CSA C22.1:24

Canadian Electrical Code, Part I

Safety Standard for Electrical Installations

2024
26th Edition

SCC CCN

Legal Notice for Standards

Canadian Standards Association (operating as "CSA Group") develops standards through a consensus standards development process approved by the Standards Council of Canada. This process brings together volunteers representing varied viewpoints and interests to achieve consensus and develop a standard. Although CSA Group administers the process and establishes rules to promote fairness in achieving consensus, it does not independently test, evaluate, or verify the content of standards.

Disclaimer and exclusion of liability

This document is provided without any representations, warranties, or conditions of any kind, express or implied, including, without limitation, implied warranties or conditions concerning this document's fitness for a particular purpose or use, its merchantability, or its non-infringement of any third party's intellectual property rights. CSA Group does not warrant the accuracy, completeness, or currency of any of the information published in this document. CSA Group makes no representations or warranties regarding this document's compliance with any applicable statute, rule, or regulation.

IN NO EVENT SHALL CSA GROUP, ITS VOLUNTEERS, MEMBERS, SUBSIDIARIES, OR AFFILIATED COMPANIES, OR THEIR EMPLOYEES, DIRECTORS, OR OFFICERS, BE LIABLE FOR ANY DIRECT, INDIRECT, OR INCIDENTAL DAMAGES, INJURY, LOSS, COSTS, OR EXPENSES, HOWSOEVER CAUSED, INCLUDING BUT NOT LIMITED TO SPECIAL OR CONSEQUENTIAL DAMAGES, LOST REVENUE, BUSINESS INTERRUPTION, LOST OR DAMAGED DATA, OR ANY OTHER COMMERCIAL OR ECONOMIC LOSS, WHETHER BASED IN CONTRACT, TORT (INCLUDING NEGLIGENCE), OR ANY OTHER THEORY OF LIABILITY, ARISING OUT OF OR RESULTING FROM ACCESS TO OR POSSESSION OR USE OF THIS DOCUMENT, EVEN IF CSA GROUP HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, INJURY, LOSS, COSTS, OR EXPENSES.

In publishing and making this document available, CSA Group is not undertaking to render professional or other services for or on behalf of any person or entity or to perform any duty owed by any person or entity to another person or entity. The information in this document is directed to those who have the appropriate degree of experience to use and apply its contents, and CSA Group accepts no responsibility whatsoever arising in any way from any and all use of or reliance on the information contained in this document.

CSA Group is a private not-for-profit company that publishes voluntary standards and related documents. CSA Group has no power, nor does it undertake, to enforce compliance with the contents of the standards or other documents it publishes.

Intellectual property rights and ownership

As between CSA Group and the users of this document (whether it be in printed or electronic form), CSA Group is the owner, or the authorized licensee, of all works contained herein that are protected by copyright, all trade-marks (except as otherwise noted to the contrary), and all inventions and trade secrets that may be contained in this document, whether or not such inventions and trade secrets are protected by patents and applications for patents. Without limitation, the unauthorized use, modification, copying, or disclosure of this document may violate laws that protect CSA Group's and/or others' intellectual property and may give rise to a right in CSA Group and/or others to seek legal redress for such use, modification, copying, or disclosure. To the extent permitted by licence or by law, CSA Group reserves all intellectual property rights in this document.

Patent rights

Attention is drawn to the possibility that some of the elements of this standard may be the subject of patent rights. CSA Group shall not be held responsible for identifying any or all such patent rights. Users of this standard are expressly advised that determination of the validity of any such patent rights is entirely their own responsibility.

Authorized use of this document

This document is being provided by CSA Group for informational and non-commercial use only. The user of this document is authorized to do only the following:

If this document is in electronic form:

- load this document onto a computer for the sole purpose of reviewing it;
- search and browse this document; and
- print this document if it is in PDF format.

Limited copies of this document in printed or paper form may be distributed only to persons who are authorized by CSA Group to have such copies, and only if this Legal Notice appears on each such copy.

In addition, users may not and may not permit others to

- alter this document in any way or remove this Legal Notice from the attached standard;
- sell this document without authorization from CSA Group; or
- make an electronic copy of this document.

If you do not agree with any of the terms and conditions contained in this Legal Notice, you may not load or use this document or make any copies of the contents thereof, and if you do make such copies, you are required to destroy them immediately. Use of this document constitutes your acceptance of the terms and conditions of this Legal Notice.

2024 Canadian Electrical Code and related products

In addition to CSA C22.1:24, *Canadian Electrical Code, Part I*, CSA Group offers a variety of related publications and resources designed to assist with the interpretation and application of the Code. Our facilitated training can be available in both virtual and in-person formats as required.

Handbook

The 2024 Canadian Electrical Code Handbook provides detailed rationale and background information behind the requirements in CSA C22.1:24. The handbook helps you find information quickly and explains the rules in plain, easy-to-understand language.

Overview of Changes Training

Self-paced | Facilitated | Custom onsite

Designed for professionals with a good working knowledge of the Code who only need to know the changes in the 2024 edition.

Essentials Training

Self-paced | Facilitated | Custom onsite

Gain an understanding of the definitions, scope, and objectives of the 2024 Code as they apply to construction-related electrical installations.

Modular Training

Self-paced | Custom onsite

Create your own self-paced or custom onsite course based on specific sections of the Code. Choose from more than 30 training modules referencing specific Code sections to create a customized learning experience for you or your team.

Learn more

For more information or to purchase CSA C22.1:24, *Canadian Electrical Code, Part I* products:

1 800 463 6727

csagroup.org/2024CECode

Standards Update Service

CSA C22.1:24
March 2024

Title: *Canadian Electrical Code, Part I*

To register for e-mail notification about any updates to this publication
- go to www.csagroup.org/store/
- click on **CSA Update Service**

The **List ID** that you will need to register for updates to this publication is **2429568**.

If you require assistance, please e-mail techsupport@csagroup.org or call 416-747-2233.

Visit CSA Group's policy on privacy at www.csagroup.org/legal to find out how we protect your personal information.

Canadian Standards Association (operating as "CSA Group"), under whose auspices this National Standard has been produced, was chartered in 1919 and accredited by the Standards Council of Canada to the National Standards system in 1973. It is a not-for-profit, nonstatutory, voluntary membership association engaged in standards development and certification activities.

CSA Group standards reflect a national consensus of producers and users — including manufacturers, consumers, retailers, unions and professional organizations, and governmental agencies. The standards are used widely by industry and commerce and often adopted by municipal, provincial, and federal governments in their regulations, particularly in the fields of health, safety, building and construction, and the environment.

More than 10 000 members indicate their support for CSA Group's standards development by volunteering their time and skills to Committee work.

CSA Group offers certification and testing services in support of and as an extension to its standards development activities. To ensure the integrity of its certification process, CSA Group regularly and continually audits and inspects products that bear the CSA Group Mark.

In addition to its head office and laboratory complex in Toronto, CSA Group has regional branch offices in major centres across Canada and inspection and testing agencies in fourteen countries. Since 1919, CSA Group has developed the necessary expertise to meet its corporate mission: CSA Group is an independent service organization whose mission is to provide an open and effective forum for activities facilitating the exchange of goods and services through the use of standards, certification and related services to meet national and international needs.

For further information on CSA Group services, write to
CSA Group
178 Rexdale Boulevard
Toronto, Ontario, M9W 1R3
Canada

A National Standard of Canada is a standard developed by a Standards Council of Canada (SCC) accredited Standards Development Organization, in compliance with requirements and guidance set out by SCC. More information on National Standards of Canada can be found at www.scc.ca.

SCC is a Crown corporation within the portfolio of Innovation, Science and Economic Development (ISED) Canada. With the goal of enhancing Canada's economic competitiveness and social wellbeing, SCC leads and facilitates the development and use of national and international standards. SCC also coordinates Canadian participation in standards development, and identifies strategies to advance Canadian standardization efforts.

Accreditation services are provided by SCC to various customers including product certifiers, testing laboratories, and standards development organizations. A list of SCC programs and accredited bodies is publicly available at www.scc.ca.

Standards Council of Canada
600-55 Metcalfe Street
Ottawa, Ontario, K1P 6L5
Canada

Cette Norme Nationale du Canada est disponible en versions française et anglaise.

Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users to judge its suitability for their particular purpose.

National Standard of Canada

CSA C22.1:24

Canadian Electrical Code, Part I

Safety Standard for Electrical Installations

(Twenty-sixth edition)

- The *Canadian Electrical Code, Part I*, is a voluntary code for adoption and enforcement by regulatory authorities.
- The *Canadian Electrical Code, Part I*, meets the fundamental safety principles of International Standard IEC 60364-1, *Low-voltage electrical installations*.
- Consult with local authorities regarding regulations that adopt and/or amend this Code.

