completed before attempting the practical assessment. 3rd party assessor as covered by agreements with agreements in place with WorkSafeBC and the ITA</td>
<td>BC regulations require a separation between training providers and certification assessment providers. Part 1 (Hand signals) and 2 (Load Chart &amp; Rigging) of the applied assessment are completed in advance (at the beginning of the assessment). The Load chart calculations are identical to calculations that would be made in the field using contemporary load charts.  • On-Crane Practical Assessment  - Crane Set-up  - Target Course without a load  - Target Course with a load</td>
<td></td>
<td>The BC DOST was developed through stakeholder consultations and based international best practices. Assessment criteria were integrated into the Canadian system to account for time-based/experience requirements. Each of the crane operator certificates is matched to an Apprenticeship Qualification in BC. The assessment tools utilized to provide this service was designed and developed by the crane industry through BCACS. BCACS has responsibility to monitor and provide quality control.</td>
<td></td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>DOST currently exists in jurisdiction</td>
<td>DOST Req’d for Certification</td>
<td>At what stage is the DOST completed?</td>
<td>Who administers the assessment?</td>
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<td>-------------------------</td>
</tr>
<tr>
<td>NT</td>
<td>Yes</td>
<td>Yes</td>
<td>Practical examinations are required for Journeypersons in the Mobile crane operator trade. Mobile crane operator trade includes in-school practical assessment.</td>
<td>No information available at this time</td>
<td>No information available at this time</td>
<td>No information available at this time</td>
<td>No information available at this time</td>
</tr>
<tr>
<td>YT</td>
<td>Yes</td>
<td>Yes</td>
<td>(note: there are no Red Seal designated mobile crane trades in YK) 3rd party assessor delivers practical assessment</td>
<td>A separation between training providers and certification assessment exists. Administered through Yukon Workers' Compensation Health and Safety Board.</td>
<td>Part 1 (Hand signals) and 2 (Load Chart &amp; Rigging) of the applied assessment are completed in advance (at the beginning of the assessment). The Load chart calculations are identical to calculations that would be made in the field using contemporary load charts. - On-Crane Practical Assessment - Crane Set-up - Target Course without a load - Target Course with a load</td>
<td>The program was based on the model developed for BC.</td>
<td></td>
</tr>
<tr>
<td>NU</td>
<td>No info available</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Overview of DOST-related program criteria per Ellis Chart (www.ellischart.ca)

4.1.1 Overview of CCD/Red Seal Trade Harmonization Findings:
A summary of key findings in the Phase One Red Seal Harmonization report is included below:

- Divergence in trade standards based on weight classes;
- Practical experience on specific equipment is key qualification determinant;
- Practical OTJ hours are the primary certification requirement;
- Little divergence in curriculum content, but differences in concentration and sequence exist;
- Differences in the trade standard and the designating authority are the most significant impediments to harmonization efforts;
- Wide range in total number of hours required (from 4,000 to 7,200) – some jurisdictions only stipulate OTJ hours, others define both OTJ and technical training; and
- Supervision ratios are relatively consistent across Canada – from 1:1 to 1:2.

In light of the findings, CCDA has targeted 10 Red Seal trades (including Mobile Crane Operator and Mobile Crane Operator (Hydraulic) with the following recommendations:

- Apprenticeship training and curriculum should be based on most recent Red Seal National Occupational Analysis (NOA);
- Same trade name and definition across jurisdictions should be adopted;
- Consistent sequencing of technical training curriculum content should be adopted;
- Consistent requirements for total training hours (i.e. in-school and OTJ) should be adopted; and
- Consistent crane equipment classifications and weight restrictions should be adopted.
A summary on the status of the Red Seal designated trades Mobile Crane Operator and Mobile Crane Operator (Hydraulic) in each jurisdiction is included below.³

<table>
<thead>
<tr>
<th>P/T</th>
<th>Designated Trade</th>
<th>Relevant Sub or Related Trades</th>
<th>Mobile Crane Trade Standard (Regulation)</th>
<th>Certification</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE</td>
<td>Mobile Crane Operator</td>
<td>None</td>
<td>Defined by NOA</td>
<td>Voluntary</td>
<td>Work 6000</td>
</tr>
<tr>
<td></td>
<td>Mobile Crane Operator (Hydraulic)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td>Mobile Crane Operator</td>
<td>None</td>
<td>Defined by NOA</td>
<td>Compulsory</td>
<td>Technical 746 Work 4654</td>
</tr>
<tr>
<td>NS</td>
<td>Mobile Crane Operator</td>
<td>Crane Operator Class 1, 2 or 3 License</td>
<td>Defined by Technical Safety Act</td>
<td>Compulsory</td>
<td>Work 4000</td>
</tr>
<tr>
<td>NB</td>
<td>Mobile Crane Operator</td>
<td>Category 1 – Hydraulic Boom Category 2 – Lattice Boom</td>
<td>Detailed Tasks Defined</td>
<td>Voluntary</td>
<td>#1 Work 3000-5400 #2 Work 5400</td>
</tr>
<tr>
<td>ON</td>
<td>Mobile Crane Operator – Branch 1</td>
<td>Hoisting Engineer – Mobile crane Operator 2 16,000 lbs – 30,000 lbs</td>
<td>Defined by Tasks and Competencies</td>
<td>Compulsory</td>
<td>Technical 480 Work 5520</td>
</tr>
<tr>
<td>MB</td>
<td>Crane and Hosting Equipment Operator Branch 1 – Mobile Crane Operator</td>
<td>None</td>
<td>Detailed Tasks Defined in Trade of Crane and Hosting Equipment Operator Regulation</td>
<td>Compulsory</td>
<td>Technical 490 Work 4610</td>
</tr>
<tr>
<td>SK</td>
<td>Crane and Hoist Operator</td>
<td>1. Lattice Boom Cranes</td>
<td>Tasks Broadly Defined</td>
<td>Voluntary</td>
<td>Technical 490 Work 3780</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Hydraulic Crane Operator</td>
<td></td>
<td></td>
<td>Technical 720 Work 3030</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Conventional Craft – Mobile Branch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BC</td>
<td>Mobile Crane Operator (Lattice Boom Friction Crane)</td>
<td>None</td>
<td>Defined by POA</td>
<td>Compulsory</td>
<td>Technical 300 Work 4020</td>
</tr>
<tr>
<td></td>
<td>Mobile Crane Operator (Lattice Boom Hydraulic Crane)</td>
<td></td>
<td></td>
<td></td>
<td>Technical 300 Work 4000</td>
</tr>
<tr>
<td>YT</td>
<td>None</td>
<td>None</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>NU</td>
<td>Crane &amp; Hoisting – Equipment Operator</td>
<td>None</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>NT</td>
<td>Crane &amp; Hoisting Equipment Operator – Mobile Crane</td>
<td>None</td>
<td>N/A</td>
<td>Voluntary</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Crane &amp; Hoisting Equipment Operator Hydraulic Mobile Crane</td>
<td></td>
<td></td>
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</table>

³ From Red Seal Harmonization Report Jan 2014
Mobile Crane Operator Summary of Definition and Weight Restriction

<table>
<thead>
<tr>
<th>Province</th>
<th>Mobile Crane Definition</th>
<th>Weight Restriction</th>
</tr>
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<tbody>
<tr>
<td>BC</td>
<td>Lattice Boom Friction</td>
<td>unlimited</td>
</tr>
<tr>
<td>BC</td>
<td>Lattice Boom Hydraulic</td>
<td>&lt;80 tonnes</td>
</tr>
<tr>
<td>BC</td>
<td>Hydraulic Unlimited Tonnage</td>
<td>unlimited</td>
</tr>
<tr>
<td>AB</td>
<td>Mobile Crane (Conventional or Hydraulic)</td>
<td>&gt;15 tons</td>
</tr>
<tr>
<td>SK</td>
<td>Crane and Hoist Operator</td>
<td>not defined</td>
</tr>
<tr>
<td>MB</td>
<td>Mobile Crane</td>
<td>&gt;7,299 kg (8 tons)</td>
</tr>
<tr>
<td>ON</td>
<td>Mobile Crane - Branch 1</td>
<td>&gt;8 tons</td>
</tr>
<tr>
<td>ON</td>
<td>Mobile Crane - Branch 2</td>
<td>8 &gt;15 tons</td>
</tr>
<tr>
<td>NB</td>
<td>Crane</td>
<td>&gt;17.5 tons</td>
</tr>
<tr>
<td>NS</td>
<td>Class 1 - Boom Truck or Mobile Crane</td>
<td>&gt;100 tons</td>
</tr>
<tr>
<td>NS</td>
<td>Class 2 - Boom Truck or Mobile Crane</td>
<td>20 &gt;100 tons</td>
</tr>
<tr>
<td>NS</td>
<td>Class 3 - Boom Truck or Mobile Crane</td>
<td>&lt;20 tons</td>
</tr>
<tr>
<td>NL</td>
<td>Mobile Crane</td>
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</tr>
<tr>
<td>PE</td>
<td>Mobile Crane</td>
<td>not defined</td>
</tr>
</tbody>
</table>

The following graphs illustrate the total technical work hour requirements by jurisdiction for the Mobile Crane Operator and Mobile Crane Operator (Hydraulic) trades as detailed in the Red Seal Harmonization Report from Jan 2014:

**Mobile Crane Operator**

![Bar chart showing total technical work hour requirements by jurisdiction for Mobile Crane Operator.](chart)

---

\[4\] From Red Seal Harmonization Report Jan 2014
Details of the Red Seal National Occupational Analysis for both trades are included in Section 4.2.

4.1.2 Overview of Jurisdictional Apprenticeship Systems (Ellis Chart Overview)
The Ellis Chart is produced by Employment and Social Development Canada (ESDC) in partnership with the Canadian Council of Directors of Apprenticeship (CCDA) and provides a comparative chart of apprentice training programs across Canada. It provides an overview of the 13 Canadian jurisdictional apprenticeship systems.
The Ellis Chart overview for the two Red Seal trades is reproduced below. Provincially designated trades have not been included in this review.  

<table>
<thead>
<tr>
<th>Mobile Crane Operator</th>
<th>NL</th>
<th>NS</th>
<th>PE</th>
<th>NB</th>
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<th>SK</th>
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<tbody>
<tr>
<td>Red Seal designated (Yes/No)</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Apprenticeship Training Provided (Yes/No)</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td>Yes</td>
</tr>
<tr>
<td>Apprenticeship Term - Years and Total Hours</td>
<td>3 (5400)</td>
<td>N/A</td>
<td>3 (6000)</td>
<td>7200</td>
<td>4000</td>
<td>3 (2000)</td>
<td>3 (1700)</td>
<td>3 (4500)</td>
<td>3 (4500)</td>
<td>2 (4020)</td>
<td>3 (5400)</td>
<td>N/A</td>
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<table>
<thead>
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<th>Mobile Crane Operator (Hydraulic)</th>
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<th>SK</th>
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<th>NT</th>
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<th>NU</th>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Apprenticeship Training Provided (Yes/No)</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
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<td>No</td>
<td>No</td>
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<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Apprenticeship Term - Years and Total Hours</td>
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<td>3 (5400)</td>
<td>3 (5400)</td>
<td>4000</td>
<td>2.5 (3750)</td>
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</table>

For full details, see [www.ellischart.ca](http://www.ellischart.ca).  

[http://www.ellischart.ca/tr.1d.2ch.1rt@-eng.jsp?&tid=148](http://www.ellischart.ca/tr.1d.2ch.1rt@-eng.jsp?&tid=148) (Mobile Crane Operator); - Date modified: 2014-09-26  

[http://www.ellischart.ca/tr.1d.2ch.1rt@-eng.jsp?&tid=454](http://www.ellischart.ca/tr.1d.2ch.1rt@-eng.jsp?&tid=454) (Mobile Crane Operator (Hydraulic)); - Date modified: 2014-08-19
<table>
<thead>
<tr>
<th>Mobile Crane Operator (Hydraulic)</th>
<th>Part A - Education/Entrance Requirements</th>
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<tr>
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<tr>
<td>Prior Learning Assessment and Recognition (PLAR) Available (Yes/No)</td>
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<tr>
<td>Apprenticeship Accreditation Process Available (Yes/No)</td>
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<tr>
<td>Apprenticeship Technical Training Required (Yes/No)</td>
<td>No</td>
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<tr>
<td>Training Delivery Methods - Block Release (BR); Individualized (I); Both (B)</td>
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</tr>
<tr>
<td>If Block Release: No. of Periods/Total</td>
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<tr>
<td>Total Theory Hours</td>
<td>560</td>
</tr>
<tr>
<td>Total Shop/Lab</td>
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<tr>
<td>If Individualized: Total Hours</td>
<td>870</td>
</tr>
<tr>
<td>Day/Release</td>
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</tr>
<tr>
<td>Fixed Entry/Open</td>
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</tr>
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<td>Flexible/Distant Education</td>
<td>X</td>
</tr>
<tr>
<td>Other</td>
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</tr>
<tr>
<td>Pre-Employment Training - Compulsory (C); Voluntary (V); Not Available (NA)</td>
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<tr>
<td>Train-the-Trainer Program for Journeypersons Supervising Apprentices (Yes/No)</td>
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</tr>
<tr>
<td>Ratio - Journeyperson/Apprentice - Indicate Actual Ratio or Variable (V)</td>
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<tr>
<td>Journeyperson Certification Available - Compulsory (C); Voluntary (V); Not Available (NA)</td>
<td>* C</td>
</tr>
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</table>
4.2 Overview of National Occupational Analysis

### 4.2.1 Current NOA for Mobile Crane Operator and Mobile Crane Operator (Hydraulic)

The National Occupational Analysis (NOA), developed for each Red Seal designated trade, identifies all the tasks and sub-tasks performed in the trade and is used as a base document for the development of interprovincial standard examinations.

