Trades Access Common Core

Line D: Organizational Skills
Competency D-4: Use Codes, Regulations and Standards

Trades Access
COMMON CORE

Line D: Organizational Skills

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Foreword

The BC Open Textbook Project began in 2012 with the goal of making post-secondary education in British Columbia more accessible by reducing student cost through the use of openly licensed textbooks. The BC Open Textbook Project is administered by BCcampus and is funded by the British Columbia Ministry of Advanced Education.

Open textbooks are open educational resources (OER); they are instructional resources created and shared in ways so that more people have access to them. This is a different model than traditionally copyrighted materials. OER are defined as teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property licence that permits their free use and repurposing by others (Hewlett Foundation). Our open textbooks are openly licensed using a Creative Commons licence, and are offered in various e-book formats free of charge, or as printed books that are available at cost. For more information about this project, please contact opentext@bccampus.ca. If you are an instructor who is using this book for a course, please let us know.

Preface

The concept of identifying and creating resources for skills that are common to many trades has a long history in the Province of British Columbia. This collection of Trades Access Common Core (TACC) resources was adapted from the 15 Trades Common Core line modules co-published by the Industry Training and Apprenticeship Commission (ITAC) and the Centre for Curriculum Transfer and Technology (C2T2) in 2000-2002. Those modules were revisions of the original Common Core portion of the TRAC modules prepared by the Province of British Columbia Ministry of Post-Secondary Education in 1986. The TACC resources are still in use by a number of trades programs today and, with the permission from the Industry Training Authority (ITA), have been utilized in this project.

These open resources have been updated and realigned to match many of the line and competency titles found in the Province of BC's trades apprenticeship program outlines. A review was carried out to analyze the provincial program outlines of a number of trades, with the intent of finding common entry-level learning tasks that could be assembled into this package. This analysis provided the template for the outline used to update the existing modules. Many images found in ITA apprentice training modules were also incorporated into these resources to create books that are similar to what students will see when they continue their chosen trades training. The project team has also taken many new photographs for this project, which are available for use in other trades training resources.

The following list of lines and competencies was generated with the goal of creating an entry-level trades training resource, while still offering the flexibility for lines to be used as stand-alone books. This flexibility—in addition to the textbook content being openly licensed—allows these resources to be used within other contexts as well. For example, instructors or institutions may incorporate these resources into foundation-level trades training programming or within an online learning management system (LMS).

Line A – Safe Work Practices
- A-1 Control Workplace Hazards
- A-2 Describe WorkSafeBC Regulations
- A-3 Handle Hazardous Materials Safely
- A-4 Describe Personal Safety Practices
- A-5 Describe Fire Safety

Line B – Employability Skills
- B-1 Apply Study and Learning Skills
- B-2 Describe Expectations and Responsibilities of Employers and Employees
- B-3 Use Interpersonal Communication Skills
- B-4 Describe the Apprenticeship System

Line C – Tools and Equipment
- C-1 Describe Common Hand Tools and Their Uses
- C-2 Describe Common Power Tools and Their Uses
- C-3 Describe Rigging and Hoisting Equipment
- C-4 Describe Ladders and Platforms

Line D – Organizational Skills
- D-1 Solve Trades Mathematical Problems
- D-2 Apply Science Concepts to Trades Applications
- D-3 Read Drawings and Specifications
- D-4 Use Codes, Regulations, and Standards
- D-5 Use Manufacturer and Supplier Documentation
- D-6 Plan Projects

Line E – Electrical Fundamentals
- E-1 Describe the Basic Principles of Electricity
- E-2 Identify Common Circuit Components and Their Symbols
- E-3 Explain Wiring Connections
- E-4 Use Multimeters

All of these textbooks are available in a variety of formats in addition to print:

- PDF—printable document with TOC and hyperlinks intact
- HTML—basic export of an HTML file and its assets, suitable for use in learning management systems
- Reflowable EPUB—format that is suitable for all screen sizes including phones

All of the self-test questions are also available from BCcampus as separate data, if instructors would like to use the questions for online quizzes or competency testing.