Published in March 2024 by CSA Group
A not-for-profit private sector organization
178 Rexdale Boulevard, Toronto, Ontario, Canada M9W 1R3

To purchase standards and related publications, visit our Online Store at www.csagroup.org/store/ or call toll-free 1-800-463-6727 or 416-747-4044.

ICS 29.020
ISBN 978-1-4883-4250-9

Contents

Committee on Canadian Electrical Code, Part I

(Membership list as of June 2023)

T. Olechna *(Chair)*	CSA Consumer Network, Toronto, Ontario, Canada
T. Simmons *(Vice-Chair)*	British Columbia Institute of Technology, Burnaby, British Columbia, Canada
T. Pope *(Senior Project Manager)*	CSA Group, Toronto, Ontario, Canada

Representing Provincial and Territorial Electrical Inspection Authorities

M. S. Anderson	Technical Safety Authority of Saskatchewan, Regina, Saskatchewan, Canada
P. Daigle	New Brunswick Department of Justice and Public Safety, Miramichi, New Brunswick, Canada
K. Dunbar	Government of the Northwest Territories, Yellowknife, Northwest Territories, Canada
K. Glubrecht	Alberta Municipal Affairs, Edmonton, Alberta, Canada
R. Grant	Nova Scotia Department of Labour, Skills & Immigration, Sydney, Nova Scotia, Canada
N. Hanna	Electrical Safety Authority, Mississauga, Ontario, Canada
T. K. Kjartanson	Manitoba Hydro, Winnipeg, Manitoba, Canada
H. Lang	Government of Yukon, Whitehorse, Yukon, Canada
D. Mayne	Government of Newfoundland and Labrador, Human Resource Secretariat, St. John's, Newfoundland and Labrador, Canada
S. Mercier	Régie du bâtiment du Québec, Montréal, Québec, Canada
M. Pilato	Technical Safety BC, Kelowna, British Columbia, Canada
J. C. Potts	Nunavut Department of Community and Government Services, Iqaluit, Nunavut, Canada
M. Smith	Housing, Land and Communities, Government of Prince Edward Island, Agriculture and Land, Charlottetown, Prince Edward Island, Canada

Representing Municipal Electrical Inspection Authorities

C. Fallon *(Associate)*	City of St. John's Planning, Engineering and Regulatory Services, St. John's, Newfoundland and Labrador, Canada
S. H. Mallikarachchi	City of Winnipeg Planning, Property and Development, Winnipeg, Manitoba, Canada
D. L. Pickering	City of Calgary, Calgary, Alberta, Canada
J. Rowley	City of Vancouver, Vancouver, British Columbia, Canada

Representing Bahamas

D. B. King *(Associate)*	Ministry of Works and Transport, Nassau, Bahamas
Q. C. Knowles *(Associate)*	Flameless Electrical Contracting Ltd., Nassau, Bahamas

Representing Canada West Ski Areas Association

W. Sparks	Doppelmayr Canada Ltd., Kelowna, British Columbia, Canada

Representing Canadian Association of Fire Investigators

E. Randsalu *(Associate)*	Ontario Ministry of the Solicitor General, Toronto, Ontario, Canada

Representing Canadian Association of Petroleum Producers

T. S. Driscoll — OBIEC Consulting Ltd., Calgary, Alberta, Canada

Representing Canadian Electrical Contractors Association

I. Laouini — Corporation des maîtres électriciens du Québec, Montréal, Québec, Canada

Representing Canadian Home Builders' Association

F. Lohmann *(Associate)* — Canadian Home Builders' Association, Ottawa, Ontario, Canada

Representing Codes Canada, NRC Construction Research Centre

A. Laroche *(Associate)* — National Research Council Canada, Ottawa, Ontario, Canada

Representing Committee on the Installation Code for Natural Gas and Propane Appliances

R. Charbonneau *(Associate)* — P38 Energy Inc./Budget Propane, Valleyfield, Québec, Canada

Representing Committee on Use of Electricity in Mines

G. Lobay — CSA Consumer Network, Ottawa, Ontario, Canada

Representing Committee on Workplace Electrical Safety

D. T. Roberts — Electrical Safety Solutions, Mississauga, Ontario, Canada

Representing Committees on the Canadian Electrical Code, Part II*, Application of Electricity in Health Care, and Emergency Electrical Power Supply for Buildings*

A. Z. Tsisserev — AES Engineering Ltd., Vancouver, British Columbia, Canada

Representing Communication Industry

S. Turcot — Bell Canada, Montréal, Québec, Canada

Representing Consumers

W.J. Burr *(Associate)* — Burr and Associates, Campbell River, British Columbia, Canada
T. Olechna — CSA Consumer Network, Toronto, Ontario, Canada
M. Smith — CSA Consumer Network, Kitchener, Ontario, Canada

Representing Education

J. P. Galbraith *(Associate)* — Saskatchewan Polytechnic, Moose Jaw, Saskatchewan, Canada
G. W. Jones — Assiniboine Community College, Brandon, Manitoba, Canada
R. A. Nelson *(Associate)* — National Electrical Trade Council, Ancaster, Ontario, Canada
T. Simmons — British Columbia Institute of Technology, Burnaby, British Columbia, Canada

Representing Electricity Canada

C.C. Cormier	Nova Scotia Power, Halifax, Nova Scotia, Canada
H. Tremblay	Hydro-Québec, Montréal, Québec, Canada

Representing Electro-Federation Canada

G. Benjamin	ABB Electrification Canada Inc., Dorval, Québec, Canada
G. Chopra *(Associate)*	Electro-Federation Canada, Toronto, Ontario, Canada
R. P. de Lhorbe	Schneider Electric Canada Inc., North Vancouver, British Columbia, Canada
P. Desilets	Leviton Manufacturing of Canada Ltd., Pointe-Claire, Québec, Canada
V. V. Gagachev	Eaton, Burlington, Ontario, Canada
T. Hamden	Hubbell Canada LP, Pickering, Ontario, Canada
L. Heidrich *(Associate)*	Hubbell Canada LP, Pickering, Ontario, Canada
J. Johnson	Electro-Cables Inc., Trenton, Ontario, Canada
S. Rasaratnam *(Associate)*	Schneider Electric Inc., Edmonton, Alberta, Canada
J. Singh *(Associate)*	Domtech Inc., Trenton, Ontario, Canada

Representing Energy Industry Electrical Engineering Associates

B. Fuhr *(Associate)*	DJA Engineering Services, Calgary, Alberta, Canada

Representing Forest Products Association of Canada

T. Branch	PDR Technologies Inc., Oakville, Ontario, Canada

Representing Institute of Electrical and Electronics Engineers

B. Johnson *(Associate)*	Thermon Inc., Egg Harbor City, New Jersey, USA

Representing Institute of Electrical and Electronics Engineers (Canada)

R. Leduc	Marex Canada Ltd., Calgary, Alberta, Canada
J. Turner *(Associate)*	Swansea Consulting, Toronto, Ontario, Canada

Representing International Association of Electrical Inspectors

D. E. Clements *(Associate)*	International Association of Electrical Inspectors, Richardson, Texas, USA

Representing Labour

A. Van Steinburg	IBEW 1st District, Burnaby, British Columbia, Canada

Representing Mexico

M. Jimenez *(Associate)*	Asociación de Normalización y Certificación AC, Del Gustavo A Madero, Mexico

Representing National Electrical Code Committees

J. Sargent *(Associate)*	National Fire Protection Association, Quincy, Massachusetts, USA

Representing National Electrical Manufacturers Association

R.W. Horner *(Associate)*	Atkore International (Allied Tube & Conduit Corp.), Harvey, Illinois, USA

Representing National Elevator and Escalator Association

D. McColl	Otis Canada Inc., Mississauga, Ontario, Canada

Representing SCC Accredited Certification Organizations

S.W. Douglas	QPS Evaluation Services Inc., Toronto, Ontario, Canada
M. Hagan *(Associate)*	CSA Group, Cleveland, Ohio, USA
D. Langlois	CSA Group, Toronto, Ontario, Canada
J. H. Morrison *(Associate)*	QPS Evaluation Services Inc., Toronto, Ontario, Canada
G. Paintal *(Associate)*	Underwriters Laboratories of Canada, Scarborough, Ontario, Canada
A. Pottier	Underwriters Laboratories of Canada, Toronto, Ontario, Canada