The NOAs have the following objectives:

- To describe and group the tasks performed by skilled workers;

---

<table>
<thead>
<tr>
<th>Mobile Crane Operator</th>
<th>Part B - Curriculum Resources - Mobile Crane</th>
<th>NL</th>
<th>NS</th>
<th>PE</th>
<th>NB</th>
<th>QC</th>
<th>ON</th>
<th>MB</th>
<th>SK</th>
<th>AB</th>
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<th>YT</th>
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<td>National (N); Province/Worker (P/T); Both (B), Not Available (NA)</td>
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<td>N</td>
<td>N</td>
<td>B</td>
<td>B</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>P/T</td>
<td>N</td>
<td></td>
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<td><strong>Province/Worker Skill Profile Chart</strong></td>
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<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
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<td>Yes</td>
<td>Yes</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td><strong>Apprentice On-The-Job Training Standards/Record Book</strong></td>
<td>Yes/No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td>Yes</td>
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<tr>
<td><strong>Province/Worker Journeyperson Course Outline(s) - Upgrading (UG); Updating (UD); Both (B); Not Available (NA)</strong></td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>B</td>
<td>NA</td>
<td>UG</td>
<td>UG</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
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<th>Part C - Assessment/Examination Resources - Mobile Crane</th>
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<th>NS</th>
<th>PE</th>
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<th>QC</th>
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<td>N</td>
<td>B</td>
<td>P/T</td>
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<td>UG</td>
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<tr>
<th>Mobile Crane Operator (Hydraulic)</th>
<th>Part C - Assessment/Examination Resources - Mobile Crane</th>
<th>NL</th>
<th>NS</th>
<th>PE</th>
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<td>W</td>
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</table>
• To identify which tasks are performed in every province and territory;
• To develop instruments for use in the preparation of interprovincial Red Seal examinations and curricula for training leading to the certification of skilled workers;
• To facilitate the mobility of apprentices and skilled workers in Canada; and
• To supply employers, employees, associations, industries, training institutions and governments with analyses of occupations.

An outline view of the blocks and tasks, within the current versions of the NOA, is included below for both relevant Red Seal Mobile Crane trades.

**Blocks:** The largest division within the analysis that is comprised of a distinct set of tradeactivities.

**Tasks:** Distinct actions that describe the activities within a block.

<table>
<thead>
<tr>
<th>Overview of 2013 Mobile Crane Operator NOA</th>
<th>Overview of 2012 Mobile Crane Operator (Hydraulic) NOA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Block A: Common Occupational Skills</strong></td>
<td><strong>Block A: Common Occupational Skills</strong></td>
</tr>
<tr>
<td>Task 1 Performs safety-related functions</td>
<td>Task 1 Performs safety-related functions</td>
</tr>
<tr>
<td>Task 2 Organizes work</td>
<td>Task 2 Organizes work</td>
</tr>
<tr>
<td><strong>Block B: Hoisting Calculations</strong></td>
<td><strong>Block B: Hoisting Calculations</strong></td>
</tr>
<tr>
<td>Task 3 Determines load weights</td>
<td>Task 3 Determines load weights</td>
</tr>
<tr>
<td>Task 4 Calculates crane capacity</td>
<td>Task 4 Calculates crane capacity</td>
</tr>
<tr>
<td>Task 5 Performs rigging calculations</td>
<td>Task 5 Performs rigging calculations</td>
</tr>
<tr>
<td><strong>Block C: Crane Inspection and Maintenance</strong></td>
<td><strong>Block C: Crane Inspection and Maintenance</strong></td>
</tr>
<tr>
<td>Task 6 Performs pre-operational checks and regular inspection</td>
<td>Task 6 Performs pre-operational checks and regular inspections</td>
</tr>
<tr>
<td>Task 7 Performs operational and continual checks</td>
<td>Task 7 Performs operational and continual checks</td>
</tr>
<tr>
<td>Task 8 Performs minor crane maintenance</td>
<td>Task 8 Performs minor crane maintenance</td>
</tr>
<tr>
<td><strong>Block D: Rigging</strong></td>
<td><strong>Block D: Rigging</strong></td>
</tr>
<tr>
<td>Task 9 Inspects, maintains and stores slings and hardware</td>
<td>Task 9 Inspects, maintains and stores slings and hardware</td>
</tr>
<tr>
<td>Task 10 Follows rigging procedures</td>
<td>Task 10 Follows rigging procedures</td>
</tr>
<tr>
<td><strong>Block E: Lift Planning, Site Preparation and Crane Setup</strong></td>
<td><strong>Block E: Lift Planning, Site Preparation and Crane Setup</strong></td>
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<tr>
<td>Task 11 Performs pre-lift planning</td>
<td>Task 11 Performs pre-lift planning</td>
</tr>
<tr>
<td>Task 12 Sets up crane</td>
<td>Task 12 Sets up crane</td>
</tr>
</tbody>
</table>
*Block F: Crane Assembly, Disassembly and Transport*

Task 13 Loads and unloads components for transport
Task 14 Drives crane on public roadways
Task 15 Assembles and disassembles lattice boom cranes
Task 16 Assembles and disassembles telescopic boom cranes
Task 17 Assembles and disassembles specialty equipment and attachments

*Block G: Crane Operations*

Task 18 Performs common craning operations
Task 19 Operates friction drive lattice boom cranes
Task 20 Operates hydraulic drive lattice boom cranes
Task 21 Operates telescopic boom cranes
Task 22 Performs specialty craning operations
Task 23 Secures crane

The NOA further sub-divides tasks into sub-tasks and identifies key competencies.  

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

**Key Competencies:** activities that a person should be able to do in order to be called ‘competent’ in the trade.

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For complete details on the Mobile Crane Operator NOA, visit

http://www.red-seal.ca/d.4c.5m.2ntdet.1.3l@-eng.jsp?tid=148&did=10

For complete details on the Mobile Crane Operator (Hydraulic) NOA, visit

http://www.red-seal.ca/tr.1d.2@-eng.jsp?tid=454
4.2.2 Interprovincial Program Guide
The Interprovincial Program Guide (IPG) is a set of validated technical training outcomes, based upon sub-tasks identified as common core in the National Occupational Analysis (NOA). It is validated by industry in the provinces and territories as incorporating the essential tasks, knowledge and skills associated with a given trade.

The learning outcomes contained in the IPG represent the minimum common core content for the development of jurisdictional training standards. Each jurisdiction has the flexibility to add additional content.

The IPG was constructed to be easy to use and flexible in structure in order to adapt to differing delivery requirements in the jurisdictions. It does not specify the delivery model, teaching format or assessment method.

The IPG includes a recommended leveling structure (Level 1 and Level 2) to facilitate inter-jurisdictional mobility for apprentices. Due to the difference in jurisdictional regulations and program durations, levels are offered as suggestions only.

Level 1 learning outcomes for Mobile Crane Operator and Mobile Crane Operator (Hydraulic) are identical. The Level 2 learning outcomes are very similar, with the one exception being learning outcome requirements for Friction Drive Lattice Boom Operation that only apply to the Mobile Crane Operator IPG.\(^7\)

4.3 Jurisdictional summary – USA

4.3.1 USA OSHA Regulations for Crane Operators
In the USA, Occupational Safety and Health Administration (OSHA) regulation 29 CFR Subpart CC released August 9, 2010, includes requirements for qualification and certification of crane operators for construction. Exceptions to the regulation include: operators of derricks, sideboom cranes or equipment with a maximum manufacturer-rated hoisting/lifting capacity of 2,000 pounds or less.

The regulation originally included a requirement for crane operators on construction sites to comply with one of four options for qualification/certification by Nov. 10, 2014. However, after OSHA issued the standard, a number of parties raised concerns about these requirements. OSHA held three

\(^7\) Full text of the IPG can be found at the following:

Mobile Crane Operator: [http://www.red-seal.ca/tr.1d.2@-eng.jsp?tid=148](http://www.red-seal.ca/tr.1d.2@-eng.jsp?tid=148)

Mobile Crane Operator (Hydraulic): [http://www.red-seal.ca/tr.1d.2@-eng.jsp?tid=454](http://www.red-seal.ca/tr.1d.2@-eng.jsp?tid=454)
stakeholder meetings on operator certification/qualification issues in April 2013 and posted detailed notes of the meetings at http://www.osha.gov/cranes-derricks/stakeholders.html.

The outcome of these meetings is an extension to the enforcement date so that the certification requirements do not take effect during potential rulemaking or cause disruption to the construction industry.

The Occupational Safety and Health Administration issued a proposed rule in Feb 2014 to extend the compliance date for the crane operator certification requirement by three years to Nov. 10, 2017. The proposal also extends the existing phase-in requirement that employers ensure that their operators are qualified to operate the equipment.

The OSHA regulation also includes options for Certification of Crane Operators:

1. *Certification by an accredited crane operator testing organization*
2. *Qualification by an audited employer program*
3. *Qualification by US military*
4. *Licensing by a government entity*

A summary of Option 1: *Certification by an accredited crane operator testing organization* is included below for the purposes of comparison with Canadian jurisdictional certification models:

For a testing organization to be considered accredited to certify operators Option 1, it must:
- Be accredited by a nationally recognized accrediting agency based on that agency's determination that industry recognized criteria for written testing materials, practical examinations, test administration, grading, facilities/equipment and personnel have been met.
- Administer written and practical tests that:
  - Provide different levels of certification based on equipment capacity and type;
  - Have procedures for operators to re-apply and be re-tested in the event an operator applicant fails a test or is decertified;
  - Have testing procedures for re-certification designed to ensure that the operator continues to meet the technical knowledge and skills requirements; and
  - Have its accreditation reviewed by the nationally recognized accrediting agency at least every three years.

An operator will be deemed qualified to operate a particular piece of equipment if the operator is certified for that type and capacity of equipment or for higher-capacity equipment of that type. If no accredited testing agency offers certification examinations for a particular type and/or capacity of equipment, an operator will be deemed qualified to operate that equipment if the operator has been certified for the type/capacity that is most similar to that equipment and for which a certification examination is available. The operator's certificate must state the type/capacity of equipment for which the operator is certified.

A certification issued under this option is portable. A certification issued under this section of the regulation is valid for 5 years.
4.3.2  Accreditation Bodies for Mobile Crane Operators in the USA

There are four agencies that provide crane operator certification programs and services in Washington State. All four agencies operate on a national basis in the United States. The four agencies are: The Operating Engineers Certification Program (OECP), Crane Institute Certification (CIC), The National Commission for the Certification of Crane Operators (NCCCO), and The National Center for Construction Education and Research (NCCER).

1. **Operating Engineers Certification Program** - The Operating Engineers Certification Program (OECP) is an independent, non-profit organization formed to provide members of the International Union of Operating Engineers (IUOE) a means to obtain a valid and reliable certification that accurately assesses their competence in craning operations. The program is managed by a Board of Directors primarily comprised of IUOE members and individuals representing major employers of crane operators. OECP offers NCCA accredited certifications.

**OECP Mobile Crane Operator Certifications:**
- Lattice Boom
- Telescopic Boom

2. **Crane Institute of America Certification** - Crane Institute of America Certification (CIC) is an independent certifying organization. CIC’s nationally accredited certification programs include crane operator, rigger, signalperson and crane certifier/inspector. CIC has joined its expertise in the crane industry with the assessment expertise of 4ROI, based in Minneapolis, Minnesota. 4ROI responsibilities include the ongoing validity and reliability of the written and practical exams and provide support for the exam administration process.