About This Book

In an effort to make this book a flexible resource for trainers and learners, the following features are included:

- An introduction outlining the high-level goal of the Competency, and a list of objectives reflecting the skills and knowledge a person would need to achieve to fulfill this goal.
- Discrete Learning Tasks designed to help a person achieve these objectives
- Self-tests at the end of each Learning Task, designed to informally test for understanding.
- A reminder at the end of each Competency to complete a Competency test. Individual trainers are expected to determine the requirements for this test, as required.
- Throughout the textbook, there may also be links and/or references to other resources that learners will need to access, some of which are only available online.
- Notes, cautions, and warnings are identified by special symbols. A list of those symbols is provided below.

Symbols Legend

Important: This icon highlights important information.

Poisonous: This icon is a reminder for a potentially toxic/poisonous situation.

Resources: The resource icon highlights any required or optional resources.

Flammable: This icon is a reminder for a potentially flammable situation.

Self-test: This icon reminds you to complete a self-test.

Explosive: This icon is a reminder for a possibly explosive situation.

Safety gear: The safety gear icon is an important reminder to use protective equipment.

Electric shock: This icon is a reminder for potential electric shock.

Safety Advisory

Be advised that references to the Workers' Compensation Board of British Columbia safety regulations contained within these materials do not/may not reflect the most recent Occupational Health and Safety Regulation. The current Standards and Regulation in BC can be obtained at the following website: http://www.worksafebc.com.

Please note that it is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulation pertaining to his/her area of work.

BCcampus
January 2015

Disclaimer

The materials in the Trades Access Common Core Open Textbook project are for use by students and instructional staff and have been compiled from sources believed to be reliable and to represent best current opinions on these subjects. These manuals are intended to serve as a starting point for good practices and may not specify all minimum legal standards. No warranty, guarantee or representation is made by BCcampus as to the accuracy or sufficiency of the information contained in these publications. These manuals are intended to provide basic guidelines for trade practices. Do not assume, therefore, that all necessary warnings and safety precautionary measures are contained in this module and that other or additional measures may not be required.

Contents

Introduction

Codes, regulations, standards, specifications, and recommended practices are used in all aspects of construction, fabrication, manufacturing, and inspection.

The earliest building code is thought to have been developed sometime between 1955 BC and 1913 BC, during the reign of King Hammurabi of Babylon. The code was more of an enforcement document in that it didn't specify how to build a building but laid out the consequences of not building well. If a house fell and killed the owner or his child, then the builder or his child would be slain in retaliation.

Today's codes are more specific and less punitive. But like Hammurabi's code, they express society's will on a particular technical issue, specifying a desired outcome.

Objectives

When you have completed the Learning Tasks in this Competency, you should be able to:

- Describe the differences between codes, standards, regulations, and by-laws

- Describe codes and standards agencies and organizations affecting the trades

- Describe testing agencies and organizations affecting the trades

- Describe enforcement authorities affecting the trades

- Explain standards and how they affect the trades

- Explain codes and how they affect the trades

- Explain acts, regulations, by-laws, and how they affect the trades

Resources

R   You will be required to reference publications and videos available online.

LEARNING TASK 1

Describe authorities, agencies, and organizations affecting the trades

A *standard* is a level of quality and legitimacy that has been agreed upon through consultation, experience, and rigorous testing. *Standardization* is the development and application of standards publications that establish accepted practices, technical requirements, and terminologies for products, services, and systems.

Through standardization, *specifications* are produced. *Specifications* are a detailed description of how something should be installed or constructed.

The following are some of the organizations that develop, test, and regulate standards and codes nationally and internationally.

Codes and standards organizations

A standards organization's primary activities are developing technical codes and standards that are intended to address the needs of industries that adopt them. Standards organizations can be classified by their role, position, and the extent of their influence on the local, regional, national, and global standardization arena. There exist regional, national, and international standards bodies.

