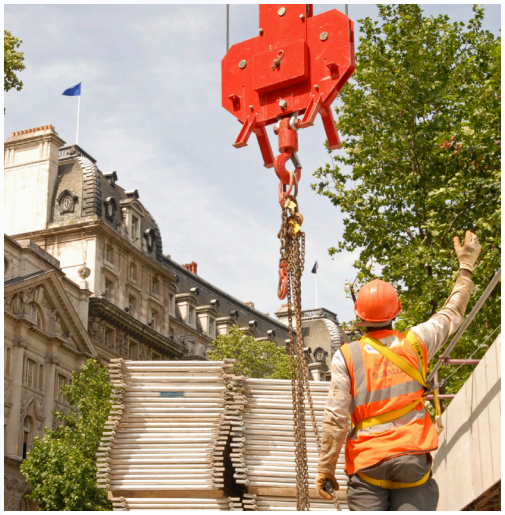
Standards Council of Canada
Conseil canadien des normes

INDUSTRY REPORT ON STANDARDS

Standards Referenced in Canadian Regulations for the Hoisting and Rigging Industry

August 2014



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About the Standards Council of Canada

The Standards Council of Canada (SCC) is a Crown corporation within the Industry Canada portfolio. With the goal of enhancing Canada's economic competitiveness and social well-being, SCC leads and facilitates the development and use of national and international standards. SCC also coordinates the efforts of Canadians in the development and use of national and international standards. Accreditation services are provided by SCC to various customers, including product certifiers and testing laboratories. SCC represents Canada at the International Organization for Standardization (ISO) and oversees the Canadian National Committee of the International Electrotechnical Commission. For more information on SCC, visit www.scc.ca.

About the Canadian Hoisting and Rigging Safety Council

The Canadian Hoisting and Rigging Safety Council (CHRSC) promotes the harmonization of credentials, certification standards, and regulations relevant to cranes, hoisting and rigging, across Canada. The Council is a focal point for national and international dialogue on these issues. To participate or become a member, visit www.chrsc.ca, or send inquiries to info@chrsc.ca.

Foreword

There are thousands of different standards incorporated by reference in federal, provincial and territorial regulations. Differences in standards and certification requirements referenced in regulations create Technical Barriers to Trade, which are difficult to identify and are some of the most persistent internal trade barriers within Canada. A 2006 report produced by the Conference Board of Canada found that non-tariff barriers represent the most significant remaining internal trade barriers within Canada.[1] Similar evidence was presented in a 2006 examination of interprovincial barriers to trade by the Senate Committee on Banking, Trade, and Commerce.[2]

The persistence of Technical Barriers to Trade-based internal issues is due to the difficulty of identifying Technical Barriers to Trade compared to more explicit tariff-based barriers. For example, Canada's provinces and territories do not currently possess the tools to keep track of the standards they incorporate by reference in their jurisdictional regulations – nor do they have a mechanism with which to identify or compare against those standards used in other jurisdictions. This inhibits the ability of Canada's provinces and territories to identify those standards that have a significant economic impact and/or effect on trade and/or a broader economic impact on industry. This baseline information is necessary to improve standards alignment between Canadian jurisdictions.

As noted in the 2014 federal budget, Canada's Public Policy Forum indicated in a recent report that a lack of data and research is one of the main factors preventing policymakers from being aware of internal trade barriers.[3] As such, in its budget, the federal government committed to better identifying and understanding the impact of measures that currently restrict trade.[4]

In early 2014, the Standards Council of Canada (SCC) agreed to provide support to the Canadian Hoisting & Rigging Safety Council (CHRSC) in meeting its goals to bring standards and regulatory harmonization to the hoisting and rigging industry across Canada. The CHRSC promotes the harmonization of credentials, certification standards, and regulations relevant to cranes, hoisting and rigging, across Canada. This project is a first step in initiating and establishing common rigging standards nationally.

Canada's standardization network holds great promise to increase Canada's competitiveness and to safeguard the health and safety of its citizens. Although not generally visible to the average Canadian, standards and conformity assessment activities contribute to our national economic growth. They help establish a level playing field for industry and help build capacity in key sectors of the economy. Standardization activities play a pivotal role in protecting the health, safety and security of Canadians in areas such as energy, machine operation, the workplace, transport and the environment.