**CIC Mobile Crane Operator Certifications:**
- Lattice Boom Crawler
- Lattice Boom Carrier
- Large Telescopic Boom – Over 75 Tons
- Medium Telescopic Boom – 21 to 75 Tons
- Small Telescopic Boom – Under 21 Tons

3. **National Commission for the Certification of Crane Operators** - The National Commission for the Certification of Crane Operators (NCCCO) is an independent, not-for-profit organization incorporated in January 1995 to establish and administer a nationwide program for the certification of crane operators. An NCCCO certification card is issued to those who meet eligibility requirement and pass written and practical exams demonstrating fundamental knowledge of and skill in safe operations.

NCCCO is accredited by both NCCA and ANSI. Most NCCCO certification programs—Mobile, Tower, and Overhead Crane Operator, Signalperson, and Rigger Level I—are accredited by ANSI to the ISO/IEC 17024 International Standard for organizations that certify personnel.

**NCCCO Mobile Crane Operator Certifications:**
- Lattice Boom Crawler
• Lattice Boom Truck
• Telescopic Boom – Fixed Cab
• Telescopic Boom – Swing Cab

4. **National Center for Construction Education and Research** - NCCER is a not-for-profit education foundation created in 1996 as The National Center for Construction Education and Research. NCCER is headquartered in Alachua, Florida, and is affiliated with the University of Florida’s M.E. Rinker Sr. School of Building Construction.

NCCER’s Crane Operator Certification Program is accredited by the American National Standards Institute (ANSI) under the ANSI/ISO IEC 17024 for the following scopes: Industrial/All Purpose Crane, Rubber Tire Truck Mount Crane and Rough Terrain/All Terrain Crane.

**NCCER Mobile Crane Operator Certifications:**
• Lattice Friction Crawler
• Lattice Friction Rubber Tire
• Lattice Hydraulic Crawler
• Lattice Hydraulic Rubber Tire
• Telescopic Boom Crawler
• Telescopic Boom Rubber Tire
Appendix A – Jurisdictional Profile: Newfoundland and Labrador

A.1 Newfoundland and Labrador Program Background:
Newfoundland and Labrador has designated the Mobile Crane Operator Occupation (interprovincial, Red Seal occupation) as a compulsory trade. The Mobile Crane Operator Occupation has compulsory certification and training requirements.

A.2 Newfoundland and Labrador Trade Profile:
Mobile Crane Operator (interprovincial trade) is a designated, compulsory trade in Newfoundland and Labrador. Certification is compulsory for Mobile Crane Operators as determined by the Provincial Apprenticeship and Certification Board. Pre-employment training in accordance with apprenticeship standards is also required as per the Newfoundland and Labrador Apprenticeship Standard for Mobile Crane Operators (effective Sept. 2012).

A.3 Newfoundland and Labrador Program Use and Application:
The overseeing authority of the Provincial Apprenticeship and Certification Board (PACB) includes the following:
- setting policies to ensure the provisions of the Apprenticeship and Certification Act are implemented;
- accrediting institutions to deliver apprenticeship training programs;
- designating occupations for apprenticeship training and/or certification.

Responsibilities of the Department of Advanced Education and Skills, Apprenticeship and Trades Certification Division include:
- establishing and maintaining a protocol with training institutions, employers and other appropriate stakeholders to ensure the quality of apprenticeship training programs;
- ensuring all apprentices are appropriately registered and records are maintained as required;
- scheduling all necessary technical training periods for apprentices to complete requirements for certification;
- administering block, provincial and interprovincial examinations.

The Newfoundland and Labrador Apprenticeship Standard for Mobile Crane Operators is mapped to the 2009 edition of the National Occupational Analysis for the trade. The mandatory implementation date of this apprenticeship standard was September 2012. This Apprenticeship training standard document describes the curriculum content for the Mobile Crane Operator apprenticeship training program and outlines each of the courses necessary for completion of apprenticeship. The program outlines practical skills learning objectives that are mandatory in Newfoundland.

A.4 Newfoundland and Labrador Eligibility for Certification/DOST
As per the Provincial Plan of Training for the Mobile Crane Occupation, the following program schedule for the apprenticeship program applies:
<table>
<thead>
<tr>
<th>Year of Apprenticeship</th>
<th>Requirements for Progression</th>
<th>Progress To</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Year Apprentice</td>
<td>Completion of entry level (Block 1) courses, plus relevant work experience totaling a minimum of 1800 hours (^8)</td>
<td>Second Year</td>
</tr>
<tr>
<td>Second Year Apprentice</td>
<td>Completion of advanced level (Block 2) courses, plus relevant work experience totaling a minimum of 3600 hours</td>
<td>Third Year</td>
</tr>
<tr>
<td>Third Year Apprentice</td>
<td>Completion of advanced level (Block 3) courses, plus sign-off of workplace skills required for certification totaling a minimum of 5400 hours</td>
<td>Write Certification Examination</td>
</tr>
</tbody>
</table>

For each of the courses outlined in the apprenticeship plan of training, a formal assessment is required. A mark of 70% must be attained on both the theory examination and the practical project assignments, as applicable. Course equivalencies between designated trades may be assessed for course credit, granted through the use of a PACB approved matrix.

The ratio of journeypersons to apprentices is not permitted to exceed 1:2.

Requirements for Red Seal Endorsement are outlined as follows:
- Evidence the required work experiences per the Plan of Training have been obtained;
- Successful completion of all courses requirements per the Plan of Training;
- Completion of a combination of training from an approved training program and suitable work experience totaling 5400 hours, or, a total of 7200 hours of suitable work experience in the occupation accompanied by sign-off of required work competencies;
- Successful completion of a National Red Seal examination.

Trade Qualifiers may apply to complete the Certificate of Qualification exam provided they have sufficient practical work experience to meet the established criteria to attempt the certification journey level (provincial or interprovincial) examination. Documentation attesting to relevant on-the-job experience must be at least one year in excess of the apprenticeship term. A person attempting certification as a Trade Qualifier does not need to complete institutional training; although the option to attend training is available where the need for theoretical upgrading is identified.

A.5 Newfoundland DOST Process
Practical assessment criteria are included as part of the apprenticeship plan of training.

A.6 Newfoundland Overview of Existing DOST Assessment Criteria
No details on the practical assessment criteria were available.

\(^8\) Total Course Credit Hours = 746
Appendix B – Jurisdictional Profile: Nova Scotia

B.1 Nova Scotia - Program Background

The current Crane Operators Regulations have been in place since 2011 (made under section 49 of the Technical Safety Act S.N.S. 2009, c. 10).

The previous Crane Operators Regulations were created pursuant to the Crane Operators and Power Engineers Act. As a result of the introduction of the Technical Safety Act, the regulation was rewritten.

Key changes reflected the training and experience requirements necessary to safely operate crane equipment through the introduction of initial certification, licensing and additional equipment based endorsements.

B.2 Nova Scotia Trade Profile

The licensing of mobile crane operators is compulsory in Nova Scotia. Jurisdictional regulation includes the following types of equipment:

<table>
<thead>
<tr>
<th>Class</th>
<th>Regulated Cranes</th>
<th>Rated Lifting Capacity</th>
</tr>
</thead>
</table>
| Class 1 | boom truck or mobile crane that:  
  • is a power-operated machine with a boom  
  • includes a hoisting mechanism that is an integral part of the machine  
  Excludes: tower cranes, self-erecting tower cranes, overhead travelling cranes | 91 tonnes (100 tons) or more |
| Class 2 | boom truck or a mobile crane that:  
  • is a power-operated machine with a boom  
  • includes a hoisting mechanism that is an integral part of the machine  
  Excludes: tower cranes, self-erecting tower cranes, overhead travelling cranes | 18 tonnes (20 tons) or more, but less than 91 tonnes (100 tons) |
| Class 3 | boom truck or a mobile crane that:  
  • is a power-operated machine with a boom  
  • includes a hoisting mechanism that is an integral part of the machine  
  Excludes: tower cranes, self-erecting tower cranes, overhead travelling cranes | less than 18 tonnes (20 tons) |
| Class 4 | boom truck that:  
  • has an articulating boom that does not include a winch for lifting the load  
  • is a power-operated machine with a boom  
  • includes a hoisting mechanism that is an integral part of the machine  
  Excludes: tower cranes, self-erecting tower cranes, overhead travelling cranes | less than 18 tonnes (20 tons) |
The classes of mobile Crane Operator licenses are as follows:

(a) Crane operator 1 license  
(b) Crane operator 2 license  
(c) Crane operator 3 license  
(d) Crane operator 4 license

Crane operator license Classes 1, 2 and 3 apply to Hydraulic Boom Cranes only; operators of lattice boom cranes require a separate endorsement in addition to the license. Endorsements are only considered if the applicant can demonstrate training and/or experience on equipment and capacity covered by the Endorsement.

In addition to the jurisdictional specific trade names as identified above, Red Seal Mobile Crane Operator trade is designated in Nova Scotia. An operator may challenge the Red Seal exam if they hold a Mobile Crane Operator Certificate of Competency Class 1 or Class 2 issued under the current Crane Operators Regulations.

**B.3 Nova Scotia Program Use and Application**

The overseeing body for mobile crane operator qualifications as required by the regulations outlined in B.1 and B.2 is the Nova Scotia Department of Labour and Advanced Education.

**Recognition of other jurisdictions and organizations** - The Crane Operator chief inspector may grant a Crane Operator license and endorsement to an individual who applies and who

(a) holds a qualification from another jurisdiction that is sufficiently equivalent to the requirements of these regulations for the required equivalent class of Crane Operator certificate of competency and endorsements; and

(b) has practical experience and educational qualifications that are sufficiently equivalent to the requirements for the Crane Operator license and any required endorsements the individual is applying for.

The Crane Operator chief inspector may require an applicant from a jurisdiction where crane operators are not granted certificates of qualification, certificates of competency, licences or endorsements, to undergo a prior learning assessment to establish that the applicant’s experience and qualifications are sufficiently equivalent to the requirements for the Crane Operator license and endorsements applied for under these regulations.

An interprovincial certificate of qualification is equivalent to a type and class of Crane Operator certificate of competency that authorizes the same regulated work as the interprovincial certificate of qualification.
**Grandfathering**

An individual whose certificate of qualification issued under the *Crane Operators and Power Engineers Act* is not required to hold a Crane Operator license and any required endorsements to perform the same regulated work under these regulations, but must apply for a Crane Operator license and any required endorsements to continue to be authorized to perform regulated work under these regulations after the certificate of qualification expires.

**B.4 Nova Scotia Eligibility for Certification/DOST**

The Practical Experience requirements for each Class of Crane Operator are noted below:

**Crane operator 1 certificate of competency and endorsements practical experience**

An applicant for a crane operator 1 certificate of competency must meet 1 of the following practical experience requirements:

- 4000 hours of practical experience on a class 1 crane under the direct supervision of a crane operator who holds a crane operator 1 license;
- 1000 hours of practical experience on a class 1 regulated crane under the direct supervision of a crane operator who holds a crane operator 1 license, and have held a crane operator 2 license for 6 months or longer.

In addition to the certificate of competency requirements, an applicant for a crane operator 1 lattice boom crane endorsement must meet both of the following practical experience requirements:

- at least 300 hours of the practical experience required for a crane operator 1 license spent actually operating a class 1 lattice boom crane;
- 80 hours of practical experience spent contributing to mobilizing and demobilizing a class 1 lattice boom crane.

**Crane operator 2 certificate of competency and endorsements practical experience**

An applicant for a crane operator 2 certificate of competency must meet 1 of the following practical experience requirements:

- 3000 hours of practical experience on a class 2 crane under the direct supervision of a crane operator who holds a crane operator 1 license or a crane operator 2 license;
- 1000 hours of practical experience on a class 2 crane under the direct supervision of a crane operator who holds a crane operator 1 license or a crane operator 2 license, and have held a crane operator 3 license for 6 months or longer.

In addition to the certificate of competency requirements, an applicant for a crane operator 2 lattice boom crane endorsement to a crane operator 2 certificate of competency must meet both of the following practical experience requirements:

- at least 100 hours of the practical experience required spent actually operating a class 2 lattice boom crane;
• 80 hours of practical experience spent contributing to mobilizing and demobilizing a class 2 lattice boom crane.

**Crane operator 3 certificate of competency and endorsements practical experience**
An applicant for a crane operator 3 certificate of competency must have 2000 hours of practical experience on a class 3 crane under the direct supervision of a crane operator who holds a crane operator 1 license, a crane operator 2 license or a crane operator 3 license.