There are many international standards organizations. The three largest and most well established are the International Organization for Standardization, the International Electrotechnical Commission, and the International Telecommunication Union. These three organizations together make up the World Standards Cooperation (WSC) alliance.

The WSC organizations are all based in Geneva, Switzerland, and together have established tens of thousands of standards covering almost every conceivable topic. Many of these standards have naturally evolved from those designed in-house within an industry or by a particular country, while others have been built from scratch by groups of experts who sit on various technical committees.

In general, each country or economy has a single recognized national standards body. National standards bodies usually do not prepare the technical content of standards, which instead is developed by national technical societies.

International Organization for Standardization (ISO)

The International Organization for Standardization (ISO) is an independent, non-governmental organization, the members of which are the standards organizations of the 163 member countries. ISO is the world's largest developer of voluntary international standards and facilitates

world trade by providing common standards between nations. ISO's main products are international standards, although it also publishes technical reports, technical specifications, publicly available specifications, and guides on topics ranging from clothing to lifejackets, pressure safety valves to workplace air quality.

The Standards Council of Canada (SCC)

The Standards Council of Canada (SCC) is a federal Crown corporation. Its mandate is to promote efficient and effective standardization in Canada. The SCC does not develop standards itself; rather the SCC accredits organizations that develop standards in Canada. It coordinates standards work in Canada and ensures Canada has input on standards issues within international standards organizations.

Accreditation is the verification that an organization has the competence necessary to carry out a specific function, and the SCC's accreditation programs are based on internationally recognized guidelines and standards. SCC accredits Canadian standards development organizations and also approves Canadian standards as National Standards of Canada, based on a specific set of requirements.

Canadian General Standards Board (CGSB)

The Canadian General Standards Board (CGSB) is an active participant in the National Standards System of Canada. It offers a wide range of standards services, including development of National Standards of Canada, CGSB standards, and Government of Canada Standards, and supports the ISO in the development of international standards.

The CGSB currently has approximately 350 standards in the following areas:

- building and construction

- business (office) equipment, supplies, and furniture

- electronic records as documentary evidence

- food and organic agriculture

- geomatics

- Government of Canada forms

- non-destructive testing

- paper and paper products

- personnel qualifications and competencies

- protective clothing

- textiles

- transportation fuels

- transportation of dangerous goods

National Research Council of Canada (NRC)

The National Research Council (NRC) is the primary national research and technology organization of the Government of Canada in science and technology research and development. The federal Minister of Industry is responsible for the NRC.

The objectives of NRC are to create, acquire, and promote the application of scientific and engineering knowledge to meet Canadian needs for economic, regional, and social development and to promote and provide for the use of scientific and technical information by the people and the Government of Canada.

To keep pace with changes, a new edition of the National Building Code is published approximately every five years. NRC's Canadian Codes Centre (CCC) plays a vital role in this process by providing technical and administrative support to the Canadian Commission on Building and Fire Codes and its related committees, which are responsible for developing Canada's National Model Construction Codes. These codes are the following:

- National Energy Code of Canada for Buildings 2011 (NECB)

- National Building Code of Canada 2010 (NBC)

- National Fire Code of Canada 2010 (NFC)

- National Plumbing Code of Canada 2010 (NPC)

- National Farm Building Code of Canada 1995 (NFBC)

- Historical editions of the National Construction Codes (1941–1998)

Canadian Commission on Building and Fire Codes (CCBFC)

Established by the NRC, the Canadian Commission on Building and Fire Codes (CCBFC) develops and maintains Canada's National Model Construction Codes. The CCBFC receives policy advice from the Provincial-Territorial Policy Advisory Committee on Codes, which is made up of representatives from the provincial and territorial ministries responsible for building, plumbing, and fire safety regulation. The CCBFC formally approves all model code documents and technical revisions prior to publication by the NRC.

Canadian Standards Association (CSA)

The Canadian Standards Association (CSA) is the largest standards development organization in Canada, with standards covering more than 50 areas. It has published more than 3000 standards and codes addressing subjects that affect the interests of industry, consumers, regulators, and the public at large. The CSA mark can be found on items like steel pipe, hard hats, appliances, and motor vehicles.

