Skilled Trades Ontario | Métiers spécialisés Ontario

Apprenticeship
Training Standard
Logbook

Electrician – Construction and Maintenance

309A

Apprenticeship Training Standard

The Apprenticeship Training Standard or herein after referred to as “Logbook” is a document issued to Apprentices who sign a Training Agreement in the Province of Ontario as an official record of training. It is to be used by the Apprentice and Sponsor/trainer to guide the process of skills development in a particular trade.

Training As An Apprentice

- ✓ Ensure you, your sponsor, and your witness sign a Training Agreement with the Ministry of Labour, Immigration, Training and Skills Development. Once it is registered, you will receive a copy of the registered Training Agreement for your records.
- ✓ Notify the local Service Delivery Office **immediately** if any changes to contact information or training agreement, especially if you change sponsors.
- ✓ Review the Logbook regularly with your trainer and sponsor to discuss your progress, ask questions, seek feedback and have the trainer **sign off on competencies**
- ✓ Keep an accurate record of the hours you work.
- ✓ Attend classroom training when it is offered.
- ✓ Apply for the financial incentives for which you are eligible.

Completing Your Logbook

- ✓ **Complete the Sponsor Record Form –** A form must be completed for each Sponsor/Trainer used during your apprenticeship.
- ✓ **Confirm Skill Sign-off is Complete**
  - **You and your trainer** sign-off each required skill to confirm that you have demonstrated competency in that skill.
  - Shaded boxes in your Logbook mean the skills are optional and do not have to be confirmed by your trainer or sponsor. However, you are encouraged to complete them as part of your training.
- ✓ **Confirm Skill Set Sign-off is Complete**
  - After you and your trainer have signed-off all the required skills in a skill set, your sponsor signs the signature box on the form in **Appendix C – *“Skill Set Completion for Sponsor”*** to confirm your completion of all competencies within each skill set.

This document is the property of the apprentice named inside and represents the official record of your training. For information about completing your apprenticeship, see inside of back cover**.**

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Apprentice Name:_____

Address: _____

_____

Phone Number:_____

Email Address:_____

Trade: _____

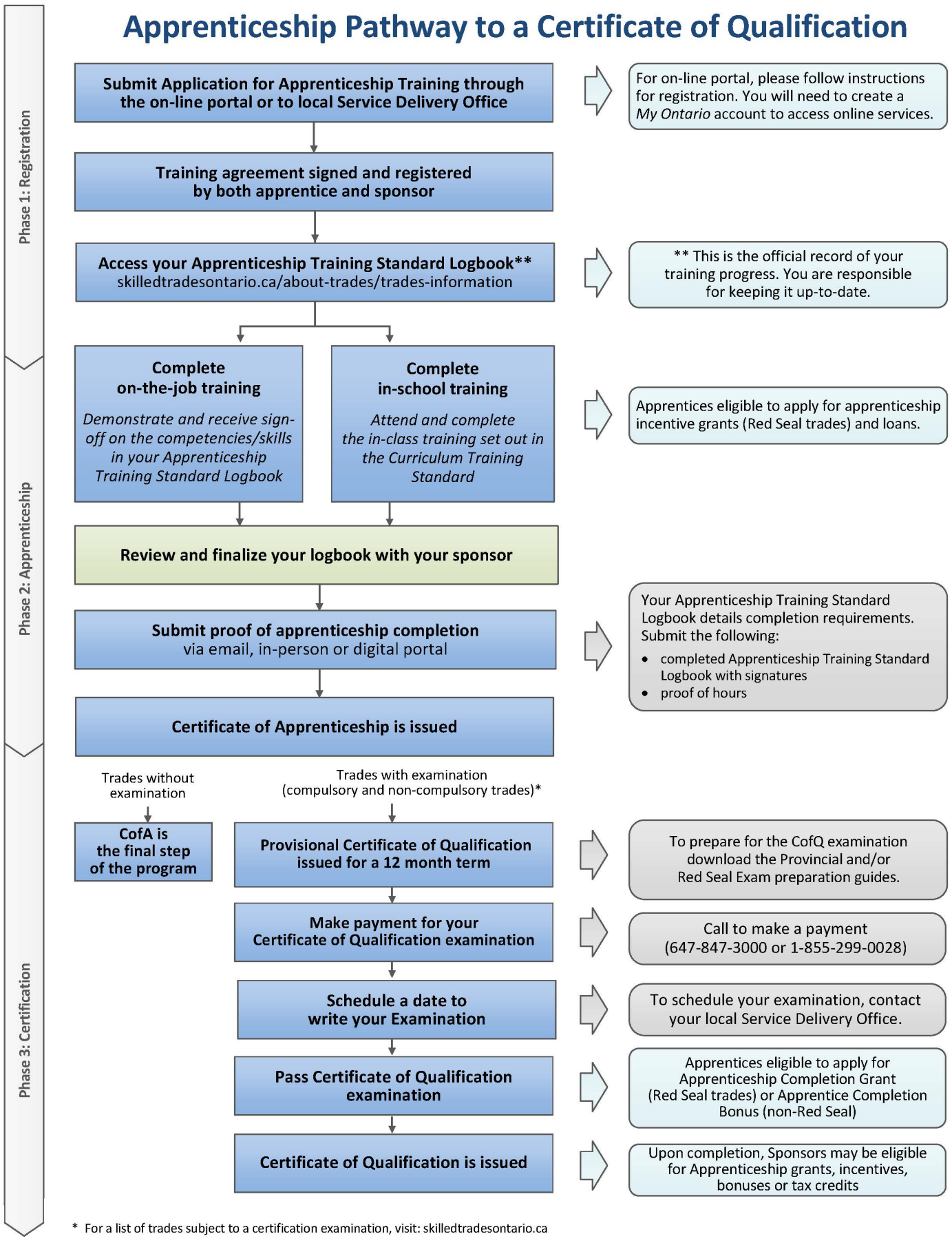
Training Agreement # (for Compulsory and Non-Compulsory trades):