In addition to the certificate of competency requirements, an applicant for a crane operator 3 lattice boom crane endorsement to a crane operator 3 certificate of competency must meet both of the following practical experience requirements:
  • at least 100 hours of the practical experience required spent actually operating a class 3 lattice boom crane;
  • 40 hours of practical experience spent contributing to mobilizing and demobilizing a class 3 lattice boom crane.

**Crane operator 4 certificate of competency practical experience**
An applicant for a crane operator 4 certificate of competency must have 500 hours of practical experience on a class 4 crane under the direct supervision of a crane operator who holds a crane operator 1 license, a crane operator 2 license, a crane operator 3 license or a crane operator 4 license.

The practical experience requirement for each class of Crane Operator certificate of competency must include the following:
  • at least 50% of the hours spent operating the regulated crane from the operator’s seat; and
  • practical experience in all of the following:
    (i) rigging;
    (ii) pre-lift planning;
    (iii) assembling and disassembling the regulated crane;
    (iv) inspecting and maintaining the regulated crane;
    (v) preparing a site for a lift.

The figure below provides an overview of the licensing structure including the education and experience requirements
B.5 Nova Scotia DOST Process

The Crane Operator chief inspector may approve a crane operator training program that leads to a Crane Operator certification of competency or endorsement. The practical skills assessment is administered by a provider approved by the Department of Labour and Advanced Education.

An applicant for a Crane Operator certificate of competency must successfully pass a practical test to demonstrate they can safely operate the regulated crane that they are required to obtain practical experience with for the class of Crane Operator certificate of competency they are applying for.

An applicant who successfully passes a practical test demonstrating that they can safely operate a regulated crane is not required to pass a practical test for a Crane Operator certificate of competency that authorizes them to operate the lower classes of cranes.

The passing grade for an examination leading to a Crane Operator certificate of competency is 65%. An individual who failed the examination may apply in writing to retake the exam no sooner than 60 days after the date of an examination. If an individual fails an examination 3 or more consecutive times, they cannot apply to retake the same examination for at least 6 months from the date they last took the examination.

Crane Operator certificate of competency is valid unless it is suspended or revoked by the Crane Operator chief inspector. A Crane Operator license is valid until the expiry date provided on the Crane Operator license unless it is suspended or revoked earlier by the Crane Operator chief inspector.

For licences and endorsements expired for longer than 4 years, an individual may apply for reinstatement of an expired Crane Operator license and any attached endorsements in the same manner as applying for a license or endorsement. For reinstatement of a license and any endorsement that has been expired for longer than 4 years, an individual may be required to be reevaluated in a manner approved by the Crane Operator chief inspector.

**B.6 Nova Scotia Overview of Existing DOST Assessment Criteria**

Practical assessment exam curriculum is developed and administered by training providers (training providers are also assessors).

Programs are required to include:
- Weight calculations
- Equipment inspection (pre-start)
- Handling load
- Handling crane
- In an obstacle course type of arrangement

The assessment and training are components so it is possible for an individual to be assessed (i.e. foreign credential, PLAR, inter-jurisdictional experience, etc) without registering for a training program.
Approved programs for mobile crane operator training and/or assessment vary in terms of the course length and eligibility to apply time accredited towards practical experience.\textsuperscript{10}

\textsuperscript{10} A list of approved programs is provided at:
\url{http://novascotia.ca/lae/equipmentsafety/docs/ApprovedProgramsV1.pdf}
Appendix C – Jurisdictional Profile: Prince Edward Island

C.1 PEI Program Background:
PEI has 56 trades designated under the Apprenticeship and Trades Qualification Act and Regulations (Dec 8, 2012). Red Seal mobile crane operator trade is a voluntary, designated occupation in PEI.

C.2 PEI Trade Profile:
Red Seal mobile crane operator trade is a voluntary, designated occupation in PEI. Red Seal mobile crane operator (hydraulic) is voluntary in PEI.

C.3 PEI Program Use and Application:
Oversight of the mobile crane operator certification requirements is by the Department of Innovation and Advanced Learning.

PEI mobile crane apprenticeship programs run through a third party, off-island institute in New Brunswick (further details unavailable at this time).

<table>
<thead>
<tr>
<th>Designated Trade</th>
<th>Mobile Crane Operator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interprovincial (Red Seal) or Provincial Trade</td>
<td>Interprovincial (Red Seal)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Credit Hours Needed to Write Certification Exam</th>
<th>Apprentice Hours</th>
<th>6,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade Qualifier Hours</td>
<td>8,000</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Certification Available</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apprenticeship Available</td>
<td>Yes</td>
</tr>
<tr>
<td>Location of Block Release Training</td>
<td>New Brunswick</td>
</tr>
</tbody>
</table>

C.4 PEI Eligibility for Certification/DOST
To become certified as a journeyperson in PEI, you are required to meet one of the following criteria:
- Have Successfully Completed an Apprenticeship Program – A Certificate of Apprenticeship and a Certificate of Qualification will be issued to graduates upon successful completion of an
apprenticeship program. In an interprovincial occupation/trade, an Interprovincial Red Seal will be affixed to the Completion of Apprenticeship Certificate and the Certificate of Qualification.

- Have Successfully Completed the Certification Exam based on Occupational Experience (Time in Trade) – A Certificate of Qualification will be issued upon proof of required practical experience and successful writing of the certification examination. In an interprovincial trade, an Interprovincial Red Seal will be affixed to the Certificate of Qualification.

- Have Provincial or Interprovincial Status from another Canadian jurisdiction – A provincial Certificate of Qualification will be issued in a trade designated on PEI without further examination upon proof of provincial and/or interprovincial status from another province/territory in Canada.

Operator must attest to competence on the following skills as a journeyperson:

- Communication Skills
- Hoisting Calculations
- Crane Inspection and Maintenance
- Rigging
- Lift Planning, Site Preparation and Crane Setup
- Crane Assembly, Disassembly and Transport
- Crane Operation

Where an applicant fails on the first attempt to attain the grade required by the apprenticeship plan for the designated trade in an examination, the Manager may permit the applicant to write the examination a second time after a waiting period of 3 months. Where an applicant fails on the second or subsequent attempt to attain the grade required by the apprenticeship plan for the designated trade in an examination, the Manager may permit the applicant to write the examination a third or subsequent time after the applicant has, in the opinion of the Manager, successfully completed additional training approved by the Manager.

C.5 PEI DOST Process
No details on practical assessment criteria were available.

C.6 PEI Overview of Existing DOST Assessment Criteria
No details on practical assessment criteria were available.
Appendix D– Jurisdictional Profile: New Brunswick

D.1 New Brunswick Program Background:
Three voluntary mobile crane operator occupations are designated within New Brunswick. Voluntary occupations are regulated by Board Orders of the New Brunswick Apprenticeship and Occupational Certification Board made pursuant to section 13 of the Apprenticeship and Occupational Certification Act (assented to on June 13, 2012).

D.2 New Brunswick Trade Profile:
There are three voluntary mobile crane operator trades in New Brunswick on the list of designated occupations and regulated by Board Orders:

- Mobile Crane Operator (Hydraulic) – *interprovincial Red Seal occupation*
- Mobile Crane Operator (Lattice) – *interprovincial Red Seal occupation*
- Mobile Hoisting Equipment Operator

Board order V158.1 (effective date Dec 1, 2013) outlines the activities and functions of the designated mobile crane operator occupation. This section includes operators of the following equipment -

- a wheel or crawler mounted hydraulic boom crane with a lifting capacity of over 25 tons; or
- a wheel or crawler mounted lattice boom crane with a lifting capacity of over 25 tons.

Board order V092.1 (effective date Dec 1, 2013) outlines the activities and functions of the designated mobile hoisting equipment operator occupation. This section includes mobile hoisting equipment operators of any mechanical devices meeting the following criteria:

- incorporates a power driven drum, with cable or rope, or an articulated boom, with or without cable or rope;
- is equipped with a boom, capable of swinging, hoisting and booming up and down;
- is mounted on a self-propelled vehicle used exclusively to load, unload and transport materials or goods; and
- has a lifting capacity of between 2 tons, up to and including 25 tons.

but that does not include:

- tower cranes;
- overhead monorail cranes;
- equipment designed to lift persons only;
- skidders and backhoe loaders.

A survey on compulsory designation of mobile crane operator trade was has been conducted:
http://www2.gnb.ca/content/dam/gnb/Departments/petl-epft/PDF/Appren/MCOEmployees.pdf
D.3 New Brunswick Program Use and Application:
Board Orders GC001.1 (effective Dec 1, 2013) stipulates that a Certificate of Qualification may be issued to an individual who:

- is the holder of a valid diploma of apprenticeship issued under the Apprenticeship and Occupational Certification Act; or
- has the required practical experience for the occupation and has successfully passed the examination for a certificate of qualification; or
- is the holder of a valid certificate of qualification from another province or territory in Canada.

Appropriate supporting documentation must be provided. Individuals applying to challenge the certification examination must provide documentation to prove that twenty percent (20%) of the practical work experience required for the occupation has been gained within the six (6) years prior to the date of submission of application.

Board Order GC002.1 (effective Dec 1, 2013) includes prerequisite requirements to registration into an apprenticeship agreement.

D.4 New Brunswick Eligibility for Certification/DOST
Training and apprenticeship/qualifier hours are as outlined below:

<table>
<thead>
<tr>
<th>Designated Occupations</th>
<th>Technical Training</th>
<th>Apprenticeship Hrs.</th>
<th>Trade Qualifier Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Crane Operator</td>
<td>Yes</td>
<td>7,200</td>
<td>As per C of Q requirements</td>
</tr>
<tr>
<td>Mobile Crane Operator</td>
<td>Yes</td>
<td>7,200</td>
<td>As per C of Q requirements</td>
</tr>
<tr>
<td>Mobile Hoisting Equipment</td>
<td>Yes</td>
<td>1,800</td>
<td>2,700</td>
</tr>
</tbody>
</table>

An individual desiring certification as a journeyperson in New Brunswick in the mobile crane operator occupation is required to meet one of the criteria as stipulated in Board Order GC001.1, “Requirements to Obtain a Certificate of Qualification”:

A crane operator with the minimum of 3000 hours of practical experience in either category of the mobile crane operator occupation may apply to challenge the certification examination. The certification examination includes both written and practical elements.

A mobile crane operator who holds a certificate of qualification in one category of the mobile crane operator occupation and has gained the equivalent of 1500 hours of practical experience in the other
category of the mobile crane operator occupation may be a candidate for the certificate of qualification in the other category.

Application for Certificates of Qualification are submitted to the New Brunswick Department of Post-Secondary Education, Training and Labour. A New Brunswick Diploma of Apprenticeship and a Certificate of Qualification will be awarded upon successful completion of 3000 hours of on-the-job and technical training and the final examination. Where applicable, an Interprovincial Red Seal will be affixed to these documents.

Assessment completed as part of the apprenticeship program includes both a written and practical examination.

As per Board Order GE001.1 the following examination requirements are stipulated for Mobile Crane Operator Occupations:

Written Examinations:
- A minimum grade of 70% must be achieved to successfully pass the written examination;
- Marks will be recognized for a maximum of six years.

Practical Assessments:
- The mark required to successfully pass the hand signals practical assessment is 100%;
- The mark required to successfully pass the load chart practical assessment is 70%;
- The mark required to successfully pass the equipment operation practical assessment is 70%;
- The mark on the practical assessment remains valid for 2 years.

The Practical Examination fee ($350) is intended to recover the costs of administering the examination and related administrative functions.

D.5 New Brunswick DOST Process
The practical assessment is completed as part of the apprenticeship program. See D.4 above for details.

D.6 New Brunswick Overview of Existing DOST Assessment Criteria
The practical assessment includes three elements with pass criteria as stipulated per Board order GE001.1:
- Hand signal practical assessment;
- Load chart practical assessment;
- Equipment operation practical assessment.
Appendix E – Jurisdictional Profile: Quebec

E.1 Quebec Program Background
In Quebec, recent changes have been made to the regulations governing crane operator certification. The regulatory changes are the result of studies conducted by the Commission de la construction du Québec (CCQ) and of its consultations with key stakeholders. The following regulations were updated:

Regulation Respecting the Issuance of Competency Certificates (R-20, r.5): Modification of conditions for issuing competency certificates.

Regulation Respecting the Vocational Training of the Workforce in the Construction Industry (R-20, r.8): Modification of the terms of practice and qualification requirements.

Changes to the crane operator trade include a change in the number of apprenticeship periods and a new specialty for operators of concrete pumps with distribution mast. Crane operator is one of four trades covered by this regulatory change, effective July 18, 2013.