Transport Canada

Transport Canada works with industry and government partners to make Canada's roads safe. Governed by the Canada Motor Vehicle Safety Act and the Motor Vehicle Transport Act, they propose, apply, and enforce national safety standards in three main areas:

- vehicle safety—by setting safety standards for the design, construction, and importation of the many types of motor vehicles

- child safety—by working to make sure that child car seats provide the best possible protection

- motor carriers, commercial vehicles, and their drivers—by establishing the safety fitness requirements by which provinces and territories regulate motor carriers under federal jurisdiction and by regulating drivers' hours of service to prevent accidents due to fatigue

American National Standards Institute (ANSI)

The American National Standards Institute (ANSI) does not develop standards but oversees the development and use of standards by accrediting the procedures of standards-developing organizations. The ANSI accreditation signifies that the procedures used by standards-developing organizations meet the institute's requirements for openness, balance, consensus, and due process. This in turn quickens the market acceptance of products.

ANSI also designates specific standards as American National Standards (ANS), and there are approximately 9500 ANS that carry the ANSI designation.

ANSI is the official U.S. representative to the two major international standards organizations, the International Organization for Standardization and the International Electrotechnical Commission.

American Society of Mechanical Engineers (ASME)

Founded in 1880, the American Society of Mechanical Engineers (ASME) is one of the oldest standards-developing organizations in the United States. ASME is a leading international developer of codes and standards associated with the art, science, and practice of mechanical engineering. It produces approximately 600 codes and standards covering many technical areas such as elevators, amusement rides, industrial fasteners, plumbing fixtures, pipelines, and power plant systems and components.

ASTM International (ASTM)

ASTM International (ASTM), formerly known as the American Society for Testing and Materials, was formed in 1898. It develops international voluntary consensus standards serving a diverse range of industries from metals to construction, petroleum to consumer products, and many more. Today, some 12 000 ASTM standards are commonly used for the various grades of steel pipe and tubing used in certain trades.

SAE International

SAE International, initially established as the Society of Automotive Engineers, is a U.S.-based, globally active professional association and standards organization for engineering professionals in various industries. Its principal emphasis is on transport industries such as automotive, aerospace, and commercial vehicles.

SAE International provides a forum for companies, government agencies, research institutions, and consultants to devise technical standards and recommended practices for the design, construction, and characteristics of motor vehicle components.

In the 1930s and 1940s, the American Iron and Steel Institute (AISI) and SAE were both involved in efforts to standardize a numbering system for steels. These efforts were similar and overlapped significantly. For several decades the systems were united into a joint system designated the AISI/SAE steel grades. In 1995, AISI turned over future maintenance of the system to SAE. SAE International maintains several alloy numbering systems used to classify various steels by their composition and physical properties.

International Association of Plumbing and Mechanical Officials (IAPMO)

The International Association of Plumbing and Mechanical Officials (IAPMO) produces the standards for plumbing, and recently its efforts have broadened to include standards for mechanical products. Mechanical product standards cover heating, ventilation, cooling, and refrigeration system products.

IAPMO members have also contributed to the development of the Uniform Mechanical Code. IAPMO also publishes standards covering products used in the recreational vehicle and manufactured housing industry, called IAPMO Trailer Standards.

National Fire Protection Association (NFPA)

The National Fire Protection Association (NFPA) is a trade association that creates and maintains private, copyrighted standards and codes for local governments to use and adopt.

NFPA is responsible for 380 codes and standards that are designed to minimize the risk and effects of fire by establishing criteria for building, processing, design, service, and installation of fire protection systems such as automatic fire sprinklers.

Canadian Centre for Occupational Health and Safety (CCOHS)

The Canadian Centre for Occupational Health and Safety (CCOHS) functions as the primary national agency in Canada for the advancement of safe and healthy workplaces and preventing work-related injuries, illnesses, and deaths. Provincial and territorial labour departments and workers' compensation boards carry out additional work in this area. CCOHS promotes the total well-being—physical, psychosocial, and mental health—of working Canadians by providing

information, training, education, management systems, and solutions. CCOHS makes credible information about workplace hazards and conditions easily and widely accessible to all Canadians, promoting safe and healthy workplaces.