Representing Wire and Cable Manufacturing

I. Müller	American Wire Group, Lindsay, Ontario, Canada

Former Members

J. Côté	Hydro-Québec, Montréal, Québec, Canada
S. Farrell	Government of the Northwest Territories, Yellowknife, Northwest Territories, Canada
K. Fournier	Canadian Electricity Association, Ottawa, Ontario, Canada
T. Kitson	Department of Agriculture and Lands, Charlottetown, Prince Edward Island, Canada
J. Mantyla	Canadian Home Builders' Association, Ottawa, Ontario, Canada
D.G. Morlidge	Okotoks, Alberta, Canada
R. Pack	SaskPower, Saskatoon, Saskatchewan, Canada
S. Paulsen	CSA Group, Toronto, Ontario, Canada
S. Poutissou	CSA Group, Richmond, British Columbia, Canada
K.L. Rodel	Hubbell Canada LP, Pickering, Ontario, Canada
M. Staples	City of Victoria, Victoria, British Columbia, Canada
J. Zulak	National Defence Headquarters, Ottawa, Ontario, Canada

Regulatory Authority Committee

M. Pilato *(Chair)*	Technical Safety BC, Kelowna, British Columbia, Canada
J.C. Potts *(Vice-Chair)*	Nunavut Department of Community and Government Services, Iqaluit, Nunavut, Canada
M. S. Anderson	Technical Safety Authority of Saskatchewan, Regina, Saskatchewan, Canada
P. Daigle	New Brunswick Department of Justice and Public Safety, Miramichi, New Brunswick, Canada
K. Dunbar	Government of the Northwest Territories, Yellowknife, Northwest Territories, Canada
C. Fallon	City of St. John's Planning, Engineering and Regulatory Services, St. John's, Newfoundland and Labrador, Canada
K. Glubrecht	Alberta Municipal Affairs, Red Deer, Alberta, Canada
R. Grant	Nova Scotia Department of Labour, Skills & Immigration, Sydney, Nova Scotia, Canada
N. Hanna	Electrical Safety Authority, Mississauga, Ontario, Canada
T. K. Kjartanson	Manitoba Hydro, Winnipeg, Manitoba, Canada
H. Lang	Government of Yukon, Whitehorse, Yukon, Canada

S. H. Mallikarachchi	City of Winnipeg Planning, Property and Development, Winnipeg, Manitoba, Canada
D. Mayne	Government of Newfoundland and Labrador Human Resource Secretariat, St. John's, Newfoundland and Labrador, Canada
S. Mercier	Régie du bâtiment du Québec, Montréal, Québec, Canada
D. L. Pickering	City of Calgary, Calgary, Alberta, Canada
J. Rowley	City of Vancouver, Vancouver, British Columbia, Canada
M. Smith	Housing, Land and Communities, Government of Prince Edward Island, Charlottetown, Prince Edward Island, Canada
T. Pope *(Senior Project Manager)*	CSA Group, Toronto, Ontario, Canada

Executive Committee

T. Olechna *(Chair)*	CSA Consumer Network, Toronto, Ontario, Canada
T. Simmons *(Vice-Chair)*	British Columbia Institute of Technology, Burnaby, British Columbia, Canada
P. Desilets	Leviton Canada, Pointe-Claire, Québec, Canada
S. W. Douglas	QPS Evaluation Services Inc., Toronto, Ontario, Canada
N. Hanna	Electrical Safety Authority, Mississauga, Ontario, Canada
G. Lobay	CSA Consumer Network, Ottawa, Ontario, Canada
S. Mercier	Régie du bâtiment du Québec, Montréal, Québec, Canada
I. Müller	American Wire Group, Lindsay, Ontario, Canada
D.T. Roberts	Electrical Safety Solutions Inc., Mississauga, Ontario, Canada
A. Z. Tsisserev	AES Engineering Ltd., Vancouver, British Columbia, Canada
T. Pope *(Senior Project Manager)*	CSA Group, Toronto, Ontario, Canada

National Building Code/Canadian Electrical Code *Liaison Committee*

A. Z. Tsisserev *(Chair)*	AES Engineering Ltd., Vancouver, British Columbia, Canada
M. S. Anderson	Technical Safety Authority of Saskatchewan, Regina, Saskatchewan, Canada
G. Benjamin	ABB Electrification Canada Inc., Dorval, Québec, Canada
L. Cantelo	Larry Cantelo Technical Training, Camrose, Alberta, Canada
G. Dupont	Montréal, Québec, Canada
T. Fazzari	Mohawk College, Stoney Creek, Ontario, Canada
R. J. Kelly	Oasis Consulting, Ingleside, Ontario, Canada
A. Laroche	National Research Council Canada, Ottawa, Ontario, Canada
F. Lohmann	Canadian Home Builders' Association, Ottawa, Ontario, Canada
S. H. Mallikarachchi	City of Winnipeg Planning, Property and Development, Winnipeg, Manitoba, Canada
S. Mercier	Régie du bâtiment du Québec, Montréal, Québec, Canada
R. A. Nelson	National Electrical Trade Council, Ancaster, Ontario, Canada
T. Pope *(Senior Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section Subcommittees

Section 0 — Object, scope, and definitions

G. Lobay *(Chair)*	CSA Consumer Network, Ottawa, Ontario, Canada
S. Mercier *(Vice-Chair)*	Régie du bâtiment du Québec, Montréal, Québec, Canada
B. M. Baldwin	Baldwin Services Inc., Saskatoon, Saskatchewan, Canada
S. Burger	Electrical Safety Authority, Mississauga, Ontario, Canada
T. J. Burt	Fanshawe College Applied Science and Technology, London, Ontario, Canada
D. J. Heron	Heron Electrical Consulting Inc., Worthington, Ontario, Canada
J. N. Martin	Electrical Safety Authority Field Evaluation (ESAFE), Ottawa, Ontario, Canada
P. McDonald	St. Albert, Alberta, Canada
D. T. Roberts	Electrical Safety Solutions Inc., Mississauga, Ontario, Canada
H. Tremblay	Hydro-Québec, Montréal, Québec, Canada
A. Z. Tsisserev	AES Engineering Ltd., Vancouver, British Columbia, Canada
M. Wilson	CSA Group, Toronto, Ontario, Canada
T. Pope *(Senior Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 2 — General Rules

S. W. Douglas *(Chair)*	QPS Evaluation Services Inc., Toronto, Ontario, Canada
M. Smith *(Vice-Chair)*	CSA Consumer Network, Kitchener, Ontario, Canada
D. Beattie	Dan Beattie Electrical Inc., Spencerville, Ontario, Canada
D. Brière	CSA Group, Toronto, Ontario, Canada
L. Coulombe	Régie du bâtiment du Québec, Québec, Québec, Canada
S. Fisher	Technical Safety BC, Nanaimo, British Columbia, Canada
G. W. Jones	Assiniboine Community College, Brandon, Manitoba, Canada
R. J. Kelly	Oasis Consulting, Ingleside, Ontario, Canada
J. N. Martin	Electrical Safety Authority Field Evaluation (ESAFE), Ottawa, Ontario, Canada
D. T. Roberts	Electrical Safety Solutions Inc., Mississauga, Ontario, Canada
T. Pope *(Senior Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 4 — Conductors

I. Müller *(Chair)*	American Wire Group, Lindsay, Ontario, Canada
A. Z. Tsisserev *(Vice-Chair)*	AES Engineering Ltd., Vancouver, British Columbia, Canada
K. Bartlett	Electrical Safety Authority, Ottawa, Ontario, Canada
J. Calabrese	Mississauga, Ontario, Canada
R. P. de Lhorbe	North Vancouver, British Columbia, Canada
R. Drury	Electro Cables, Trenton, Ontario, Canada
S. Hall	CSA Group, Toronto, Ontario, Canada
M. Humphries	CSA Group, Toronto, Ontario, Canada
S. Kelly	Electrical Safety Authority, Ottawa, Ontario, Canada *(Representing International Association of Electrical Inspectors)*
R. Kummer	Southwire Co., Carrollton, Georgia, USA
R. A. Nelson	National Electrical Trade Council, Ancaster, Ontario, Canada
J. Rowley	City of Vancouver, Vancouver, British Columbia, Canada
J. Singh	Domtech Inc., Trenton, Ontario, Canada

M. Staples	City of Victoria, Victoria, British Columbia, Canada
M. McEwen *(Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 6 — Services and service equipment