E.2 Quebec Trade Profile
Crane Operator (including operators of concrete pump with distribution mast) is a provincial, designated trade in Quebec with compulsory operator certification. The French trade name is Grutier. The crane operator occupation includes those operating all types of cranes, including conventional truck-mounted on tracks or trucks, hydraulic telescoping cranes, boom trucks, as well as tower cranes, travelling cranes, and boring machines. A specialty for operators of concrete pumps with distribution masts has been identified.

The most recent updates to the regulations covering the trade became effective in July 2013.

E.3 Quebec Program Use and Application
Oversight of the compulsory certification requirements for the crane operator trade is provided by Commission de la construction du Québec (CCQ). There are three types of competency certificates issued by CCQ: Apprentice competency certificate, occupation competency certificate and journeyperson competency certificate, each valid for one year after issuance or renewal. In order to maintain a JCC, a worker must have performed, in the construction industry, work related to the trade mentioned in the certificate during a period of 5 consecutive years. A journeyperson whose competency certificate has been cancelled may take a competency assessment exam recognized by the Commission. The Commission will determine if additional vocational training must be received in order for the JCC to be reinstated.

Red Seal trades crane operator, mobile crane operator (hydraulic) and tower crane operator are all included under the provincially trade designation for crane operator in Quebec. Under regulation Chapter R-20, r.5, an operator must hold a qualification certificate or attestation of appropriate
experience in accordance with the vocational training requirements per Chapter R-20, r.8 in order to obtain a journeyperson competency certificate (JCC) for the Red Seal trade.

E.4 Quebec Eligibility for Certification/DOST
Applicable regulations in the CCQ apprenticeship system were updated in July 2013. Under the current system, candidates must:

- Complete two, 2000 hour apprenticeship periods (4000 hours in total) in order to be eligible to take the qualification examination for the trade of crane operator; passing this exam leads to obtaining a journey competency certificate in the trade; or
- For the specialty of operator of concrete pump with distribution mast, must complete the 2000 hour apprenticeship period devoted strictly to work in the specialty in order to be eligible to take the provincial qualification examination for this specialty; passing the exam leads to obtaining a journeyman competency certificate in this specialty.

Additional Training requirement includes: Diploma of vocational studies (DEP) – Conduite de grues (S248). The duration of training is 870 hours.

Exemption criteria exist for:

- Transitional measures are set out for apprentice crane operators who began their crane operator apprenticeship before the regulatory change came into effect in July 2013;
- Concrete pump operator - To become an operator of concrete pumps with distribution mast, apprentice crane operators may register for the provincial qualification examination for this specialty once they have finished their first 2,000-hour apprenticeship period. These hours may have been worked as an operator of concrete pumps with distribution mast. Once these workers have passed the exam, they will obtain an operator of concrete pumps with distribution mast JCC.

Apprentice candidates who have passed the provincial qualification examination (written examination) and completed the required courses automatically receive the journeyperson competency certificate. Non-apprentice candidates must make an application to the CCQ.

The holder of a qualification certificate corresponding to that trade must also provide proof of completion of the course “Utilisation sécuritaire des grues” given by the Quebec School Boards or any equivalent course given outside Québec.

In the case of a failed qualification exam, the conditions for registering to retake the exam will be specified in the result letter. The letter details the overall result as well as the results for each section of the exam.
E.5 Quebec DOST in the Certification Process
There are no practical assessment criteria required for journeyperson certification. Journeyperson competency certificate is automatically issued to apprentice candidates upon successful completion of the qualification exam and apprenticeship course.

E.6 Quebec Overview of Existing DOST Assessment Criteria
There are no practical assessment criteria required for journeyperson certification.
Appendix F – Jurisdictional Profile: Ontario

F.1 Ontario Program Background:
The Ontario College of Trades and Apprenticeship Act, 2009 (OCTAA) replaced previous Ontario legislation that set out the regulatory framework for the skilled trades in Ontario – the Trades Qualification and Apprenticeship Act (TQAA) and the Apprenticeship and Certification Act (ACA). On April 8, 2013, the TQAA and ACA were repealed. Regulations under OCTAA now set out the legislative and regulatory framework for the skilled trades in Ontario.

The following mobile crane trades are regulated in Ontario:
- Hoisting engineer Branch 1
- Hoisting engineer Branch 2

Workers are required to hold a Certificate of Qualification issued under the Ontario College of Trades and Apprenticeship Act, 2009, or the worker is an apprentice and is working pursuant to a training agreement registered under that Act.

F.2 Ontario Trade Profile:
The hoisting engineer trade is a compulsory, designated trade in Ontario. The trade is divided into three different categories, each with its own certification requirements:\(^{11}\)
- Branch 1\(^{12}\), Mobile Crane Operators (also known as 339A Mobile Crane operators, unlimited capacity), maintain and operate mobile cranes capable of raising, lowering or moving material that weighs more than 16,000 pounds (a lifting capacity of more than 15 tons or 13,636 kg.).
- Branch 2, Mobile Crane Operators, (also known as 339C Mobile Crane operators) maintain and operate mobile cranes capable of raising, lowering or moving material that weighs more than 16,000 pounds but less than 30,000 pounds (a lifting capacity of eight to 15 tons, or 7,273 kg to 13,636 kg.)
- Branch 3 Tower Cranes of the Hoisting Engineers Trade is out of scope of this review.

F.3 Ontario Program Use and Application:
The Ontario College of Trades regulates people practicing in skilled trades in Ontario, establishes the scope of practice and standards for trades and issues Certificates of Qualification. The Ontario College

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\(^{11}\) Exclusions to hoisting engineer trades: Equipment that is used exclusively for fire-fighting or towing motor vehicles.

\(^{12}\) Branch 1 hoisting engineers are also permitted to operate equipment meeting Branch 2 classification.
of Trades works with the Minister of Training, Colleges and Universities on the Interprovincial Red Seal Program. OCTAA gives the College’s Board of Governors the authority to make regulations prescribing wage rates, ratios and training hours for apprentices.

As a compulsory regulated trade in Ontario, all workers who wish to practice in this trade must attain trade certification. Certified skilled workers in compulsory trades must be members of the Ontario College of Trades.

Red Seal endorsement is also available to qualified mobile crane and tower operators in Ontario upon successful completion of the interprovincial Red Seal examination. ¹³

The trade is defined as largely competency based, with qualification requirements for OTJ and training.

Detailed descriptions of the competency/skills profile for hoisting engineers are outlined in the Apprenticeship Training Standards:

For Mobile Crane Operator Branch 1, apprenticeship training standards identify the following skills:
- protect self and others
- conduct pre-operational inspection
- prepare and transport cranes
- plan lifts
- assemble and dismantle the cranes
- perform rigging
- set up cranes
- operate hydraulic cranes
- operate conventional friction cranes
- maintain cranes

For Mobile Crane Operator Branch 2, apprenticeship training standards identify the following skills:
- protect self and others
- conduct pre-operational inspection
- prepare and transport crane
- plan lifts
- perform rigging
- set up cranes
- operate cranes
- maintain cranes

F.4 Ontario Eligibility for Certification/DOST

To become a hoisting engineer in Ontario, working in all aspects of the trade:

1. The Ministry of Training, Colleges and Universities workers to be at least 16 years of age and complete Grade 10 of high school;
2. Workers must complete one of the following paths to qualification:

**Option A:** Enter the trade as a C of Q applicant.

This requires proof of sufficient training and experience to practice the trade in Ontario. An assessment process evaluates the training and experience of qualified internationally trained tradespersons. The length of time that it takes to become certified depends on how closely the training and experience of the applicant match the training standards for hoisting engineers in Ontario (as little as six months, or up to 4 years if the work experience criteria must be met).

To that end, applicants must:

- Provide documentation of your on-the-job experience for the relevant crane type;
- Pass a Load Chart test – If the Load Chart Test is failed three times, the applicant must register as an apprentice.
- Pass a crane hand signal test; and
- Successfully complete a Demonstration of Skills Test (DOST).

Following completion of the trade exam (grade of 70% or higher), the candidate will receive a C of Q.

**Option B:** Enter the trade as an apprentice.

The Apprenticeship Training and Curriculum Standards were developed by the Ministry of Training, Colleges and Universities (MTCU). As of April 8th, 2013, the Ontario College of Trades (College) has become responsible for the development and maintenance of these standards. The College is carrying over existing standards without any changes; the existing standards of MTCU are still in effect:

- 339A – Mobile Crane Operator: 6000 hour apprenticeship including 480 hours of in-school training (4 levels)
- 339C – Mobile Crane Operator, up to and including 15 Tons: 1000 hour apprenticeship, including 240 hours of in-school training (1 level).
- Journeyperson to apprentice Ratio – 1:1

Apprenticeships are offered by:

- Operating Engineers Training Institute of Ontario - IUOE, Local 793 Apprenticeships
- Durham College
Apprentices are required to complete an MTCU trade exam at the end of their apprenticeship, with a minimum score of 70%.

MTCU staff may conduct a Prior Learning Assessment and Recognition (PLAR) review to determine whether an approved apprenticeship applicant or an apprentice may be exempted from some or all of the formal instruction requirements (curriculum standards/learning outcomes) of the apprenticeship program for the relevant trade. Where formal instruction exists, on-the-job experience cannot be used for exemption.

To work legally, an individual must be a member in good standing with the Ontario College of Trades and hold one of the following for these trades:

- A valid Certificate of Qualification (or Provisional Certificate of Qualification), which provides membership in the Journeypersons Class; or
- A registered training agreement and Statement of Membership in the Apprentices Class; or
- A Statement of Membership in the Journeyperson Candidates Class.

In Ontario, the DOST is completed as the last step in the certification process before the C of Q exam.

Many DOST assessments are completed at a training facility; however on-site testing is an option.

F.5 Ontario DOST in the Certification Process
Ontario provides split delivery of practical assessment criteria for hoisting engineers. The Load Chart and Hand Signal portions of the DOST are administered by the MTCU; The hands-on, practical skills assessment is administered by organizations designated by the Ontario College of Trades. Failed Exams C of Q can be rewritten after 15 days.

Once a candidate has passed the C of Q exam, the Certificate of Qualification is provided by the Ontario College of Trades. Annual membership fees must be paid to retain the license.

Licensing - Once the Certificate of Qualification is obtained, the worker must contact the Ontario College of Trades to apply for membership.

F.6 Ontario Overview of Existing DOST Assessment Criteria
The DOST in Ontario is divided into 3 elements (hand signals, load chart and practical assessment); the first two are administered separately and are conducted by the Ministry office. A candidate must complete the first two parts of the DOST assessment before they are eligible to complete the third part of the assessment. The hands-on, practical assessment is administered by Ontario College of Trades (or designate).

The Ontario College of Trades has completed a mapping exercise of the DOST against the 2013 NOA.

The practical assessment portion of the DOST includes:
• perform a pre-operational inspection of the crane;
• set up a crane;
• operate both hydraulic and conventional / lattice cranes;
• prepare a mobile crane for travel.
Appendix G – Jurisdictional Profile: Manitoba

G.1 Manitoba Program Background:

The Crane and Hoist Equipment Operator Regulation 91/2000 was introduced in 2002. Under this regulation, the Apprenticeship and Trades Qualifications Board made certification mandatory for individuals who operate specific crane and hoist equipment in Manitoba. This regulation requires that anyone operating a mobile crane or boom truck with a lifting capacity rating of 7300 kilograms or greater must:

(a) hold a valid certificate of qualification issued under this regulation;
(b) hold a certificate that bears an interprovincial standard seal; or
(c) be registered as an apprentice under this regulation.

A crane and hoist operator with the necessary prerequisites is permitted to challenge the Trades Qualification Examination without having to enter into the apprenticeship program.

Certification of mobile crane operators may be issued for two applicable branches of the trade: 14

- Branch 1: Mobile Crane Operator (weight range: greater than 7,299 kg);
- Branch 2: Boom Truck Hoist Operator (weight range: minimum 7,299 kg to a maximum 40,825 kg);

The regulation does not apply to the operators of side booms or winch trucks.

G.2 Manitoba Trade Profile:

Certification/licensing for Mobile Crane Operator and Boom Truck Hoist Operator trades are compulsory in Manitoba.

The following Crane & Hoisting Equipment Operator trades are designated in Manitoba: 15

- a Mobile Crane Operator (weight range: greater than 7,299 kg);
- a Boom Truck Hoist Operator (weight range: minimum 7,299 kg to a maximum 40,825 kg);
- Power Generation and Transmission (PGT)-Mobile Crane Operator (MB Hydro);
- Power Generation and Transmission (PGT)-Boom Truck Hoist Operator (MB Hydro);

Relevant regulations are included under workplace safety and health legislation:

- Cranes and Hoists: Manitoba Regulation 217/2006 Part 23;

14 Branch 3 Tower Crane Operator (no weight range) is out of scope for this review.

15 In November, 2010, the Manitoba government registered Power Generation and Transmission Mobile Crane Operator and Power Generation and Transmission Boom Truck Hoist Operator as three-year apprentice trade programs with Manitoba Hydro.
- W210, Workplace Safety and Health Act;
- The Apprenticeship and Certification Act/Trade of Crane and Hoisting Equipment Operator;
- Regulation Manitoba Regulation 91/2000R.