Occupational Safety and Health Administration (OSHA)

The Occupational Safety and Health Administration (OSHA) is an agency of the U.S. Department of Labor. OSHA was established by the agency under the Occupational Safety and Health Act in 1970, with a mission to "assure safe and healthful working conditions for working men and women by setting and enforcing standards and by providing training, outreach, education, and assistance."

The Occupational Safety and Health Act gives OSHA the authority to issue workplace health and safety regulations in the United States. These regulations include limits on hazardous chemical exposure, employee access to hazard information, requirements for the use of personal protective equipment, and requirements for fall protection.

Canada Green Building Council

The Canada Green Building Council (CaGBC) is a not-for-profit national organization created in 2002 to further the expansion of green building in Canada. The CaGBC is a member of the World Green Building Council.

The CaGBC is dedicated to promoting the Leadership in Energy and Environmental Design (LEED) rating system. Its mission, along with its membership of over 1600 industry organizations, is to lead and accelerate the transformation to high-performing, healthy green buildings, homes, and communities throughout Canada.

Testing agencies

Product testing is any process by which a researcher measures a product's performance, safety, quality, and compliance with established standards. The primary element that constitutes an objective comparative test program is the extent to which the researchers can perform tests with independence from the manufacturers, suppliers, and marketers of the products. Often an existing formal test method is used as a basis for testing. Other times engineers develop test methods that are suited to the specific purpose. Comparative testing subjects several replicate samples of similar products to identical test conditions. An independent laboratory or a government agency might conduct product testing.

CSA product certification

CSA Group is recognized and accredited in Canada by the Standards Council of Canada (SCC) and in the United States by the American National Standards Institute (ANSI) and the Occupational Safety and Health Administration (OSHA) as a nationally recognized testing laboratory. It tests and certifies products to applicable North American standards, including ANSI, ASME, CSA, EPA, IAPMO, NFPA, and ULC.

The CSA mark is widely accepted and recognized by building and fire officials, manufacturers, regulatory authorities, and retailers. Products that have been tested and certified by CSA Group, or that are eligible to bear the CSA certification mark, appear in its certified product listing database.

Underwriters' Laboratories (UL)

Underwriters Laboratories (UL) is an American global independent safety science company with headquarters in Northbrook, Illinois. It maintains offices in 46 countries. UL provides safety-related certification, validation, testing, inspection, auditing, advising, and training services to a wide range of clients, including manufacturers, retailers, policy makers, regulators, service companies, and consumers.

International Association of Plumbing and Mechanical Official Research and Testing (IAPMO R&T)

The International Association of Plumbing and Mechanical Official Research and Testing (IAPMO R&T) was started in 1936 as a third-party listing agency specializing in plumbing and mechanical products. IAPMO R&T is accredited to certify products that meet the criteria of the Uniform Plumbing Code, Uniform Mechanical Code, Uniform Solar Energy Code, Uniform Swimming Pool, Spa and Hot Tub Code, and other nationally recognized codes and standards in North America.

IAPMO R&T is accredited by ANSI and the Standards Council of Canada to act as an independent and authoritative conformity assessment body to operate a material and product listing and labelling (certification) system.

The product listing (certification) process includes initial and ongoing product testing, a periodic inspection on current production of listed products, and making a published report available that contains specific information on the material or product conformity to applicable standards. For example, the IAPMO R&T issued Energy Star certification to appliances, providing consumers with information about energy consumption associated with the product.

Recently, IAPMO began a partnership with the Indian Plumbing Association and the Indian Institute of Plumbers to provide training and education throughout India.

Intertek/Warnock Hersey/Electrical Testing Laboratories (WH-ETL)

The Intertek Group is a multinational inspection, product testing, and certification company headquartered in London, United Kingdom.