G. W. Jones *(Chair)*	Assiniboine Community College, Brandon, Manitoba, Canada
R. T. Hiscock *(Vice-Chair)*	RTH Electrical Consulting, Fort Steele, British Columbia, Canada
G. Benjamin	ABB Electrification Canada Inc., Dorval, Québec, Canada
W. J. Burr	Burr and Associates, Campbell River, British Columbia, Canada
P. Falzon	Electrical Safety Authority, Mississauga, Ontario, Canada
R. J. Kelly	Oasis Consulting, Ingleside, Ontario, Canada
M. Mihaluk	Les installations électriques Auger inc., Montréal, Québec, Canada
E. J. Power	E.J. Power Engineering, Stanhope, Prince Edward Island, Canada
D. Schill	SaskPower, Regina, Saskatchewan, Canada
H. Tremblay	Hydro-Québec, Montréal, Québec, Canada
A. Z. Tsisserev	AES Engineering Ltd., Vancouver, British Columbia, Canada
T. Pope *(Senior Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 8 — Circuit loading and demand factors

A. Z. Tsisserev *(Chair)*	AES Engineering Ltd., Vancouver, British Columbia, Canada
S. W. Douglas *(Vice-Chair)*	QPS Evaluation Services Inc., Toronto, Ontario, Canada *(Representing International Association of Electrical Inspectors)*
J. Calabria	Smith + Andersen, Toronto, Ontario, Canada
C. C. Cormier	Nova Scotia Power, Halifax, Nova Scotia, Canada
L. Coulombe	Régie du bâtiment du Québec, Québec, Québec, Canada
K. Forbes	City of Lethbridge, Lethbridge, Alberta, Canada
K. W. Harrison	St. Albert, Alberta, Canada
S. Jenken	City of Winnipeg, Winnipeg, Manitoba, Canada
G. W. Jones	Assiniboine Community College, Brandon, Manitoba, Canada
R. J. Kelly	Oasis Consulting, Ingleside, Ontario, Canada
G. Kooner	Vancouver Airport Authority, Richmond, British Columbia, Canada
H. Park	Power Bus Way Ltd., Mississauga, Ontario, Canada
R. Yousef	Electrical Safety Authority, Mississauga, Ontario, Canada
M. McEwen *(Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 10 — Grounding and bonding

A. Pottier *(Chair)*	Underwriters Laboratories of Canada Inc., Toronto, Ontario, Canada
M. Pilato *(Vice-Chair)*	Technical Safety BC, Kelowna, British Columbia, Canada *(Representing International Association of Electrical Inspectors)*
G. Benjamin	ABB Electrification Canada Inc., Dorval, Québec, Canada
S. C. Bygrave	Stantec Consulting Ltd., Dartmouth, Nova Scotia, Canada
J. Calabrese	Mississauga, Ontario, Canada
T. Dinic	Electrical Safety Authority, Mississauga, Ontario, Canada
R. Leduc	Marex Canada Ltd., Calgary, Alberta, Canada
C. LeGrandeur	Cenovus Energy Inc., Calgary, Alberta, Canada
G. Lobay	CSA Consumer Network, Ottawa, Ontario, Canada

O. Maita	Inter Pipeline Ltd., Edmonton, Alberta, Canada
M. Mihaluk	Les installations électriques Auger inc., Montréal, Québec, Canada
J. Overton	Technical Safety BC, Port Alberni, British Columbia, Canada
M. Tarabain	Hydro-One, Barrie, Ontario, Canada
C. J. Workman	Eaton Industries (Canada) Co., Burlington, Ontario, Canada
M. McEwen *(Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 12 — Wiring methods

S. W. Douglas *(Chair)*	QPS Evaluation Services Inc., Toronto, Ontario, Canada *(Representing International Association of Electrical Inspectors)*
I. Müller *(Vice-Chair)*	American Wire Group, Lindsay, Ontario, Canada
M. S. Anderson	Technical Safety Authority of Saskatchewan, Regina, Saskatchewan, Canada
K. Bartlett	Electrical Safety Authority, Mississauga, Ontario, Canada
G. Benjamin	ABB Electrification Canada Inc., Dorval, Québec, Canada
P. Daigle	New Brunswick Department of Justice and Public Safety, Miramichi, New Brunswick, Canada
B. Fuhr	DJA Engineering Services, Calgary, Alberta, Canada
T. Hamden	Hubbell Canada, Pickering, Ontario, Canada
R. W. Horner	Atkore International (Allied Tube & Conduit Corp.), Harvey, Illinois, USA
I. Laouini	Corporation des maîtres électriciens du Québec, Montréal, Québec, Canada
A. Nause	IPEX Management Inc., Oakville, Ontario, Canada
A. Pottier	Underwriters Laboratories of Canada Inc., Toronto, Ontario, Canada
K. Richards	BnZ Engineering, Burlington, Ontario, Canada
A. Zubczyk	Georgian College, Barrie, Ontario, Canada
L. Letea *(Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 14 — Protection and control

R. P. de Lhorbe *(Chair)*	North Vancouver, British Columbia, Canada
R. T. Hiscock *(Vice-Chair)*	RTH Electrical Consulting, Fort Steele, British Columbia, Canada
T. Branch	PDR Technologies Inc., Oakville, Ontario, Canada
S. C. Bygrave	Stantec Consulting Ltd., Dartmouth, Nova Scotia, Canada
L. Coulombe	Régie du bâtiment du Québec, Québec, Québec, Canada
S. G. Davies	Tidewater Midstream and Infrastructure, Calgary, Alberta, Canada
T. Evans	Underwriters Laboratories of Canada Inc., Toronto, Ontario, Canada
G. T. Gingara	BHP, Saskatoon, Saskatchewan, Canada
D. J. Heron	Heron Electrical Consulting Inc., Worthington, Ontario, Canada
M. Lusk	CSA Group, Charlotte, North Carolina, USA
H. Masroor	Winnipeg, Ontario, Canada
W. C. Rossmann	Pegasus Consulting, Calgary, Alberta, Canada
T. Pope *(Senior Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 16 — Class 1 and Class 2 circuits

T. Simmons *(Chair)*	British Columbia Institute of Technology, Burnaby, British Columbia, Canada
T. K. Kjartanson *(Vice-Chair)*	Manitoba Hydro, Winnipeg, Manitoba, Canada
P. Doucet	New Brunswick Department of Justice and Public Safety, Moncton, New Brunswick, Canada

C. Fallon	City of St. John's Planning, Engineering and Regulatory Services, St. John's, Newfoundland and Labrador, Canada
D. Lenasi	Signify Canada Ltd., Langley, British Columbia, Canada
N. Mashayekh	Eaton's Bussmann Business, Lachine, Québec, Canada
R. Mitchell	Electrical Safety Authority, Mississauga, Ontario, Canada
P. Olders	G6 Systems, Inc., Toronto, Ontario, Canada *(Representing International Association of Electrical Inspectors)*
C. Quist	Nova Scotia Power Inc., Halifax, Nova Scotia, Canada
W. Saworski	SNC Lavalin, North Battleford, Saskatchewan, Canada
A. Z. Tsisserev	AES Engineering Ltd., Vancouver, British Columbia, Canada
C. Hamza *(Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 18 — Hazardous locations

T. S. Driscoll *(Chair)*	OBIEC Consulting Ltd., Calgary, Alberta, Canada
G. Lobay *(Vice-Chair)*	CSA Consumer Network, Ottawa, Ontario, Canada
A. Bozek	EngWorks Inc., Calgary, Alberta, Canada
M. T. Cole	Hubbell Canada ULC, Pickering, Ontario, Canada
G. Drew	Cenovus Energy Inc., Calgary, Alberta, Canada
D. J. Heron	Heron Electrical Consulting Inc., Worthington, Ontario, Canada
B. Keane	INNIO Waukesha, Welland, Ontario, Canada
R. Kohuch	QPS Evaluation Services Inc., Edmonton, Alberta, Canada
R. R. Langlois	Stantec Consulting Ltd., Waterloo, Ontario, Canada
W. G. Lawrence	FM Approvals LLC, Norwood, Massachusetts, USA
R. Leduc	Marex Canada Ltd., Calgary, Alberta, Canada
R. Loiselle	Calgary, Alberta, Canada
J. H. Morrison	QPS Evaluation Services Inc., Toronto, Ontario, Canada *(Representing International Association of Electrical Inspectors)*
V. Rowe	Marex Canada Ltd., Nanaimo, British Columbia, Canada
B. Schneider	Canary Hazardous Locations Experts, Edmonton, Alberta, Canada
D. Stochitoiu	CSA Group, Toronto, Ontario, Canada
T. Tremblay	Electrical Safety Authority, Sudbury, Ontario, Canada
G. Matuvi *(Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 20 — Flammable liquid and gasoline dispensing, service stations, garages, bulk storage plants, finishing processes, and aircraft hangars