The regulation does not apply to the operators of side booms or winch trucks.

**G.3 Manitoba Program Use and Application:**

The following table provides a summary of the certification and apprenticeship requirements for mobile crane operator trades in Manitoba:

<table>
<thead>
<tr>
<th>Trade</th>
<th>Certificate of Qualification</th>
<th>Length (Years)</th>
<th>Annual (Level) Requirements</th>
<th>Delivered by</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total hours/year (on-the-job &amp; technical training)</td>
<td>Total Weeks/Year (Technical training)</td>
</tr>
<tr>
<td>Mobile Crane Operator •■</td>
<td>Interprovincial</td>
<td>3</td>
<td>1700</td>
<td>7-7-0</td>
</tr>
<tr>
<td>Boom Truck Hoist Operator •■</td>
<td>Provincial</td>
<td>2</td>
<td>1250</td>
<td>7-5</td>
</tr>
<tr>
<td>Power Generation and Transmission</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobile Crane Operator</td>
<td>Provincial</td>
<td>3</td>
<td>300</td>
<td>7-6-6</td>
</tr>
<tr>
<td>Power Generation and Transmission</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Boom Truck Hoist Operator</td>
<td>Provincial</td>
<td>3</td>
<td>300</td>
<td>7-4-5</td>
</tr>
</tbody>
</table>

• Compulsory apprenticeship or a Certificate of Qualification is required to work these trades

■ High School Apprenticeship Program available

■ Must be employed with Manitoba Hydro

A crane and hoist operator with the necessary requisites may challenge the Trades Qualification Examination without having to enter into the apprenticeship program. An experienced operator may become a certified journeyperson based on years of proven industry experience and successful

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16 http://www.gov.mb.ca/tce/apprent/mb_trades/#certificate
completion of the Red Seal Examination. Trades professionals whose entrance readiness is less than that required, must take appropriate upgrading.

Out of province crane and hoist operators who hold valid certification from other jurisdictions may operate in Manitoba provided they carry out only those operations for which they are certified. Technical and practical training completed as an apprentice in another Canadian jurisdiction can be assessed for credit, applications must include proof of education; calendar time and number of hours of work experience during the course of the apprenticeship training; and course outline for technical training completed.

G.4 Manitoba Eligibility for Certification/DOST
Certification is issued after the practical experience and technical training requirements are fulfilled and the operator successfully completes the certification examination.

Candidates must score at least 70 per cent or better to qualify for a “Red Seal” endorsed interprovincial certificate as a Mobile Crane Operator or a provincial certificate in the trade of Boom Truck Hoist Operator, PGT- Mobile Crane Operator, or PGT- Boom Truck Hoist Operator.

Apprenticeship programs for Crane & Hoisting Equipment Operators are offered by Red River College and Operating Engineers Training Institute of Manitoba (OETIM). Crane Operation is an Apprentice-able Red Seal trade. Operators must have an employer sponsor before registering as an apprentice. Only registered apprentices can take crane courses.

An overview of the apprenticeship program for each relevant trade is included below:

**Mobile Operator:** The apprenticeship is three years consisting of two levels. Practical and technical training is a minimum of 1700 hours per level. About 80 per cent of the time is spent learning practical on-the-job skills under the supervision of a certified journeyperson; 20 per cent consists of learning the theoretical and technical aspects of the trade through in-school training. The third year of training is devoted entirely to acquiring on-the-job experience.

**Boom Truck Hoist Operator:** The apprenticeship is two years consisting of two levels. Practical and technical training is a minimum of 1250 hours per level. About 80 per cent of the time is spent learning practical on-the-job skills under the supervision of a certified journeyperson; 20 per cent consists of learning the theoretical and technical aspects of the trade through in-school training.

**Power Generation and Transmission (PGT)-Mobile Crane Operator:** The apprenticeship is three years consisting of three levels. Practical and technical training is a minimum of 300 hours per level. About 80 per cent of the time is spent learning practical on-the-job skills under the supervision of a certified journeyperson; 20 per cent consists of learning the theoretical and technical aspects of the trade through in-school training of which the third year will be spent learning at Manitoba Hydro.
**Power Generation and Transmission (PGT)-Boom Truck Hoist Operator:** The apprenticeship is three years consisting of three levels. Practical and technical training is a minimum of 300 hours per level. About 80 per cent of the time is spent learning practical on-the-job skills under the supervision of a certified journeyperson; 20 per cent consists of learning the theoretical and technical aspects of the trade through in-school training of which the third year will be spent learning at Manitoba Hydro.

The employer is required to maintain a 1:1 ratio of apprentices to journeypersons on-site. Mobile crane operator apprentices must be directly supervised by a certified journeyperson in the trade of mobile crane operator; however, a certified journeyperson or designated trainer is able to supervise in all other trade areas, including both PGT trades.\(^{17}\)

Apprenticeship Manitoba has mapped the Mobile Crane Operator NOA (2006) to the units in the Manitoba Apprenticeship program for this trade. The 2005 Boom Truck Operator Provincial Occupational Analysis (POA) has been mapped to units in the apprenticeship program.

**G.5 Manitoba DOST in the Certification Process**
Not applicable - A demonstration of skills test is not required for trade certification.

**G.6 Manitoba Overview of Existing DOST Assessment Criteria**
Not applicable – A demonstration of skills test is not required for trade certification.

\(^{17}\) For more detail on the technical training requirements in the apprenticeship curriculum, see [http://www.gov.mb.ca/tce/apprent/apprentice/curriculum.html](http://www.gov.mb.ca/tce/apprent/apprentice/curriculum.html).
Appendix H - Jurisdictional Profile: Saskatchewan

H.1 Saskatchewan Program Background:
The Crane and Hoist Operator trade is a designated trade in the province of Saskatchewan. Recent changes were made to the Crane and Hoist Operator sub-trade as of December 9, 2013:

- The Hydraulic Crane Operator sub-trade and the Tower Crane Operator sub-trade have both become full, interprovincial “Red Seal” journeyperson trades. The amendments to the regulation mirror this.
- The Hoist Operator sub-trade, which has been inactive for some time, is no longer available for certification.

As a result of the changes the Crane and Hoist Operator trade has three remaining sub-trades: boom truck A, boom truck B and lattice boom crane operator.

H.2 Saskatchewan Trade Profile:
In Saskatchewan, under the oversight of the Saskatchewan Apprenticeship and Trade Certification Commission (SATCC), Crane and Hoist Operator is a designated trade with voluntary certification requirements. Crane and Hoist Operators operate mobile cranes, boom trucks and hoists.

Most operators specialize in a sub-trade, each with its own proficiency exam. Three sub-trades are currently designated under the Crane and Hoist Operator Trade:

- Lattice boom crane operator - Lattice Boom Crane Operators operate many types of mechanical devices or structures incorporating a power driven drum and wire rope used to move, place and position items.
- Boom truck “A” operator - Boom Truck “A” Operator apprentices or tradespeople operate many types of Boom Truck cranes over 15.5 tons. Boom Truck Operator “A” proficiency certificate holders are certified to operate Boom Truck “B”.
- Boom truck “B” operator - Boom Truck “B” Operator apprentices or tradespeople operate many types of Boom Truck cranes up to and including 15.5 tons.

Effective December 2013, Interprovincial Red Seal trade Hydraulic Crane Operator is also a designated trade with voluntary certification requirements.

H.3 Saskatchewan Program Use and Application:
The Crane and Hoist Operator and Hydraulic Crane Operator trades are under the oversight of the SATCC. The regulations outline apprenticeship and training program requirements as follows:
**Boom Truck Operator A**
Successful completion of apprenticeship program requires completion of the required technical training and sufficient on-the-job experience to total at least 1500 hours each year. Total trade time required is 3000 hours and at least 2 years in the trade.

Two levels of technical training are delivered by the Western Trade Training Institute for Boom Truck Operator A:
- Level One: 8 weeks
- Level Two: 1 week in-class or delivered online

**Boom Truck Operator B**
Successful completion of apprenticeship program requires completion of the required technical training and sufficient on-the-job experience to total at least 1000 hours each year. Total trade time required is 2000 hours and at least 2 years in the trade.

Two levels of technical training are delivered by the Western Trade Training Institute for Boom Truck Operator B:
- Level One: 8 weeks
- Level Two: 1 week in-class or delivered online

**Lattice Boom Crane Operator**
Successful completion of apprenticeship program requires completion of the required technical training and sufficient on-the-job experience to total at least 1500 hours each year. Total trade time required is 4500 hours and at least 3 years in the trade.

Three levels of technical training are delivered by the Western Trade Training Institute for Lattice Boom Crane Operator:
- Level One: 8 weeks
- Level Two: 8 weeks
- Level Three: 2 weeks

Journeyperson to apprentice ratio for the Crane and Hoist Operator trade is: 1:2.

**Hydraulic Crane Operator**
Successful completion of apprenticeship program requires completion of the required technical training and sufficient on-the-job experience to total at least 1500 hours each year. Total trade time required is 3750 hours and at least 2.5 years in the trade.

Three levels of technical training are delivered by the Western Trade Training Institute for Hydraulic Crane Operator:
- Level One: 8 weeks
- Level Two: 8 weeks
Level Three: 2 weeks

Journeyperson to apprentice ratio for the Hydraulic Crane Operator trade is: 1:2.

To write the interprovincial journeyperson examination, a candidate must either successfully complete an apprenticeship training program or meet tradesperson eligibility requirements. The pass mark is 70%.

H.4 Saskatchewan Eligibility for Certification/DOST
Western Trade Training Institute (WTTI) in Saskatoon has the protocol agreement with the Saskatchewan Apprenticeship and Trade Certification Commission to deliver accredited apprenticeship level training for Crane and Hoist Operator trade and related sub trades and the Hydraulic Crane Operate trade.

Written examination for certification is issued by SATCC.

H.5 Saskatchewan DOST in the Certification Process
Certification includes written assessment criteria only. Practical performance criteria are assessed as part of the on-the-job apprenticeship requirements as overseen by the employer.

Apprenticeship training (theory only) is delivered by WTTI and includes an end of level examination which makes up part of the overall mark for that level of training. SATCC administers the written examination for certification.

H.6 Saskatchewan Overview of Existing DOST Assessment Criteria
Detailed practical assessment criteria are unavailable.
Appendix I – Jurisdictional Profile: Alberta

I.1 Alberta Program Background:
The Crane and Hoisting Equipment Operator occupation is covered under Alberta Trade Regulation 272/2000 of the Apprenticeship and Industry Training Act effective January 2001 with updates up to 2013.

I.2 Alberta Trade Profile:
Two branches of the Crane and Hoisting Equipment Operator Trade are within the scope of this review:
Mobile Crane branch of the trade consisting of 2 crafts being:
• the hydraulic mobile crane craft; and
• the conventional mobile crane craft.

Boom Truck branch of the trade consisting of 2 crafts being:
• the boom truck craft; and
• the wellhead boom truck craft.

Certification of mobile crane operators is compulsory. Certification for boom truck operators is required when operating:
• booms (including telescoping booms and articulating booms possessing live lines) capable of swinging, hoisting and booming up and down with a lifting capacity of greater than 5 tons (4.5 tonnes) and less than 45 tons (40.8 tonnes);
• articulating booms WITHOUT live lines with a lifting capacity of greater than 8 tons (7.3 tonnes) and less than 45 tons (40.8 tonnes).

I.3 Alberta Program Use and Application:
Requirements for the content and delivery of technical training and for operator certification are developed and updated by the Alberta Apprenticeship and Industry Training Board (the Board) and a network of industry-driven local apprenticeship committees (LAC) and provincial apprenticeship committees (PAC). Relevant key responsibilities for each group are outlined below.

Local Apprenticeship Committees (LAC)
• monitor the apprenticeship system, and the progress of apprentices in their trade, at the local level;
• recommend improvements in apprenticeship training and certification to their trades’ PAC.

Provincial Apprenticeship Committees (PAC)
• identify the relevant training needs and content for their trade;

18 A third branch, Tower Crane, is out of scope)
• provide recommendations to the Board on the standards for training and certification for their trade;
• make recommendations to the Board about the designation of trades and occupations;
• determine whether training of various kinds is equivalent to training provided in an apprenticeship program in the trade.