Intertek originates from a number of companies that have merged or been acquired over many years. A few of the more notable ones include:

- a marine surveying business formed by Caleb Brett in the 1890s in the United Kingdom for testing and certification of ships' cargoes

- a chemical testing laboratory formed by Milton Hersey in Montreal in 1888

- a lamp testing bureau established by Thomas Edison in 1896, later named Electrical Testing Laboratories, still later shortened to ETL

- Warnock Hersey, the merger of Milton Hersey's and Chas Warnock's companies in 1954 to form one of the largest testing and inspection entities in Canada and later expanding into minerals, lumber testing, and the U.S. market

The Intertek Group is the largest tester of consumer goods in the world and has a network of more than 1000 laboratories across around 100 countries.

The Warnock Hersey Mark can be found on more than 6500 products ranging from fire doors to hardware, hearth, plumbing, and construction products.

Enforcement authorities

This section identifies some of the authorities that are legislated to enforce regulations, codes, and standards necessary to protect the public.

BC Safety Authority

The BC Safety Authority is provincially mandated to oversee the safe installation and operation of technical systems and equipment. In addition to issuing permits, licences, and certificates and performing inspections, it works with industry to reduce safety risks through assessment, education and outreach, enforcement, and research. Its powers are mandated through provincial legislation, some of which require the creation of regulations and the adoption of codes or standards.

The systems and equipment regulated by the BC Safety Authority include:

- electrical
- fuel gas
- boilers
- elevators
- amusement devices such as rollercoasters
- passenger ropeways such as ski lifts
- railways

The Safety Authority also issues directives, safety orders, and information bulletins that keep workers up to date with changes in technology.

Transport Canada

Transport Canada was formally known as the Department of Transport and was once responsible for all areas of transportation operations. Today, Transport Canada is focussed on policy and regulation rather than operations. It is responsible for enforcing several pieces of

Canadian legislation, including the Aeronautics Act, Transportation of Dangerous Goods Act, Motor Vehicle Safety Act, Canada Transportation Act, Railway Safety Act, Canada Shipping Act, and Marine Transportation Security Act, among others.

WorkSafeBC

WorkSafeBC is the operating name of the Workers' Compensation Board of British Columbia, a statutory agency created by an act of the provincial legislature in 1917. WorkSafeBC is dedicated to promoting workplace health and safety for the workers and employers of this province. It is directed by the Workers Compensation Act to consult with and educate employers and workers, and to enforce the Occupational Health and Safety Regulation.

In the event of work-related injuries or diseases, WorkSafeBC also works with the affected parties to provide return-to-work rehabilitation, compensation, health-care benefits, and a range of other services.

Environmental Protection Agency (EPA)

The U.S. Environmental Protection Agency (EPA) is responsible for enforcing many of the environmental statutes and regulations of the United States. It is granted explicit enforcement authority in environmental statutes and may also develop and implement policies and/or write guidance documents to encourage compliance with environmental requirements.

Home Owner Protection Office (HPO)

The Home Owner Protection Office (HPO) is responsible for:

- licensing residential builders and building envelope renovators province-wide
- administering owner-builder authorizations
- carrying out research and education that benefits the residential construction industry and consumers

The HPO serves buyers of new homes and people arranging for new homes to be built, homeowners (particularly owners of homes covered by home warranty insurance), developers, residential builders, and building envelope renovators.

In undertaking its activities, the HPO also works closely with warranty providers, building officials, industry and related consumer associations, all levels of government, educational institutions, research organizations, architects, engineers, property managers, the legal community, and the real estate community.

Now complete the Learning Task Self-Test.