T. Olechna *(Chair)*	CSA Consumer Network, Toronto, Ontario, Canada
V. Rowe *(Vice-Chair)*	Marex Canada Ltd., Nanaimo, British Columbia, Canada
I. Barnes	AES Engineering Ltd., Victoria, British Columbia, Canada
R. Charbonneau	P38 Energy Inc./Budget Propane, Valleyfield, Québec, Canada
L. Coulombe	Régie du bâtiment du Québec, Québec, Québec, Canada
G. J. Drew	Cenovus Energy Inc., Calgary, Alberta, Canada
G. Lobay	CSA Consumer Network, Ottawa, Ontario, Canada
A. Milivojevich	QPS Evaluation Services Inc., Toronto, Ontario, Canada *(Representing International Association of Electrical Inspectors)*
E. J. Power	E.J. Power Engineering, Stanhope, Prince Edward Island, Canada

D. Smith	Electrical Safety Authority, Mississauga, Ontario, Canada
G. Matuvi *(Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 22 — Locations in which corrosive liquids, vapours, or excessive moisture are likely to be present

N. Hanna *(Chair)*	Electrical Safety Authority, Mississauga, Ontario, Canada
R. J. Kelly *(Vice-Chair)*	Oasis Consulting, Ingleside, Ontario, Canada
L. Cantelo	Larry Cantelo Technical Training, Camrose, Alberta, Canada *(Representing International Association of Electrical Inspectors)*
G. T. Gingara	BHP, Saskatoon, Saskatchewan, Canada
M. Khalid	R.V. Anderson Associates Ltd., Toronto, Ontario, Canada
R. R. Langlois	Stantec Consulting Ltd., Waterloo, Ontario, Canada
M. Pilato	Technical Safety BC, Kelowna, British Columbia, Canada
G. T. Walker	Emery Electric, Shawnigan Lake, British Columbia, Canada
J. Zyta	Heartland Farm Mutual Insurance, Waterloo, Ontario, Canada
U. Flynn *(Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 24 — Patient care areas

A. Z. Tsisserev *(Chair)*	AES Engineering Ltd., Vancouver, British Columbia, Canada
G. Hughes *(Vice-Chair)*	University of New Brunswick Department of Health, Fredericton, New Brunswick, Canada
K.W. Blazey	Total Power Ltd., Mississauga, Ontario, Canada
M. Brodeur	CISSS de la Montérégie-Centre, Brossard, Québec, Canada
M. Brossoit	CSA Group, Pointe-Claire, Québec, Canada
R. Dodds	Provincial Health Service Authority, Vancouver, British Columbia, Canada
L. Ferchoff	North Hill Engineering, East St. Paul, Manitoba, Canada
J. Karman	SMP Engineering, Edmonton, Alberta, Canada
D. Madill	Electrical Safety Authority, Mississauga, Ontario, Canada
S. H. Mallikarachchi	City of Winnipeg Planning, Property and Development, Winnipeg, Manitoba, Canada
E. Smeltzer	Nova Scotia Power Inc., Lower Sackville, Nova Scotia, Canada *(Representing International Association of Electrical Inspectors)*
M. McEwen *(Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 26 — Installation of electrical equipment

T. Simmons *(Chair)*	British Columbia Institute of Technology, Burnaby, British Columbia, Canada
R. Leduc *(Vice-Chair)*	Marex Canada Ltd., Calgary, Alberta, Canada
L. Coulombe	Régie du bâtiment du Québec, Québec, Québec, Canada
P. Desilets	Leviton Canada, Pointe-Claire, Québec, Canada
V. V. Gagachev	Eaton, Burlington, Ontario, Canada
F. Lohmann	Canadian Home Builders' Association, Ottawa, Ontario, Canada
M. Mihaluk	Les installations électriques Auger inc., Montréal, Québec, Canada
R. A. Nelson	National Electrical Trade Council, Ancaster, Ontario, Canada
S. Rasaratnam	Schneider Electric Inc., Edmonton, Alberta, Canada
D. Smith	Electrical Safety Authority, Mississauga, Ontario, Canada

T. R. Titus	Electrical Safety Authority, New Hamburg, Ontario, Canada *(Representing International Association of Electrical Inspectors)*
A. Z. Tsisserev	AES Engineering Ltd., Vancouver, British Columbia, Canada
M. McEwen *(Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 28 — Motors and generators

M. Smith *(Chair)*	CSA Consumer Network, Kitchener, Ontario, Canada
V. V. Gagachev *(Vice-Chair)*	Eaton, Burlington, Ontario, Canada
P. Baltazart	City of Edmonton Facility Engineering Services, Edmonton, Alberta, Canada
D. Beattie	Dan Beattie Electrical Inc., Spencerville, Ontario, Canada
J. P. Boivin	CSA Group, Pointe-Claire, Québec, Canada
T. Branch	PDR Technologies Inc., Oakville, Ontario, Canada
S. G. Davies	Tidewater Midstream and Infrastructure, Calgary, Alberta, Canada
R. P. de Lhorbe	North Vancouver, British Columbia, Canada
C. Fallon	City of St. John's Planning, Engineering and Regulatory Services, St. John's, Newfoundland and Labrador, Canada
S. Finnagan	Arnprior, Ontario, Canada
E. J. Friesen	E.J. Friesen and Associates Inc., Calgary, Alberta, Canada
D. Pilon	Technical Safety Authority of Saskatchewan, Saskatoon, Saskatchewan, Canada
G. Matuvi *(Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 30 — Installation of lighting equipment

P. Desilets *(Chair)*	Leviton Canada, Pointe-Claire, Québec, Canada
M. Pilato *(Vice-Chair)*	Technical Safety BC, Kelowna, British Columbia, Canada
J. A. Davidson	JAD Consulting, Virden, Manitoba, Canada *(Representing International Association of Electrical Inspectors)*
T. Dinic	Electrical Safety Authority, Mississauga, Ontario, Canada
B. Keane	INNIO Waukesha, Welland, Ontario, Canada
D. Lemaux	CSA Group, Atlanta, Georgia, USA
D. Lenasi	Signify Canada Ltd., Langley, British Columbia, Canada
Q. Y. Li	Mainland Technical Services Inc., Richmond, British Columbia, Canada
M. Mihaluk	Les installations électriques Auger inc., Montréal, Québec, Canada
D. Rittenhouse	Maple Ridge, British Columbia, Canada
C. Hamza *(Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 32 — Fire alarm systems, smoke alarms, carbon monoxide alarms, and fire pumps

M. S. Anderson *(Chair)*	Technical Safety Authority of Saskatchewan, Regina, Saskatchewan, Canada
A. Z. Tsisserev *(Vice-Chair)*	AES Engineering Ltd., Vancouver, British Columbia, Canada
S. Aspinwall	Smith + Andersen, Toronto, Ontario, Canada
K. Bartlett	Electrical Safety Authority, Ottawa, Ontario, Canada
R. Delisle	Trade-Mark Industrial Inc., Guelph, Ontario, Canada
R. Dodds	Provincial Health Service Authority, Vancouver, British Columbia, Canada
C.J. Estereicher	Photon Electric, Cochrane, Alberta, Canada

D. Gnocchi	Tornatech Inc., Laval, Québec, Canada
S. Jenken	City of Winnipeg, Winnipeg, Manitoba, Canada
R. Kummer	Southwire Co., Carrollton, Georgia, USA
A. Pottier	Underwriters Laboratories of Canada Inc., Toronto, Ontario, Canada
V. R. Rochon	Roar Engineering, Mississauga, Ontario, Canada
P. Sloop	CSA Group, Cleveland, Ohio, USA
D. Weber	Canadian Fire Alarm Association, Markham, Ontario, Canada
C. J. Workman	Eaton Industries (Canada) Co., Burlington, Ontario, Canada
G. Matuvi *(Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 34 — Signs and outline lighting

M. Pilato *(Chair)*	Technical Safety BC, Kelowna, British Columbia, Canada
S.H. Mallikarachchi *(Vice-Chair)*	City of Winnipeg Planning, Property and Development, Winnipeg, Manitoba, Canada
L. Catton	Acme Design Service Ltd., Belle River, Ontario, Canada
F. Dabiet	Allanson International Inc., Markham, Ontario, Canada
J. A. Davidson	JAD Consulting, Virden, Manitoba, Canada *(Representing International Association of Electrical Inspectors)*
D. Froese	Seventy-Seven Signs Ltd., Saskatoon, Saskatchewan, Canada
D. Lemaux	CSA Group, Atlanta, Georgia, USA
D. Maron	Alberta Sign Association, Edmonton, Alberta, Canada
E. J. Power	E.J. Power Engineering, Stanhope, Prince Edward Island, Canada
T. Pope *(Senior Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 36 — High-voltage installations