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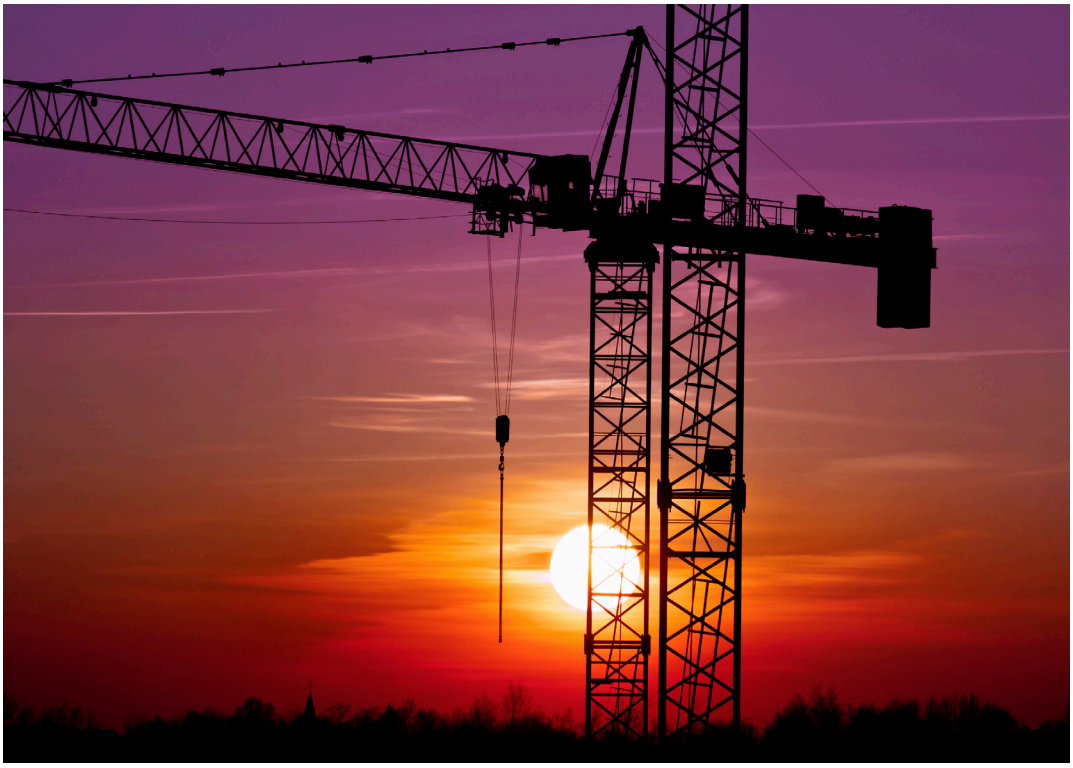
1 Darby, Paul, et al, (2006), *"Death by a Thousand Paper Cuts: The Effect of Barriers to Competition on Canadian Productivity,"* Conference Board of Canada, p. ii.

2 http://www.parl.gc.ca/Content/SEN/Committee/391/bank/05eva-e.htm?Language=E&Parl=39&Ses=1

3 Canada's Public Policy Forum, (2013) *Canada's Evolving Internal Market*. Ottawa: Public Policy Forum, , p. 11

4 http://www.budget.gc.ca/2014/docs/plan/pdf/budget2014-eng.pdf, p.111

In 2012, SCC introduced a targeted approach to identifying and selecting Canadian industry standardization priorities and goals that formed SCC's Industry Engagement Framework. The framework aims to enhance industry coordination, focusing on key sectors where Canada needs to become a standards setter and where SCC could direct its efforts to support the management of standardization activities on behalf of Canada. This activity is part of SCC's ongoing emphasis in engaging its industry stakeholders to strengthen Canada's standardization network. It is also a part of SCC's effort to help the Government of Canada achieve its *Economic Action Plan*, focusing on the reduction of red tape and barriers to business.



Executive Summary

The objective of this research is to identify standards incorporated by reference in Canadian jurisdictional regulations against those standards used in other jurisdictions relevant to the hoisting and rigging industry. The extent of similarities and differences of the regulatory requirements between Canada's provinces and territories will help develop a clear depiction of possible duplicative and overlapping standards referenced in Canadian regulation.