Self-Test 1

1. A standard is a way of demonstrating that a product has been vetted and possesses a predetermined level of quality.

    a. True

    b. False

2. Approximately how often is the National Building Code published?

    a. Every two years

    b. Every three years

    c. Every four years

    d. Every five years

3. What does CSA stand for?

    a. Canadian Safety Association

    b. Council of Standards America

    c. Canadian Standards Association

    d. Canadian Safety Authority

4. Transport Canada sets standards for road safety.

    a. True

    b. False

5. In BC, which of the following organizations is responsible for electrical safety?

    a. BCCSA

    b. BC Electrical Department

    c. BC Safety Authority

    d. BC SPCA

6. WorkSafeBC is responsible for worker safety in BC.

    a. True

    b. False

7. What form of construction is the HPO responsible for?

    a. Residential construction in BC

    b. Commercial construction in BC

    c. All construction in BC

    d. All construction in Canada

8. What organization is responsible for standards within transport industries?

    a. IAPMO

    b. SAE International

    c. ASTM International

    d. ASME

LEARNING TASK 2

Explain codes, standards, regulations, and by-laws affecting the trades

The creation of by-laws and regulations is necessary in order to adopt codes and standards that ensure the use of better, safer, and more efficient methods and products.

Codes and standards are an essential element of technology, innovation, and trade. Codes and standards also serve to safeguard consumers and the end users of products and services, ensuring that certified products or practices conform to the minimum standards set internationally.

However, an increasingly competitive marketplace for goods and services means that more and more customers are demanding adherence to specific standards. Most standards are voluntary, but governments can make them mandatory through legislation with acts, regulations, and by-laws.

Standards

Standards typically help define best practices for products, services, and processes. Standards are normally narrow in scope, cover a limited range of issues, and can be given the force of law when referenced in an adopted code or regulation.

National Standard of Canada (CAN)

The designation "National Standard of Canada" indicates that a standard is recognized as the official Canadian standard in a particular subject area or topic. The Standards Council of Canada must approve a standard before it can become a national standard. The abbreviation "CAN," used in the prefix of the standard's reference number, indicates that a particular standard has been designated a National Standard of Canada.

Codes

A code is a set of rules that subject area experts recommend for others to follow. Codes are developed as a result of experience and consultation. Codes are to be implemented as a model regulation that can be adopted by regulatory authorities in an effort to help address safety concerns for consumers and industry. In general, they are much broader in scope than standards and cover a wider range of issues. They are also designed to be given the force of law by the provinces, territories, and jurisdictions in which they are adopted.

Codes often reference other standards, giving them additional visibility and weight within the industries in which they are used.

In Canada, building codes are developed nationally and then, in many cases, are modified and adopted provincially. Municipalities and regional districts usually pass by-laws in regard to the application of building codes.

National Building Code (NBC)

The National Building Code (NBC) is the model building code that forms the basis for all of the provincial building codes. Some jurisdictions have created their own code based on the NBC; other jurisdictions have adopted the NBC, often with supplementary laws or regulations. The NBC is published and maintained by the National Research Council of Canada. It was first published in 1941 and has been updated approximately every five years.

The intent of the National Building Code is to detail the minimum provisions acceptable to maintain the safety of buildings, with specific regard to public health, fire protection, accessibility, and structural sufficiency. The Code is not a textbook for building design but rather guidelines for construction, renovation, and demolition.

British Columbia Building Code

From 1973 to 1987, the National Building Code was used as the building code in British Columbia. In 1987, the first British Columbia Building Code (BCBC) was adopted as the building code for the province.

Vancouver Building Code

The City of Vancouver is the only municipality in the province with its own charter. This charter allows Vancouver to have its own building code. The Vancouver Building Code, like the BC Building Code, is based on the National Building Code with additions and changes that are specific to the city of Vancouver.

BC Fire Code

The BC Fire Code is a regulation of the Fire Services Act. Along with the BC Building Code, its purpose is to provide a suitable fire safety program for public buildings in the province. The BC Fire Code applies to new and existing buildings and provides technical requirements to provide an acceptable level of fire safety within a community.

BC Plumbing Code

The BC Plumbing Code is part of the BC Building Code (Part 7, Plumbing Services) and is based on the National Plumbing Code, with modifications and additions to meet the specific requirements of the province.

Leadership in Energy and Environmental Design (LEED)

LEED is a set of rating systems for the design, construction, operation, and maintenance of "green" buildings. The system awards projects with a LEED designation—platinum, gold, silver etc.—depending on the practices employed in the project.