R. P. de Lhorbe *(Chair)*	North Vancouver, British Columbia, Canada
B. Lipson *(Vice-Chair)*	AES Engineering Ltd., Vancouver, British Columbia, Canada
L. Coulombe	Régie du bâtiment du Québec, Québec, Québec, Canada
E. P. Dick	Electric Power Diagnostics, Toronto, Ontario, Canada
J. Fairbrother	ITI, Saanichton, British Columbia, Canada
R. Farquharson	S&C Electric, Toronto, Ontario, Canada
R. Head	Cambridge, Ontario, Canada *(Representing International Association of Electrical Inspectors)*
D. J. Heron	Heron Electrical Consulting Inc., Worthington, Ontario, Canada
O. Maita	Inter Pipeline Ltd., Edmonton, Alberta, Canada
E. Sleigh	Prime Engineering Ltd., Victoria, British Columbia, Canada
H. Tremblay	Hydro-Québec, Montréal, Québec, Canada
T. Tremblay	Electrical Safety Authority, Sudbury, Ontario, Canada
M. McEwen *(Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 38 — Elevators, dumbwaiters, material lifts, escalators, moving walks, lifts for persons with physical disabilities, and similar equipment

D. McColl *(Chair)*	Otis Canada Inc., Mississauga, Ontario, Canada
R. Grant *(Vice-Chair)*	Nova Scotia Department of Labour, Skills & Immigration, Sydney, Nova Scotia, Canada

A. Azhar	Schindler Elevator Corp., Randolph, New Jersey, USA
K. C. Cheong	MKC Engineering Corp., Vancouver, British Columbia, Canada
G. W. Jones	Assiniboine Community College, Brandon, Manitoba, Canada
D. Laguerre	Schindler Elevator Corp., Toronto, Ontario, Canada
D. McLellan	Technical Standards and Safety Authority (TSSA), Toronto, Ontario, Canada
S. Mercier	Régie du bâtiment du Québec, Montréal, Québec, Canada
M. Mihai	Technical Standards and Safety Authority (TSSA), Toronto, Ontario, Canada
R. Mitchell	Electrical Safety Authority, Mississauga, Ontario, Canada *(Representing International Association of Electrical Inspectors)*
S. Mollaei	AES Engineering Ltd., Vancouver, British Columbia, Canada
M. Pedram	Modern Elevator Innovations Inc., Hamilton, Ontario, Canada
L. Yang	CSA Group, Toronto, Ontario, Canada
T. Pope *(Senior Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 40 — Electric cranes and hoists

M. S. Anderson *(Chair)*	Technical Safety Authority of Saskatchewan, Regina, Saskatchewan, Canada
D. Mayne *(Vice-Chair)*	Government of Newfoundland and Labrador Human Resource Secretariat, St. John's, Newfoundland and Labrador, Canada
S. Bollito	Hamilton, Ontario, Canada
M. Chumkovski	QPS Evaluation Services Inc., Toronto, Ontario, Canada *(Representing International Association of Electrical Inspectors)*
S. W. Douglas	QPS Evaluation Services Inc., Toronto, Ontario, Canada
K. Hood	Lloydminster, Alberta, Canada
M. Lodge	Gantron, Surrey, British Columbia, Canada
T. Rodrigues	Technical Standards and Safety Authority (TSSA), Mississauga, Ontario, Canada
R. Rus	O'Brien Lifting Solutions, Burlington, Ontario, Canada
L. Uruski	Manitoba Department of Labour and Immigration, Winnipeg, Manitoba, Canada
L. Yang	CSA Group, Toronto, Ontario, Canada
T. Pope *(Senior Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 42 — Electric welders

G. Benjamin *(Chair)*	ABB Electrification Canada Inc., Dorval, Québec, Canada
R. May *(Vice-Chair)*	Surrey, British Columbia, Canada
J. P. Boivin	CSA Group, Pointe-Claire, Québec, Canada
B. Budinski	Edmonton, Alberta, Canada
K. Dunbar	Government of the Northwest Territories, Yellowknife, Northwest Territories, Canada
D. Hisey	Drumheller, Alberta, Canada
M. Mihaluk	Les installations électriques Auger inc., Montréal, Québec, Canada
A. Pottier	Underwriters Laboratories of Canada Inc., Toronto, Ontario, Canada
T. Pope *(Senior Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 44 — Theatre installations

S. Mercier *(Chair)*	Régie du bâtiment du Québec, Montréal, Québec, Canada
I. Laouini *(Vice-Chair)*	Corporation des maîtres électriciens du Québec, Montréal, Québec, Canada

B. Bennett	TO Live, Toronto, Ontario, Canada
J. Calabrese	Mississauga, Ontario, Canada
J. Feenstra	University of the Fraser Valley, Chilliwack, British Columbia, Canada
K. Hood	Lloydminster, Alberta, Canada *(Representing International Association of Electrical Inspectors)*
D. Lemaux	CSA Group, Atlanta, Georgia, USA
M. Mihaluk	Les installations électriques Auger inc., Montréal, Québec, Canada
U. Flynn *(Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 46 — Emergency power supply, unit equipment, exit signs, and life safety systems

A. Z. Tsisserev *(Chair)*	AES Engineering Ltd., Vancouver, British Columbia, Canada
M. S. Anderson *(Vice-Chair)*	Technical Safety Authority of Saskatchewan, Regina, Saskatchewan, Canada
S. Aspinwall	Smith + Andersen, Toronto, Ontario, Canada
G. Benjamin	ABB Electrification Canada Inc., Dorval, Québec, Canada
K. W. Blazey	Total Power Ltd., Mississauga, Ontario, Canada
S. C. Bygrave	Stantec Consulting Ltd., Dartmouth, Nova Scotia, Canada
R. Dodds	Provincial Health Service Authority, Vancouver, British Columbia, Canada
T. Fazzari	Mohawk College, Stoney Creek, Ontario, Canada
D. Lemaux	CSA Group, Atlanta, Georgia, USA
D. Madill	Electrical Safety Authority, Mississauga, Ontario, Canada
W. L. McAllister	City of Camrose, Camrose, Alberta, Canada
R. A. Nelson	National Electrical Trade Council, Ancaster, Ontario, Canada
M. Rendulic	Winnipeg School Division Building Department, Winnipeg, Manitoba, Canada
M. Staples	City of Victoria, Victoria, British Columbia, Canada
M. McEwen *(Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 52 — Diagnostic imaging installations

N. Hanna *(Chair)*	Electrical Safety Authority, Mississauga, Ontario, Canada
D. Langlois *(Vice-Chair)*	CSA Group, Toronto, Ontario, Canada
M. Brossoit	CSA Group, Pointe-Claire, Québec, Canada
J. C. Einarson	Whitehorse, Yukon, Canada
W. Wetmore	QPS Evaluation Services Inc., Toronto, Ontario, Canada
U. Flynn *(Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 54 — Community antenna distribution and radio and television installations

S. M. Turcot *(Chair)*	Bell Canada, Montréal, Québec, Canada
A. Van Steinburg *(Vice-Chair)*	International Brotherhood of Electrical Workers, Abbotsford, British Columbia, Canada
T. Chiu	Stantec Consulting Ltd., Vancouver, British Columbia, Canada
P. Olders	G6 Systems, Inc., Toronto, Ontario, Canada *(Representing International Association of Electrical Inspectors)*
T. Walker	TELUS, Calgary, Alberta, Canada
U. Flynn *(Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 56 — Optical fiber cables

S. M. Turcot *(Chair)*	Bell Canada, Montréal, Québec, Canada
A. Van Steinburg *(Vice-Chair)*	International Brotherhood of Electrical Workers, Abbotsford, British Columbia, Canada
I. Albanese	TELUS, Burnaby, British Columbia, Canada
T. Driscoll	OBIEC Consulting Ltd., Calgary, Alberta, Canada
S. Finnagan	Arnprior, Ontario, Canada
S. Hall	CSA Group, Toronto, Ontario, Canada
P. Olders	G6 Systems, Inc., Toronto, Ontario, Canada *(Representing International Association of Electrical Inspectors)*
V. Rowe	Marex Canada Ltd., Nanaimo, British Columbia, Canada
A. Z. Tsisserev	AES Engineering Ltd., Vancouver, British Columbia, Canada
U. Flynn *(Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 58 — Passenger ropeways and similar equipment

W. L. Sparks *(Chair)*	Doppelmayr Canada Ltd., Kelowna, British Columbia, Canada
S. Mercier *(Vice-Chair)*	Régie du bâtiment du Québec, Montréal, Québec, Canada
D. Bruce	Alberta Municipal Affairs, Edmonton, Alberta, Canada
M. Chumkovski	QPS Evaluation Services Inc., Toronto, Ontario, Canada *(Representing International Association of Electrical Inspectors)*
V. C. Lightfoot	Cranbrook, British Columbia, Canada
P. McDermott	Technical Standards and Safety Authority (TSSA), Toronto, Ontario, Canada
D. Uddenberg	PBX Engineering Ltd., Vancouver, British Columbia, Canada
T. Pope *(Senior Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 60 — Electrical communication systems