Hoisting and rigging operators endure differing standards across jurisdictions, as they cannot easily cross provincial and territorial boundaries without adjusting to another jurisdiction's standards. According to the Bank of Canada, "If barriers created by provincial borders can be removed, easier labour mobility would ultimately facilitate macroeconomic adjustment and possibly result in stronger productivity growth."[5]

The findings of this report show differences in standards incorporated by reference across jurisdictions, which make it challenging for the hoisting and rigging industry to operate efficiently. The industry is faced with references made to different standards in federal, provincial and territorial regulations – yet many concerning identical subject matters. This leads to situations where time and costs rise substantially for businesses operating in multiple jurisdictions, just to remain in compliance.

Reviewing existing standardization gaps in relevant codes and regulations is critical to achieving success in improving standards- and certification-related harmonization of regulations relevant to the hoisting and rigging industry. The primary objective of this report is to provide relevant and up-to-date standards information to the CHRSC and its stakeholders, to assist in the identification of areas where harmonization and alignment efforts across jurisdictions may benefit industry from safety, mobility and economic perspectives.

[5] http://www.theglobeandmail.com/report-on-business/economy/economy-lab/the-jobs-challenge-canadians-dont-want-to-move-out-of-province/article12001994/

This report is intended to be part of future dialogues in streamlining standards compliance between Canadian regulations, to:

- Reduce duplication of effort in the preparation of standards, and make the most effective use of all resources available;
- Provide a single, comprehensive source of information and expertise;
- Reduce constraints on activities and innovation;
- Ensure standardized requirements specify identical requirements;
- Reduce duplication and overlap of regulatory programs;
- Streamline regulatory processes on like subject areas;
- Standardize regulatory approach through less burdensome regulations; and
- Facilitate greater trade while sustaining labour mobility.

The alignment between these standardization priorities will benefit both Canadian industry and government. As well, it will support the reduction of inter-provincial and regional barriers in the movement of qualified workers in Canada and consequently improve the ability of Canadians to work in their occupation anywhere in Canada. By working cooperatively, SCC and the CHRSC will be able to further the development, standardization and promotion of hoisting and rigging operations that increase safety, reduce costs and allow for greater employer and worker mobility for Canadians.

1. Scope of the Research and Methodology

The objective of this report is to assist the CHRSC in identifying and understanding the jurisdictional variances related to standards incorporated by reference in Canadian regulations relevant to the hoisting and rigging industry. The scope of this report is limited to standards for cableways, cranes, derricks, hoists, hooks, jacks and slings. The scope also includes normative references in those standards. Normative references[6] are publications that are cited in the text of a standard in such a way as to make them indispensable for the application of the standard itself. Any publication referred to normatively in the text of another standard has to be listed in the normative references.

The standards reviewed for this report were limited to:

- 119 standards developed by International Organization for Standardization (ISO) Technical Committee (TC) 96 on Cranes (see **Table 1** and **Table 2** for the list of ISO standards in scope);
- 17 national standards published by SCC-accredited standards development organizations (SDOs) (see **Table 3**); and
- 29 American Society of Mechanical Engineers (ASME) standards (see **Table 4**) specifically, the ASME B30 series of standards for cableways, cranes, derricks, hoists, hooks, jacks and slings.

A summary of two case studies is included as part of the analysis, to clarify the complex interdependencies regarding harmonization of hoisting- and rigging-related standards across Canada.

The identification of standards incorporated by reference in Canadian regulations was conducted using the Canadian Legal Information Institute (CanLII).[7] CanLII is a non-profit organization managed by the Federation of Law Societies of Canada. Its goal is to make Canadian law accessible, centralized and transparent. It provides access to statutes and regulations from all Canadian jurisdictions.

For the purpose of identifying and mapping standards incorporated in Canadian regulations to estimate the level of alignment of standards[8] between the provinces, territories and federal government, searches were conducted using keywords using the core designation of those identified standards (e.g., B30.1).

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[6] *Normative references can be made to a whole publication or only part of a publication. Normative references can be dated to a specific edition or can be undated, in which case the latest edition of the referenced publication (including any amendments) applies. Referenced publications that are cited in an informative manner or as bibliographic or background material in the preparation of the document are NOT normative references. Normative references in regulation, like other standards referenced in regulation, can be mandatory (law) or voluntary-based (optional) depending on how it is referenced.*

[7] ***Note:** Primary content of the CanLII database depends on document provision sources. Delays may occur during the transfer and processing of some documents. Consequently, it is possible for a particular document to be temporarily missing on the CanLII website before the omission is corrected. The research may be affected by the completeness and accuracy of this data source.*

[8] *Interchangeability of products, processes and services, or mutual understanding on same subjects.*
Source: ISO/IEC *Guide 2:2004, Standardization and related activities — General vocabulary*