The Alberta Apprenticeship and Industry Training Board (Board)
• sets training and certification standards in all trades;
• approves the technical training to be delivered by training establishments;
• makes recommendations to the Minister of Alberta Learning about the designation of trades and occupations;
• creates LACs, PACs, and appoints their members.

The Crane and Hoisting Equipment Operator apprenticeship training program is offered by Alberta Learning, Apprenticeship and Industry Training.

Interprovincial Red Seal Journeyperson certification is available for those in the Mobile Crane Operator Branch.

I.4 Alberta Eligibility for Certification/DOST
Regulations outline the following requirements for the apprenticeship program for mobile cranes
• The term of an apprenticeship program for the mobile crane branch of the trade is 3 periods of not less than 12 months each;
• In the first period of the program an apprentice must acquire not less than 1500 hours of on the job training and successfully complete the required technical training;
• In the 2nd period of the program an apprentice must acquire not less than 1500 hours of on the job training;
• In the 3rd period of the program an apprentice must acquire not less than 1500 hours of on the job training and successfully complete the required technical training.

The ratio of certified journeyperson to apprentices is 1:2.

Regulations outline the following requirements for the apprenticeship program for boom trucks:
• The term of an apprenticeship program for the boom truck branch of the trade:
  a) in the case of the boom truck craft, is one period of not less than 12 months; and
  b) in the case of the wellhead boom truck craft, is one period of not less than 12 months.
• In the case of the boom truck craft, in the period that constitutes the apprenticeship program an apprentice must acquire not less than 1200 hours of on the job training and successfully complete the required technical training;
In the case of the wellhead boom truck craft, in the period that constitutes the apprenticeship program an apprentice must acquire not less than 100 hours of on the job training and successfully complete the required technical training;

- Apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, be granted a Red Seal.

I.5 Alberta DOST in the Certification Process
The majority of operators certified in Alberta are certified through the apprenticeship programs. This is administered by the training providers. A 5 year long pilot program for trade qualifiers has been recently completed. On-site trade qualifier assessment was provided by a third party under the pilot. As the outcome from the pilot, an RFP process was underway in the Fall 2014 to determine who will deliver practical assessment practical assessments for all branches within the Crane and Hoisting Equipment Operator trade for the Qualification Certificate program and for Alberta apprentices requiring prior learning assessments or supplemental assessments on an ongoing basis.

A summary of the assessment criteria included in the apprenticeship programs for mobile cranes and boom trucks are outlined below:

Mobile Crane Exams
- Apprenticeship Exams – 1st period, Theory Examinations 1 and 2; 3rd period: Theory Examinations 1 and 2, Practical Exams 1 and 2;
- Interprovincial Exam;
- Qualification Exams – Qualification Theory Examination 1, and Qualification Practical Examination.

Boom Truck Exams
- Apprenticeship Exams – 1st period, Theory Examinations 1 and 2
- Qualification Exams – Qualification Theory Examination 1 and 2, and Qualification Practical Examination (with different examinations for articulating and stiff boom).

I.6 Alberta Overview of Existing DOST Assessment Criteria
Qualifying examinations include practical assessment criteria for Boom Truck and Mobile Crane Operators.

For Mobile Crane Operator, Boom Truck Operator (Articulating) and Boom Truck Operator (Stiff Boom) apprentice program candidates registered on or after Feb 4, 2013, the qualifying examination practical assessment criteria include three equally weighted sections:
- Hand Signals;
- Pre-operational inspection and rigging;
- Machine set-up & crane operation.

A mark above 70% on each part is required for successful completion of the Practical Assessment. Time allowed for the mobile crane practical assessment is 2-2.5 hours. Time allowed for the boom truck operator practical assessment is 2 hours.

Beyond the practical assessment requirements in the qualification examination, the 3rd period of the mobile crane operator apprenticeship program contains practical assessment examination. Ongoing assessments for all candidates will be based on the model delivered via the recently-completed pilot for trade qualifiers:

- Hand Signals
- On-Crane Practical Assessment including: 19

  Crane Set-up – Operator is required to do a pre-op inspection for crane set up from crane’s checklist. The operator must set up the crane, describing the hazards to check for and demonstrate correct use of blocking and outriggers. Assessment stops if operator cannot set up the crane successfully.

  Target Course without a load – start from first target, touch chains down inside of each target all the way around course and back. The sling is only permitted to touch the ground is inside the circle. Must demonstrate load control (without touching ground). No scoping in or out. The assessment is timed (e.g. 10-15 minutes to complete the course depending on the crane type and operation manual/remote).

  Target Course with a load – cones are placed over top of targets; operator is instructed to bring load over top of cone and to collapse the cone down a couple of inches without crushing it. If cones are crushed, the assessment is over. The assessment is timed (e.g. 10-15 minutes to complete the course depending on the crane type and operation manual/remote).

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19 Sample layout of targets is provided: [http://www.fulford.ca/crane/ab/pdf/sample-target-layouts.pdf](http://www.fulford.ca/crane/ab/pdf/sample-target-layouts.pdf)
Appendix J – Jurisdictional Profile: British Columbia

J.1 British Columbia Program Background:
The BC Association for Crane Safety has a mandate to oversee the assessment and certification of a range of crane types including different lifting capacities of Mobile Cranes and Boom Truck Cranes. Certification to operate specific crane types is issued through BCACS or ITA, depending on the lifting capacity of the crane.

Certification is compulsory: as of February 28, 2011, all crane operators are required to be certified in order to legally work in BC.

J.2 British Columbia Trade Profile:
The Industry Training Authority of BC (ITA BC) offers certification in seven crane types which are linked to the BCACS certification. BCACS and WorkSafeBC require that all crane operators in BC in an ITA linked trade write a written theory test prior to the BC DOST.

Mobile Cranes:
- Lattice Boom – Friction
- Lattice Boom – Hydraulic
- Mobile Hydraulic – Unlimited Tonnage
- Mobile Hydraulic – 80 Tonnes and under

Boom Trucks:
- Stiff Boom – Unlimited Tonnage
- Folding Boom – Unlimited Tonnage

The BC DOST was developed through stakeholder consultations and based international best practices. Assessment criteria were integrated into the Canadian system to account for time-based/experience requirements. Each of the crane operator certificates is matched to an Apprenticeship Qualification in BC.

J.3 British Columbia Program Use and Application:
Oversight for mobile crane operator certification is provided by BCACS. All crane operators are required to be certified.

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20 A seventh ITA certification category for Tower Cranes is out of scope of this review.

21 Certification for the Friction Lattice Boom Crane qualifies operators to operate any other type of crane except Tower and Self Erect Cranes. See www.bcacs.ca/crane/cs_hierarchy.html
The BC model for crane operator certification is competency-based. Identified core competencies, skills and abilities are the common foundation for all types of cranes. Detailed competencies for each crane type are further outlined. Core competencies are divided into the following categories:

- Safety
- Communications
- Rigging
- Load Charts
- Crane Operations
- Maintenance and Service

Four certification levels can be applied to each crane type:

- **Level A Certificate:**
  - Highest level of certification;
  - This is the journeyperson qualification level;
  - Operator has successfully completed both theory and practical assessments;
  - The operator has the defined skill, knowledge and ability required to safely operate cranes within scope of the crane class certification.

- **Level B Certificate:**
  - Working towards full scope, Level A certification;
  - Intended for trainee or apprentice operators during the period of formal training for a specific crane class;
  - Apprentice has passed the applicable Crane Operator Theory Exam;
  - Indirect supervision required for non-critical lifts;
  - Direct supervision required for critical lifts;
  - Valid for one year and is renewable by application.

- **Level C Letter of Permission:**
  - Intended for a new, prospective crane operator who is interested to see if they have the required aptitude and ability to pursue training;
  - Requires minimal investment if operator decides not to pursue crane operator certification;
  - Does not indicate that the named individual is competent in any aspect of crane operation;
  - Direct supervision is required for all non-critical lifts; critical lifts are not permitted;
  - Valid for 6 months and is not renewable.

- **Level D – Not full scope crane operation**
  - Holder may only operate a crane at the address that is on the issued Level D certificate;
  - Certificate is held in the name of the employer on behalf of the employee and is non-transferrable;
  - Employer must be prepared to show evidence that the operator has completed an in-house competency certification program for the specific crane class operated;
- Trainee crane operator must pass the Level D theory exam; no third-party practical assessment is required;
- No critical lifts are permitted;
- Certificate is valid only while holder is employed by the named employer.

New operators can achieve apprenticeship qualification one of two ways:

- Becoming an Apprentice – Each crane operator certificate is matched to a BC apprenticeship qualification (ticket) for the same crane type; or,
- Challenging the Qualification – an operator who feels they already have the skills to justify being awarded the qualification can submit a Challenge Application form to ITA. The challenge process requires completion of the DOST Certification assessment and the ITA Challenge exam.

In order to comply with the Trade, Investment and Labour Mobility Agreement between BC and Alberta (TILMA) and the Agreement on Internal Trade (AIT), WorkSafeBC has implemented a process for accepting the credentials of workers trained or certified in Canadian Jurisdictions to meet regulatory compliance in British Columbia (BC). For operators who have recognized government certification from another Canadian jurisdiction have the option to apply for an Equivalency Certificate to receive a BC operator’s certificate equivalent to the previous jurisdiction certification. Crane operators from other jurisdictions are provided with a Jurisprudence Package. Out-of-jurisdiction certificates are issued by the BC Association for Crane Safety.

Red Seal Trades Mobile Crane Operator and Mobile Crane Operator Hydraulic are designated as trades in BC.

J.4 British Columbia Eligibility for Certification/DOST

Apprenticeship/Technical Training – Operators may choose to submit an application to the Industry Training Authority (ITA) to register as an apprentice for the applicable crane type. Three training providers have been selected and approved to offer training funded by the ITA.

Completion Requirements:  

Technical Training: Minimum 70% in each level of technical training.
- Crane Common Core Leve 1: 3 weeks (35 hours/week)
- Mobile Crane Operator

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\(22\) Certificate of Qualification exam is required to be successfully completed before attempting the practical assessment.
Duration of work-based training varies based on the individual and the completion of defined competencies.

**J.5 British Columbia DOST in the Certification Process**

The operator must pass the C of Q exam before they are eligible to complete the practical assessment.

BC regulations require a separation between training providers and certification assessment providers.

The program for crane operator certification was developed through industry consultation. It is administered through BCACS, and the ITA. The third party practical assessment company has a service agreement in place with WorkSafeBC and ITA, all of which take their direction from BCACS in order to be able to deliver the practical assessment for mobile crane operators.

BCACS maintains responsibility for monitoring and quality control to ensure that industry is served appropriately and to the standards that industry has established. A formal written complaint process is in place as part of the quality control system.

If the operator is found not yet competent after performing the practical assessment they would be allowed to continue operating with their present level of certification as deemed appropriate by the third party assessor. An action plan and a follow up date will be set and communicated to the applicant.

**J.6 British Columbia Overview of Existing DOST Assessment Criteria**

The DOST assessment is divided into three main parts:

- Part 1: Hand signals
- Part 2: Load Chart & Rigging
- Part 3: On-Crane Practical Assessment
  - A. Pre-Operational
B. Crane Set Up & Hazard Assessment
C. Crane Operation

Assessment takes between 2-2.5 hours (3-3.5 hours for Lattice Friction Cranes).

Part 1 (Hand signals) and 2 (Load Chart & Rigging) of the applied assessment are completed in advance (at the beginning of the assessment). The Load chart calculations are identical to calculations that would be made in the field using contemporary load charts.

In BC, if an operator is successful on the hand signals or load chart assessments, they can be assessed on those components separately at a later date (apply for a “load chart reassessment”, there are colleges that will proxy this assessment for candidates not nearby).

Part 3, On-Crane Practical Assessment includes:

- Crane Set-up – Operator is required to do a pre-op inspection for crane set up from crane’s checklist. The operator must set up the crane, describing the hazards to check for and demonstrate correct use of blocking and outriggers. Assessment stops if operator cannot set up the crane successfully.

- Target Course without a load – start from first target, touch chains down inside of each target all the way around course and back. Only time sling can touch the ground is inside the circle. Must demonstrate load control (without touching ground). No scoping in or out. The assessment is timed (e.g. 10-15 minutes to complete the course depending on the crane type and operation manual/remote).

- Target Course with a load – cones are placed over top of targets; operator is instructed to bring load over top of cone and to collapse the cone down a couple of inches without crushing it. If cones are crushed, the assessment is over. The assessment is timed (e.g. 10-15 minutes to complete the course depending on the crane type and operation manual/remote).