The LEED rating system contains the following categories:

- sustainable sites (SS)
- water efficiency (WE)
- energy and atmosphere (EA)
- materials and resources (MR)
- indoor environmental quality (EQ)
- innovation in design (ID)
- regional priorities (RP)

LEED certification is done solely through the CaGBC.

Acts, Regulations, and By-laws

The following is some of the legislation that enacts many of the codes and standards affecting the trades.

Safety Standards Act

The Safety Standards Act sets out the general requirements for regulated work performed by contractors. It also includes information on the legal requirements for permits and qualifications. The Safety Standards Act authorizes the BC Safety Authority to take enforcement actions if it discovers a non-compliance with the Act or Regulations.

Workers Compensation Act

The Workers Compensation Act is the provincial legislation that authorizes and guides WorkSafeBC. This Act also explains the rights and responsibilities of employers and workers with respect to health and safety.

Occupational Health and Safety (OHS) Regulation

The Occupational Health and Safety (OHS) Regulation contains the legal requirements that must be met by all workplaces under the inspection jurisdiction of WorkSafeBC. WorkSafeBC regularly reviews the requirements of the OHS Regulation based on experience and on changes in knowledge, technology, and work practices. (For more information see Competency A-2, Describe WorkSafeBC Regulations.)

Municipal by-laws

Cities, municipalities, and regional districts are guided by a set of by-laws. By-laws are local laws that are created by local councils. By-laws can be created to cover many different concerns, as long as they meet the requirements of the Municipal Act. It is common for municipalities to have as many as 50 different by-laws.

Permits

A permit is the official document that states a specific activity has been approved and is permitted. The local government or the provincial authority having jurisdiction for the work issues the permits. This issuing authority will also inspect the work and enforce the requirements of the permit.

There are many different types of permits that you may come across; here are just a few examples:

- building permit
- demolition permit
- gas-fitting permit
- plumbing permit
- electrical permit
- fuel tank permit
- tree removal permit
- sign permit
- water and sewer connection permit
- onsite sewage disposal permit
- health permit
- occupancy permit

Consequences of non-conformance

Following codes and acquiring permits is necessary for many jobs. If work that requires a permit is conducted without one, there can be stiff and costly penalties. Fines may be issued, the job may be shut down, safety could be compromised, or you could lose your certification.

For example, if an electrician is allowed to do the wiring on a home without a permit, he or she could be fined or lose the contractor's licence or individual certification of qualification.

Following codes, standards, and regulations is the responsibility of all trades people.

Now complete the Learning Task Self-Test.

Self-Test 2

1. Codes and standards are an essential element of technology, innovation, and trades construction and manufacturing.

    a. True

    b. False

2. What is the main purpose of a building code?

    a. To ensure quality

    b. To ensure a fair price

    c. To ensure safety

    d. To ensure efficiency

3. When working in a particular municipality, which codes must be followed?

    a. International building code

    b. National building code

    c. Provincial building code

    d. Local building code

4. Plumbing and fire prevention all have their own applicable codes in BC.

    a. True

    b. False

5. What document provides the guidelines for safety at the workplace in BC?

    a. BC Safety Regulation

    b. Occupational Health and Safety Regulation

    c. National Safety Guide

    d. BC Safety Guide

6. What activity requires a permit?

    a. Plumbing

    b. Electrical work

    c. Demolition work

    d. All of the above

7. If a permit is not acquired when necessary, there are no consequences.

    a. True

    b. False

Answer Key

Self-Test 1

1. a.   True

2. d.   Every five years

3. c.   Canadian Standards Association

4. a.   True

5. c.   BC Safety Authority

6. a.   True

7. a.   Residential construction in BC

8. b.   SAE International

Self-Test 2

1. a.   True

2. c.   To ensure safety

3. d.   Local building code

4. a.   True

5. a.   Occupational Health and Safety Regulation

6. d.   All of the above

7. b.   False

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