2. Summary of Results

Canada's Agreement on Internal Trade (AIT) includes requirements to reconcile standards and conformity assessment procedures between provinces and territories through harmonization and/or mutual recognition, and to cooperate in reducing regulatory overlap and duplication. Annexes of the AIT on standards-related measures include the following key requirements designed to advance the harmonization of standards between the provinces and territories, specifically:

1) each party shall base its standards on relevant national standards, de facto national standards or international standards;
2) where national standards, de facto national standards or international standards do not exist or are not sufficient, the parties shall cooperate to develop national standards and, wherever practicable, use Canada's National Standards System for that purpose; and,
3) where a party, in pursuing a legitimate objective, has or establishes a level of protection that is the same as that of another party, the affected parties shall endeavour to adopt a harmonized standard or standards-related measure in respect of that objective.[9]

Differences in standards incorporated by reference across jurisdictions make it challenging for the hoisting and rigging industry to operate efficiently. The industry is faced with references made to different standards in both federal and provincial/territorial regulations – yet many concerning identical subject matters. This leads to situations where time and costs rise substantially for businesses operating in multiple jurisdictions, just to remain in compliance. The following pages provide a high-level summary of national, regional and international standards, within the scope of this research, referenced in Canadian regulations in the hoisting and rigging industry. Annex A provides the detailed data relevant to the scope of this paper outlined in Section 1.

[9] http://www.ait-aci.ca/index_en/ait.htm, pp. 13-15.

2.1 National – SCC-Accredited SDO Canadian Standards

A total of 17 SCC-accredited SDO Canadian standards were identified within the scope of this research. These 17 standards are incorporated by reference in Canadian regulations, with the exception of one: CSA Z19905-1, *Petroleum and Natural Gas Industries – Site-Specific Assessment of Mobile Offshore Units – Part 1: Jack-Ups*.

This standard is a national adoption of ISO 19905-1 *Petroleum and Natural Gas Industries – Site-Specific Assessment of Mobile Offshore Units*. (See **Table 5** for an overview of the standards referenced federally, and by province/territory.)

While the 17 Canadian standards are all hoist- and rig-specific, the normative references included in these standards are from various other industrial fields, such as electrical, welding, metallic tension, and oils used in machinery.

Generally, SCC-accredited SDO standards are referenced in provincial/territorial occupational health and safety acts and their respective regulations, specifically:

- *General Regulations* (Prince Edward Island – *Elevators and Lifts Act*)
- *Safety Code for the Construction Industry* (Quebec)
- *Regulation Respecting Occupational Health and Safety* (Quebec)
- *Safety Code for the Construction Industry* (Quebec)
- *Occupational Health and Safety Regulations* (Newfoundland and Labrador)
- *Construction Projects* (Ontario – *Occupational Health and Safety Act*)
- *Scaffolding Regulations* (Prince Edward Island – *Occupational Health and Safety Act*)
- *Workplace Health and Safety Regulations* (Nova Scotia)
- *Operation of Mines Regulation* (Manitoba – *Workplace Safety and Health Act*)

Other acts incorporating these standards by reference include:

- *Elevating Devices Codes Regulation and Elevating Devices, Passenger Ropeways and Amusement Rides Permit Regulation* (Alberta – *Safety Code Act*)
- *Elevating Devices Safety Regulation* (British Columbia – *Safety Standards Act*)
- *Technical Safety Standards Regulations* (Nova Scotia – *Technical Safety Act*)
- *Fixed Conveyances Regulations* (Yukon – *Elevator and Fixed Conveyances Act*)

Mine-related regulations in the Northwest Territories and Nunavut have incorporated rigging industry standards in, respectively, the *Health and Safety Regulation* and *Mine Health and Safety Act*.

Federally, the *Canada Labour Code* makes reference to these standards in its *Maritime Occupational Health and Safety Regulations*, and in the *Canada Occupational Health and Safety Regulations*.

(See **Table 6** for details on the regulations incorporating by reference SCC-accredited SDO standards by provincial, territorial and federal jurisdiction.)