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Appendix K – Jurisdictional Profile: Northwest Territories

Red Seal trades Mobile Crane Operator and Mobile Crane Operator (Hydraulic) are designated trades in the Northwest Territories. Certification of operators is voluntary.

Apprenticeship training is provided for Mobile Crane Operator; 3 years, 5400 hours. Technical training occurs over 2 blocks for a total of 9 weeks and includes 120 theory hours and 150 hours of practical training. Mobile Crane Operator trade includes in-school level practical examination and written examinations. Written and practical examinations are required for Journeypersons in the Mobile Crane Operator trade.

An apprenticeship program does not exist for Mobile Crane Operator (Hydraulic). There are no territorial-level training requirements outlined for the Mobile Crane Operator (Hydraulic) trade.
Appendix L – Jurisdictional Profile: Yukon Territory

L.1 Yukon - Program Background:
From Part 5 – Cranes, Hoisting and Lifting of the Yukon Occupational Health and Safety Act, training requirements for operators of mobile cranes or articulating boom cranes were stipulated as of December 31, 2008. Crane Operators in Yukon are required to carry 'proof of competence' by Occupational Health & Safety regulations. Only a qualified person who has been instructed and authorized shall operate a crane or hoist. Worker is required to demonstrate competency, including familiarity with the operating instructions for the particular crane or hoist, safe rigging practices, and the code of signals for hoisting operations.24

A Code of Practice explains the requirements for standard hand signals to be used for controlling cranes pursuant to the Yukon Occupational Health and Safety Act. The Code of practice applies to all workplaces as established in the Act. 25

There are no Red Seal designated mobile crane trades in the Yukon.

L.2 Yukon - Trade Profile:
On and after December 31, 2008, the operator of mobile cranes or articulating boom cranes must meet the following training requirements: 26

(1) For cranes with a rated capacity from 900 kg up to and including 7,300 kg (1 ton to 8 ton) operators shall successfully complete a 35 hour course acceptable to the director, which includes the safe operation of the crane.

(2) For cranes with a rated capacity over 7,300 kg and up to and including 13,600 kg (8 ton to 15 ton), operators shall successfully complete a 70 hour course acceptable to the director, which includes the safe operation of the crane.

(3) For cranes with a rated capacity over 13,600 kg (15 ton), operators shall
(a) have provided documented proof of crane operating experience of at least 500 hours, for a review, examination and acceptance of qualifications by a certifying agency acceptable to the director, and have successfully completed a 70 hour course acceptable to the director, which includes the safe operation of the crane, or
(b) have crane operator trade certification issued by a provincial or territorial apprenticeship board that is acceptable to the director, or

24 https://www.wcb.YT.ca/Regulations/LIB0222.aspx


26 https://wcb.YT.ca/Regulations/LIB0222.aspx
(c) in the case of a trainee with less than 500 hours operating experience
- have successfully completed a 70 hour course acceptable to the director, which includes the
  safe operation of the crane, and,
- operate the crane under the direct supervision of a qualified person who meets the
  requirements of subsections (a) or (b).

The BCACS Certification scheme has been adopted in the Yukon as proof of competence.

L.3 Yukon - Program Use and Application:
The BCACS/BC model for crane operator certification is utilized. Identified core competencies, skills and
abilities are the common foundation for all types of cranes. Detailed competencies for each crane type
are further outlined. Core competencies are divided into the following categories:

- Safety
- Communications
- Rigging
- Load Charts
- Crane Operations
- Maintenance and Service

L.4 Yukon- Eligibility for Certification/DOST
Training requirements are as outlined in section H.2 above.

L.5 Yukon - DOST in the Certification Process
A separation between training providers and certification assessment providers exists.

The program for crane operator certification was developed through industry consultation. It is
administered through Yukon Workers’ Compensation Health and Safety Board. A third party service
provider is utilized for practical assessment.

L.6 Yukon - Overview of Existing DOST Assessment Criteria
The DOST assessment is divided into three main parts

Part 1: Hand signals
Part 2: Load Chart & Rigging
Part 3: On-Crane Practical Assessment
  A. Pre-Operational
  B. Crane Set Up & Hazard Assessment
  C. Crane Operation
Assessment takes between 2-2.5 hours (3-3.5 hours for Lattice Friction Cranes).

Part 1 (Hand signals) and 2 (Load Chart & Rigging) of the applied assessment are completed in advance (at the beginning of the assessment). The Load chart calculations are identical to calculations that would be made in the field using contemporary load charts.

In the Yukon, if an operator is successful on the hand signals or load chart assessments, they can be assessed on those components separately at a later date (apply for a “load chart reassessment”, there are colleges that will proxy this assessment for candidates not nearby).

Part 3, On-Crane Practical Assessment includes:
Crane Set-up – Operator is required to do a pre-op inspection for crane set up from crane’s checklist. The operator must set up the crane, describing the hazards to check for and demonstrate correct use of blocking and outriggers. Assessment stops if operator cannot set up the crane successfully.

Target Course without a load – start from first target, touch chains down inside of each target all the way around course and back. Only time the sling can touch the ground is inside the circle. Must demonstrate load control (without touching ground). No scoping in or out. The assessment is timed (e.g. 10-15 minutes to complete the course depending on the crane type and operation manual/remote).

Target Course with a load - cones are placed over top of targets; operator is instructed to bring load over top of cone and to collapse the cone down a couple of inches without crushing it. If cones are crushed, the assessment is over. The assessment is timed (e.g. 10-15 minutes to complete the course depending on the crane type and operation manual/remote).

27 Detailed overview of the practical assessment is provided at: [http://www.fulford.ca/crane/cs_videos.html](http://www.fulford.ca/crane/cs_videos.html)
Appendix M – Jurisdictional Profile: Nunavut

Red Seal trade Mobile Crane Operator (Hydraulic) is a designated trade in Nunavut. Local trade name is Crane and Hoisting Equipment Operator. Certification of operators is voluntary.
List of References and Online Resources

Compilation of Reports to date (BCACS): USA Crane Operator

The Alliance of Sector Councils (TASC): Setting the Standard - Accepted Principles and Recommended Practices for National Occupational Standards, Certification Programs, and Accreditation Programs

CSA Z764-96, A Guide to Public Involvement

BC Association for Crane Safety: Interprovincial Practical Assessment of Crane Operators: Ontario

SKILLS TABLE: Program Feasibility Report and Development Recommendations – Crane Operator Certification in the Asia Pacific Gateway (APG)

Canadian Council of Directors of Apprenticeship Harmonization Project Summary of Key Findings, Phase 1 - Carpenter, Mobile Crane Operator and Mobile Crane Operator (Hydraulic), January 2014

City and Guilds: Guide to the assessment of practical skills in International Vocational Qualifications


Eastern Kentucky University, What Is Developing a Curriculum (DACUM)?
http://www.facilitation.eku.edu/what-developing-curriculum-dacum

List of Online Resources

Red Seal
http://www.ppforum.ca/sites/default/files/3c_1_2_red_seal_apprenticeship_in_canada.pdf
http://www.red-seal.ca/trades/d.2s.3gn.1t.2@-eng.jsp
http://www.red-seal.ca/others/developmenthistoryofnoa@-eng.jsp – how analysis is developed

AIT
http://www.ait-aci.ca/index_en/ait.htm
http://www.ait-aci.ca/index_en/labour.htm
**Nova Scotia:**
http://novascotia.ca/lae/equipmentsafety/craneoperator.asp
http://novascotia.ca/lae/publicsafety/docs/CraneOperatorsI-II-III.pdf
http://novascotia.ca/lae/publicsafety/docs/CraneOperatorsIV-TowerOverhead.pdf
http://www.novascotia.ca/just/regulations/regs/ts Crane.htm
http://novascotia.ca/lae/publicsafety/CraneOperatorRegReview.asp
http://www.oetins.ca/crane.html
http://novascotia.ca/lae/equipmentsafety/docs/Syllabus_Mobile_and_Boom_Truck.pdf
http://www.novascotia.ca/lae/equipmentsafety/docs/ApprovedProgramsV1.pdf
http://novascotia.ca/lae/equipmentsafety/docs/ApprovedProgramsV1.pdf

**New Brunswick**
http://www2.gnb.ca/content/gnb/en/services/services_renderer.11456.Mobile_Crane_Operator_-_Apprenticeship_and_Occupational_Certification_.html
http://www2.gnb.ca/content/dam/gnb/Departments/petl-epft/PDF/Appren/BoardOrders/GC001.1.pdf
http://www2.gnb.ca/content/dam/gnb/Departments/petl-epft/PDF/Appren/BoardOrders/GA002.1.pdf
http://www2.gnb.ca/content/gnb/en/departments/post-secondary_education_training_and_labour/Skills/content/ApprenticeshipAndTrades/DesignatedOccupations.html
http://www2.gnb.ca/content/dam/gnb/Departments/petl-epft/PDF/Appren/BoardOrders/MobileCraneOperator.pdf
http://www2.gnb.ca/content/dam/gnb/Departments/petl-epft/PDF/Appren/MCOEmployees.pdf
http://app.infoaa.7700.gnb.ca/gnb/PDF/FeesPDF/2013-PETL.pdf

**Newfoundland and Labrador**
http://www.cna.nl.ca/programs-courses/show-program-details.aspx?program=80
http://www.aes.gov.nl.ca/app/pacb.html
http://www.aes.gov.nl.ca/app/trades.html
http://www.aes.gov.nl.ca/app/publications/mobilecraneoper_mar05.pdf
http://www.oecollege.ca/ProMC.html
http://www.aes.gov.nl.ca/app/tradequalifier.html

**Prince Edward Island**

Quebec
http://www.ccq.org/en/GrandPublic/E_CertificatesCompetence/E09_ExamenQualification/E01_1_5_Fich
esRenseignements/E01_1_4_13_Grutier
http://www.ccq.org/~media/PDF/Communications/Metiers/ENGLISH/crane.pdf.ashx
http://imt.emploiquebec.gouv.qc.ca/mtg/inter/noncache/contenu/asp/mtg122_descrpprofession_01.asp
?lang=ANGL&Porte=1&cregn=QC&prov=pje&pro=7371
http://www.ccq.org/en/GrandPublic/E_CertificatesCompetence/E08_ChangementsReglementaires/E08_1_Grutiers/E08_1_1_CCAGrutiers
http://www.ccq.org/en/GrandPublic/E_CertificatesCompetence/E01_Compagnon
http://www.ccq.org/en/GrandPublic/E_CertificatesCompetence/E08_ChangementsReglementaires/E08_1_Grutiers/E08_1_3_NonCCAGrutiers
http://www.ccq.org/en/GrandPublic/E_CertificatesCompetence/E08_ChangementsReglementaires
http://www2.publicationsduquebec.gouv.qc.ca/dynamicSearch/telecharge.php?type=3&file=/R_20/R20R5_A.HTM

Ontario
http://www.tcu.gov.on.ca/eng/labourmarket/ojf/pdf/7371_e.pdf
http://www.skills.edu.gov.on.ca/OSP2Web/EDU/DisplayNocDetails.xhtml?nocid=7371
http://www.collegeoftrades.ca/about/legislation-and-regulations
http://www.collegeoftrades.ca/trade-assessment
http://www.corporatetrainingservices.ca/technical-training/boom-truck/
http://www.durhamcollege.ca/programs-and-courses/apprenticeship-programs
http://www.oetio.com/Mobile_Crane_Apprenticeship_Program_339A_and_339C.aspx
http://www.ontarioimmigration.ca/OI/en/working/OI_HOW_WORK HOISTENG_CM.html

Manitoba
http://www.oetim.com/Crane_Training_Course
http://www.gov.mb.ca/tce/apprent/mb_trades/crane.html
www.safemanitoba.com

Saskatchewan
http://www.saskapprenticeship.ca/designated-trades/crane-and-hoist-operator/
http://www.saskapprenticeship.ca/commission-regulation-amendments/

**Alberta**
http://www.fulford.ca/crane/ab/ab-comp.html
http://tradesecrets.alberta.ca/trades-occupations/profiles/0343/

**British Columbia**
http://bcacs.ca/index.php/about-the-trade/
www.fulford.ca/crane/cs_hierarchy.html
http://www.fulford.ca/crane/pdf/bccs_cwc_core_v2.pdf
http://bcacs.ca/index.php/crane-operator/certification/bc-equivalency
http://www.itabc.ca/

**Yukon**
https://wcb.YT.ca/Regulations/LIB0222.aspx

**Northwest Territories**

**Nunavut**

**USA**
http://www.nccco.org/nccco/certification-programs/certification-overview
http://www.craneinstitute.com/training-programs/
http://www.craneinstitute.com/accredited-certification/
http://www.nccer.org/mobile-crane-operator-certification
http://www.oecp.org/Default.cshtm