S. M. Turcot *(Chair)*	Bell Canada, Montréal, Québec, Canada
R. Grant *(Vice-Chair)*	Nova Scotia Department of Labour, Skills & Immigration, Sydney, Nova Scotia, Canada
S. Bent	Nova Scotia Power Inc., Kingston, Nova Scotia, Canada *(Representing International Association of Electrical Inspectors)*
P. Desilets	Leviton Canada, Pointe-Claire, Québec, Canada
S. Finnagan	Arnprior, Ontario, Canada
A. Z. Tsisserev	AES Engineering Ltd., Vancouver, British Columbia, Canada
T. Walker	TELUS, Calgary, Alberta, Canada
S. Wells	Digital Government and Service NL, Gander, Newfoundland and Labrador, Canada
U. Flynn *(Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 62 — Fixed electric heating systems

T. S. Driscoll *(Chair)*	OBIEC Consulting Ltd., Calgary, Alberta, Canada
J. Turner *(Vice-Chair)*	Swansea Consulting, Toronto, Ontario, Canada
L. Ahmadyar	nVent Thermal Canada Ltd., Edmonton, Alberta, Canada
R. Barth	Thermon Inc., San Marcos, Texas, USA
G. Gone	Electrical Safety Authority, Mississauga, Ontario, Canada
J. Bylinski	Stelpro Design Inc., St-Bruno, Québec, Canada

J. Calabrese	Mississauga, Ontario, Canada
T. De Francesco	Aeromation Inc., Vancouver, British Columbia, Canada
P. D. den Bakker	Shell Canada Ltd., Calgary, Alberta, Canada
G. Gagnon	Schluter Systems (Canada) Inc., Ste-Anne-de-Bellevue, Québec, Canada
T. Hamden	Hubbell Canada, Pickering, Ontario, Canada
M. Humphries	CSA Group, Toronto, Ontario, Canada
T. Jackson	CSA Group, Cleveland, Ohio, USA
R. Loiselle	Calgary, Alberta, Canada
D. W. McCallum	PCL Industrial Management, Edmonton, Alberta, Canada
J. Overton	Technical Safety BC, Port Alberni, British Columbia, Canada *(Representing International Association of Electrical Inspectors)*
E. D. Stephens	Emerson, Elmira, Ontario, Canada
L. Tiracchia *(Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 64 — Renewable energy systems, energy production systems, energy storage systems, and batteries

T. Simmons *(Chair)*	British Columbia Institute of Technology, Burnaby, British Columbia, Canada
S. W. Douglas *(Vice-Chair)*	QPS Evaluation Services Inc., Toronto, Ontario, Canada
T. Buchal	Independent Consultant, Oak Hill, New York, USA
S. Eng	Enviro-Energy Technologies Inc., Markham, Ontario, Canada
T. K. Kjartanson	Manitoba Hydro, Winnipeg, Manitoba, Canada
P. Lourdu	e2 Engineering, Victoria, British Columbia, Canada
D. Madill	Electrical Safety Authority, Mississauga, Ontario, Canada
J. Pinter	Pinter Electrical Consulting Inc., Lake Country, British Columbia, Canada
D. B. Pollock	Electrical Safety Authority, Ilderton, Ontario, Canada *(Representing International Association of Electrical Inspectors)*
A. Pottier	Underwriters Laboratories of Canada Inc., Toronto, Ontario, Canada
E. W. Smiley	Reid Wylde Engineering Ltd., Courtenay, British Columbia, Canada
M. McEwen *(Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 66 — Amusement parks, midways, carnivals, film and TV sets, TV remote broadcasting locations, and travelling shows

S. Mercier *(Chair)*	Régie du bâtiment du Québec, Montréal, Québec, Canada
A. Wanuch *(Vice-Chair)*	KRE Electric Ltd., Mississauga, Ontario, Canada
J. Calabrese	Mississauga, Ontario, Canada
R. Holden	MBS Equipment Co. Canada, Burnaby, British Columbia, Canada
K. Hood	Lloydminster, Alberta, Canada *(Representing International Association of Electrical Inspectors)*
J. Porter	Toronto, Ontario, Canada
A. Tully	City of Vancouver, Vancouver, British Columbia, Canada
K. S. Woods	IATSE Local 891, Port Moody, British Columbia, Canada
U. Flynn *(Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 68 — Pools, tubs, and spas

K. Dunbar *(Chair)*	Government of the Northwest Territories, Yellowknife, Northwest Territories, Canada

M. S. Anderson *(Vice-Chair)*	Technical Safety Authority of Saskatchewan, Regina, Saskatchewan, Canada
S. W. Douglas	QPS Evaluation Services Inc., Toronto, Ontario, Canada
J. Gurney	Hydro One Networks Inc., Toronto, Ontario, Canada
D. Lemaux	CSA Group, Atlanta, Georgia, USA
T. Minna	EPI Electrical Contractors, Brampton, Ontario, Canada
I. Robinson	City of Winnipeg Planning, Property and Development, Winnipeg, Manitoba, Canada
L. B. Ross	Newmarket, Ontario, Canada
D. Smith	Electrical Safety Authority, Mississauga, Ontario, Canada
A. Thornley	City of Vancouver, Vancouver, British Columbia, Canada
U. Flynn *(Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 70 — Electrical requirements for factory-built relocatable structures and non-relocatable structures

J. C. Potts *(Chair)*	Nunavut Department of Community and Government Services, Iqaluit, Nunavut, Canada
H. Lang *(Vice-Chair)*	Government of Yukon, Whitehorse, Yukon, Canada
M. S. Anderson	Technical Safety Authority of Saskatchewan, Regina, Saskatchewan, Canada
P. Daigle	New Brunswick Department of Justice and Public Safety, Miramichi, New Brunswick, Canada
J. C. Einarson	Whitehorse, Yukon, Canada
J. Hermary	Nickel Electric Ltd., Brandon, Manitoba, Canada
K. D. Maynard	Canadian Home Builders' Association, Ottawa, Ontario, Canada
R. W. Morin	Grafton, Ontario, Canada *(Representing International Association of Electrical Inspectors)*
V. Thielmann	Nova 3 Engineering Ltd., Winnipeg, Manitoba, Canada
T. Pope *(Senior Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 72 — Mobile home and recreational vehicle parks

R. Leduc *(Chair)*	Marex Canada Ltd., Calgary, Alberta, Canada
J. C. Potts *(Vice-Chair)*	Nunavut Department of Community and Government Services, Iqaluit, Nunavut, Canada
M. S. Anderson	Technical Safety Authority of Saskatchewan, Regina, Saskatchewan, Canada
P. Daigle	New Brunswick Department of Justice and Public Safety, Miramichi, New Brunswick, Canada
J. C. Einarson	Whitehorse, Yukon, Canada
D. J. Heron	Heron Electrical Consulting Inc., Worthington, Ontario, Canada
K. Hood	Lloydminster, Alberta, Canada
M. Pace	Electrical Safety Authority, Mississauga, Ontario, Canada
M. Staples	City of Victoria, Victoria, British Columbia, Canada
T. Pope *(Senior Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 74 — Airport installations

C. C. Cormier *(Chair)*	Nova Scotia Power, Halifax, Nova Scotia, Canada
S. W. Douglas *(Vice-Chair)*	QPS Evaluation Services Inc., Toronto, Ontario, Canada
E. J. Alf	Transport Canada — AARTAE, Ottawa, Ontario, Canada

G. W. Bradbury	BTE Engineering Technology Services, St. Petersburg, Florida, USA *(Representing International Association of Electrical Inspectors)*
R. Chernish	Department of National Defence, Winnipeg, Manitoba, Canada
D. Fedyshen	Plains Midstream Canada, Olds, Alberta, Canada
G. T. Gingara	BHP, Saskatoon, Saskatchewan, Canada
G. Kooner	Vancouver Airport Authority, Richmond, British Columbia, Canada
R. Larivée	Avia Rupta Solutions Inc., Laval, Québec, Canada
S. H. Mallikarachchi	City of Winnipeg Planning, Property and Development, Winnipeg, Manitoba, Canada
T. Pope *(Senior Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 76 — Temporary wiring