2.2 Regional – ASME Standards

The ASME B30 series consists of 29 standards. This series is developed by the ASME B30 Standards Committee on Cranes and Related Equipment. The mandate of this committee is to develop, maintain and interpret safety codes and standards for the construction, installation, operation, inspection, testing and maintenance of cranes and related equipment. The standards cover a range of areas, including overhead and gantry cranes, tower cranes, portal and pedestal cranes, mobile and locomotive cranes, derricks, winches, slings, hooks, monorails, side boom tractors, overhead hoists, stacker cranes, below-the-hook lifting devices, manually lever-operated hoists, and articulating boom cranes. Of the 29 standards developed by this committee, 16 are incorporated into Canadian provincial and territorial regulations. (See **Table 7**.) None of the standards are incorporated into any federal regulations.

While the ASME B30 series of standards are crane-specific, the normative references included in those standards cover many other subject areas, including: electrical, welding, metallic tension, and oils used in machinery.

Under some instances, references within regulations are not made by provincial/territorial jurisdictions to the ASME B30 series of standards themselves, but to normative references contained within the series. Further research and analysis would need to be conducted, but preliminary observations show that some jurisdictions are incorporating by reference ASME B30 series standards into regulation; however, it also confirms that other jurisdictions are incorporating by reference into regulation normative references from the ASME B30 series, but not the actual standards from the ASME B30 series themselves. This could indicate that there is partial alignment of standards in specific areas related to the scope of this project.

The ASME B30 series of standards has been predominantly incorporated by reference in provincial and territorial *Occupational Health and Safety Regulations*, *Workplace Safety and Health Regulation*, and *Technical Safety Standards Regulations*, in the respective acts. These regulations are rather homogenous in scope (i.e., applicable to the same industries, persons, etc.) Other incorporated references to these standards are made within the *Workers Compensation Act* and associated *Technical Safety Standards Regulations*, within the *Technical Safety Act*.

(See **Table 8** for an overview of provincial/territorial regulations incorporating ASME B30 series of standards by reference.)

2.3 International – ISO Standards

The results of the research indicated that there are no direct references in Canadian regulations to any of the standards developed by ISO Technical Committee 96. However, some are included as normative references in Canadian standards that are incorporated by reference in at least one Canadian regulation.

2.4 Case Studies: ASME B30.14 and CSA B167

A detailed review was completed of how the relevant standards are incorporated by reference in the various jurisdictions. The two case studies performed on ASME B30.14 *Side Boom Tractors* and CSA B167 *Overhead Travelling Cranes – Design, Inspection, Testing, Maintenance and Safe Operation* provide information on how Canadian jurisdictions are referencing hoisting- and rigging- related standards in regulations. Standards may be incorporated by reference in a number of ways. Of the two case studies performed, it was identified that complete references[10] were used most often. It was also found that regulations may incorporate qualified[11], partial[12], and/or good practice[13] references to standards. The way a standard is incorporated can impact the level of harmonization between provinces and territories. For example, one jurisdiction may incorporate a partial or qualified reference, and another jurisdiction may incorporate a complete reference to the same standard. There is also evidence that, in some cases, the authority to choose the applicable standard has been left to the individual engineers or industry authorities, when not described specifically in the appropriate regulation.

Findings show that jurisdictions are incorporating hoisting- and rigging-related standards by reference at different levels. These referenced standards may be dated or undated.[14] Both case studies include dated and undated references, some to the same standard.

When considering ASME B30.14, the case studies examined how two provinces incorporate the same standard, but each jurisdiction referencing a different outdated edition of the standard. It was found that regulatory alignment in referencing ASME B30.14 is quite low.

CSA B167, on the other hand, was found to be well-aligned in Canadian regulations, as it is incorporated by reference in 10 of the 14 jurisdictions examined. Two provinces use undated references, while the remaining jurisdictions examined used dated references. Of the dated references, all are outdated, as a newer version of the standard is readily available. In addition to the references being out of date, these four provinces do not reference the same edition. Although the regulations are aligned in referencing the CSA B167 standard, these references are not harmonized to the same edition across all Canadian jurisdictions.

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[10] Complete Reference: In this application, all of the content of the standard is included by reference in the regulation.

[11] Qualified Reference: In this application, selected portions of the referenced standard are deleted as being inappropriate for the intended purpose. However, the retained balance of the standard is included in the regulation.

[12] Partial Reference: In this application, only selected portions of the referenced standards are included in the regulation.

[13] Reference as Good Practice: In this application, a standard is referenced as a guide to permit conformance to good engineering practice. The method of compliance to ensure good engineering practice is generally determined by regulatory authorities. This application does not require compliance with the referenced standard, but informs users of its existence and acceptability.

[14] Dated references are used when a specific edition of a standard is intended. Undated references incorporate a standard with no mention to a date of issue or to a specific edition.

3. Conclusion and Recommendations

It is difficult to estimate, without a deeper analysis, to what degree ASME, SCC-accredited SDO, and ISO standards are aligned, as published standards on the same topic do not always cover identical subject areas. However, some examples of standards covering identical subject areas were identified. (See **Table 9**.) Nonetheless, the identified research and case studies indicate that although hoisting- and rigging-related standards are frequently incorporated by reference in federal, provincial and territorial workplace health and safety regulations, the range of regulations that incorporate these standards by reference differs from jurisdiction to jurisdiction. In certain instances, the scope of a regulation is such that a standard incorporated by reference does not apply to all industries from a regulatory point of view, even though the scope of a standard may be applicable to various industries.

Highlights from the results of this research confirm that:

1. Some jurisdictions are incorporating hoisting and rigging standards by reference into regulation, while other jurisdictions were observed to have incorporated only some of the normative references included in those standards into regulation. This indicates that there is partial alignment of standards to specific subject areas between jurisdictions related to the scope of this project.
2. The way in which a standard is incorporated can impact the level of harmonization between provinces and territories.
3. The authority with which to choose the applicable standard is sometimes left to the individual engineers or authorities within an industry, when not described specifically in the appropriate regulation.
4. Jurisdictions are incorporating hoisting- and rigging-related standards by reference at different levels. These referenced standards may be dated or undated.[15]

When considering the case studies:

5. Regulatory alignment in referencing ASME B30.14 is quite low, while CSA B167 was found to be well-aligned in Canadian regulations.
6. Although the regulations are aligned in referencing the CSA B167 standard, these references are not harmonized, as the same edition is not referred to across all Canadian jurisdictions.

[15] Dated references are used when a specific edition of a standard is intended. Undated references incorporate a standard with no mention as to a date of issue or to a specific edition.

The research and the case studies clarify that while harmonization may look like it is happening on a superficial level in some areas of the industry, there is actually a high rate of differences between regulations and the standards incorporated by reference between jurisdictions. Consequently, this could have an adverse impact on the hoisting and rigging industry, and to internal barriers to labour mobility in Canada for the industry.

SCC recommends that the CHRSC and SCC continue to collaborate on efforts to foster national harmonization of Canada's standardization system for the hoisting and rigging industry. SCC and the CHRSC share a common vision: one of a coordinated use of standardization in regulations that supports Canadian government policies and strategic objectives, as well as supports the reduction of internal trade barriers in Canada.

Standardization can help achieve regulatory alignment between Canadian provinces and territories, and with the federal government, through an agreement between provinces/territories. If one jurisdiction, for example, makes a request to SCC for a new standard, the jurisdiction could commit to use that standard once approved as a National Standard of Canada (NSC) and agree not to use different standards in its regulations. This system would be based on the presumption of conformity by jurisdictions. Such a principle could help eliminate the duplication of effort by technical experts, as well as the duplication of standards after the publication of an NSC and would not prejudice intended harmonization goals.

It is recommended that this report be presented to the CHRSC's Executive Committee, to explore options regarding how provinces and territories can potentially work together to examine and identify variances between the hoisting and rigging standards referenced in different provinces and territories jurisdictions; furthermore, it is recommended that opportunities be identified to align standards between the different jurisdictions relevant to the hoisting and rigging industry.

Annex A – Referenced Tables

Table 1: ISO Technical Committee 96 on Cranes and its nine (9) associated subcommittees

Table 2: List of International Organization for Standardization standards in scope

Table 3: List of SCC-accredited standards development organization (SDO) standards in scope

Table 4: American Society of Mechanical Engineers (ASME) standards in scope

Table 5: SCC-accredited SDO standards in scope incorporated by reference in Canadian regulation by provincial, territorial and federal jurisdiction

Table 6: Regulations incorporating by reference SCC-accredited SDO Canadian standards in scope by provincial, territorial and federal jurisdiction

Table 7: ASME standards in scope incorporated by reference in Canadian regulation by provincial, territorial and federal jurisdiction

Table 8: Regulations incorporating by reference ASME standards in scope by provincial, territorial and federal jurisdiction

Table 9: Examples of in-scope SCC-accredited SDO standards and ASME standards with like subject areas

The referenced tables above can be accessed at: www.scc.ca/en/hoisting-rigging-report.

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