J. Rowley *(Chair)*	City of Vancouver, Vancouver, British Columbia, Canada
S. W. Douglas *(Vice-Chair)*	QPS Evaluation Services Inc., Toronto, Ontario, Canada *(Representing International Association of Electrical Inspectors)*
G. Bone	Electrical Safety Authority, Mississauga, Ontario, Canada
J. Calabrese	Mississauga, Ontario, Canada
T. K. Kjartanson	Manitoba Hydro, Winnipeg, Manitoba, Canada
R. Kummer	Southwire Co., Carrollton, Georgia, USA
S. Nair	WorkSafe BC, Richmond, British Columbia, Canada
B. O'Donnell	AC Powerline Construction, Pickering, Ontario, Canada
M. McEwen *(Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 78 — Marine wharves, docking facilities, fixed and floating piers, and boathouses

A. Pottier *(Chair)*	Underwriters Laboratories of Canada Inc., Toronto, Ontario, Canada
D. Mayne *(Vice-Chair)*	Government of Newfoundland and Labrador Human Resource Secretariat, St. John's, Newfoundland and Labrador, Canada
W. J. Burr	Burr and Associates, Campbell River, British Columbia, Canada
P. Daigle	New Brunswick Department of Justice and Public Safety, Miramichi, New Brunswick, Canada
T. Dinic	Electrical Safety Authority, Mississauga, Ontario, Canada
C. J. Estereicher	Photon Electric, Cochrane, Alberta, Canada
D. J. Heron	Heron Electrical Consulting Inc., Worthington, Ontario, Canada
D. Kalles	Bruce Power, Tiverton, Ontario, Canada
M. L. Vollmer	Michael Vollmer Yacht Design Inc., Burlington, Ontario, Canada
T. Pope *(Senior Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 80 — Cathodic protection

H. Lang *(Chair)*	Government of Yukon, Whitehorse, Yukon, Canada
D. L. Pickering *(Vice-Chair)*	City of Calgary, Calgary, Alberta, Canada
R. J. Maynard	Aurora Corrosion Control, a division of Aurora Environmental Consulting Ltd., Calgary, Alberta, Canada
D. Schill	SaskPower, Regina, Saskatchewan, Canada *(Representing International Association of Electrical Inspectors)*
A. Z. Tsisserev	AES Engineering Ltd., Vancouver, British Columbia, Canada

R. G. Wakelin	Gull River Engineering Inc., Brooklin, Ontario, Canada
T. Pope *(Senior Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 84 — Interconnection of electric power production sources

S. W. Douglas *(Chair)*	QPS Evaluation Services Inc., Toronto, Ontario, Canada
G. W. Jones *(Vice-Chair)*	Assiniboine Community College, Brandon, Manitoba, Canada
M. S. Anderson	Technical Safety Authority of Saskatchewan, Regina, Saskatchewan, Canada
D. Desrosiers	Institute of Electrical Power Engineering, Montréal, Québec, Canada
E. P. Dick	Electric Power Diagnostics, Toronto, Ontario, Canada
D. J. Heron	Heron Electrical Consulting Inc., Worthington, Ontario, Canada
B. Lipson	AES Engineering Ltd., Vancouver, British Columbia, Canada
A. Mak	WorleyParsons Canada, Edmonton, Alberta, Canada
D. Mascarenhas	Brampton, Ontario, Canada
A. Pottier	Underwriters Laboratories of Canada Inc., Toronto, Ontario, Canada
J. C. Potts	Nunavut Department of Community and Government Services, Iqaluit, Nunavut, Canada *(Representing International Association of Electrical Inspectors)*
V. Rowe	Marex Canada Ltd., Nanaimo, British Columbia, Canada
T. Simmons	British Columbia Institute of Technology, Burnaby, British Columbia, Canada
T. Pope *(Senior Project Manager)*	CSA Group, Toronto, Ontario, Canada

Section 86 — Electric vehicle charging systems

P. Desilets *(Chair)*	Leviton Canada, Pointe-Claire, Québec, Canada
D. Mascarenhas *(Vice-Chair)*	Brampton, Ontario, Canada
D. Chandler	AES Engineering, Vancouver, British Columbia, Canada
D. Corbeil	Electric Vehicle Association of Québec, Laval, Québec, Canada
J. Côté	Hydro-Québec, Montréal, Québec, Canada
S. Dallas	Toronto Electric, Electric Mobility Canada, Toronto, Ontario, Canada
P. R. Hinse	University of Ontario Institute of Technology, Oshawa, Ontario, Canada
I. Laouini	Corporation des maîtres électriciens du Québec, Montréal, Québec, Canada
C. Marquis	AddÉnergie, Québec, Québec, Canada
T. W. Odell	Toronto Hydro-Electric System Ltd., Toronto, Ontario, Canada
J. Overton	Technical Safety BC, Port Alberni, British Columbia, Canada
J. C. Potts	Department of Community and Government Services, Government of Nunavut, Iqaluit, Nunavut, Canada *(Representing International Association of Electrical Inspectors)*
J. E. Tarchinski	General Motors Co., Warren, Michigan, USA
A. Z. Tsisserev	AES Engineering Ltd., Vancouver, British Columbia, Canada
R. Yousef	Electrical Safety Authority, Mississauga, Ontario, Canada
U. Khan *(Project Manager)*	CSA Group, Toronto, Ontario, Canada

Appendix C

T. Olechna *(Chair)*	CSA Consumer Network, Toronto, Ontario, Canada

Appendix D

I. Müller *(Chair)* American Wire Group, Lindsay, Ontario, Canada

Appendix F

T. S. Driscoll *(Chair)* OBIEC Consulting Ltd., Calgary, Alberta, Canada

Appendix G

A. Z. Tsisserev *(Chair)* AES Engineering Ltd., Vancouver, British Columbia, Canada

Appendix J — Annex J18

T. S. Driscoll *(Chair)* OBIEC Consulting Ltd., Calgary, Alberta, Canada

Appendix J — Annex J20

T. Olechna CSA Consumer Network, Toronto, Ontario, Canada

Appendix L

T. S. Driscoll *(Chair)* OBIEC Consulting Ltd., Calgary, Alberta, Canada

Preface

This twenty-sixth edition of the *Canadian Electrical Code, Part I*, was approved by the Committee on the *Canadian Electrical Code, Part I*, and by the Regulatory Authority Committee at their June 2023 meetings. This twenty-sixth edition supersedes the previous editions published in 2021, 2018, 2015, 2012, 2009, 2006, 2002, 1998, 1994, 1990, 1986, 1982, 1978, 1975, 1972, 1969, 1966, 1962, 1958, 1953, 1947, 1939, 1935, 1930, and 1927.

This edition contains important revisions to many Sections. Section 64 contains major revisions for energy storage and renewable energy systems, including a new Subsection for residential occupancies and updates to photovoltaic system requirements. Several important changes appear in Section 68, including new requirements for disconnecting means and bonding conductive pool infrastructure.

Section 66 now requires ground fault circuit interrupter protection for cords connected to receptacles placed in temporary installations such as tents for outdoor functions.

Other significant revisions in this edition include the following:

- voltage definitions for dc circuit voltages have been revised in Section 0;
- Section 2 sees the addition of new requirements for reduction of arcing fault clearing times and clarification on use of ingress protection designations;
- in addition to traditional AWG and kcmil sizes, use of conductors sized in mm^2 is now recognized through revisions to Section 4 and a new table;
- load calculations for installations with electric vehicle supply equipment have been revised in Section 8 and simplified through the deletion of Table 38;
- many new products and updates to wiring methods are recognized in Section 12, including sag and span requirements for overhead installations and new Rules for non-metallic jacketed cable;
- sealing requirements have been substantially revised in Section 18 and Annex J18;
- Section 36 now features Rules for installation of high-voltage couplers (i.e., devices that provide a means to repeatedly join and separate portable power cables);
- Table 11 has been reformatted into two new tables (11A and 11B) and made easier to use through a layout similar to Table 19;
- Annexes A.1 and A.2 of Appendix A and the Index have been reinstated;
- Appendix K has been deleted; and
- the word “allowable” has been removed from “allowable ampacities” throughout most of the Code.

Many of the changes in this edition were developed by cross-functional working groups. Their work is gratefully acknowledged.

This edition of the *Canadian Electrical Code, Part I*, is dedicated to the life and memory of our friend and colleague, Pierre Desilets, whose dedication and contributions helped make the publication of this document possible.

General arrangement

The Code is divided into numbered Sections, each covering some main division of the work. Sections 0 to 16 and 26 are considered general Sections, and the other Sections supplement or amend the general Sections. The Sections are divided into numbered Rules, with captions for easy reference, as follows:

a) **Numbering system** — With the exception of Section 38, even numbers have been used throughout to identify Sections and Rules. Rule numbers consist of the Section number separated by a hyphen from the 3- or 4-digit figure. The intention in general is that odd numbers may be used for new Rules required by interim revisions. Due to the introduction of some new Rules and the deletion of some existing Rules during the revision of each edition, the Rule numbers for any particular requirement are not always the same in successive editions.