STO Account No. (for Compulsory trades only):

This document is the property of the Apprentice named herein and represents the official record of their training.

If you have questions about the use of this Logbook or about your Apprenticeship program, contact your local Service Delivery Office (see Appendix D in this book) or the Employment Ontario hotline at: 1-800-387-5656.

Apprenticeship Pathway to a Certificate of Qualification



* For a list of trades subject to a certification examination, visit: skilledtradesontario.ca

Draft version: 2022-03-16

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Any updates to this publication are available on-line; to download this document in PDF format, please follow the link: Skilled Trades Ontario.ca.

Revised 2022 (V300)

Foreword: Purpose, Terms and Conditions of the registered Training Agreement

Purpose:

- Prior to starting official apprenticeship activities, the apprentice, sponsor and a witness are required to sign a Training Agreement.
- The Training Agreement that you have signed is an important legal document that outlines your responsibilities as an apprentice and the responsibilities of your sponsor.
  Once registered, this training agreement (or contract) marks the start of your formal agreement between the apprentice, the sponsor and the Ministry.
- For compulsory trades, the apprenticeship registration document must be accessible when working.

The Apprentice agrees:

- **To inform the local Service Delivery Office of any change to your contact information or change in sponsor within 7 days;**
- To follow the Sponsor's and Trainer's lawful instructions and make every effort to acquire the skills identified in the Logbook for the Trade which is part of the apprenticeship program established by Skilled Trades Ontario for the trade;
- To obtain written verification from the Sponsor and the Trainer(s) that the requirements in the Logbook for the trade have been met.
- When you receive an "Offer of Classroom Training", confirm your attendance by following the instructions in the offer. Failure to do so may result in losing your opportunity to attend school which delays the completion of your apprenticeship.

The Sponsor agrees:

- To ensure that the Apprentice is provided with the training required as part of the apprenticeship program established by Skilled Trades Ontario for this trade;
- To review the progress of training with the Apprentice, and with the Trainer(s) where the Sponsor and the Trainer are not the same party.
- Release your apprentice from work to attend in-school training without penalty to the apprentice.
- To maintain the journeyperson/apprentice ratio for your trade, if applicable.
- To monitor their apprentice(s) progress to ensure that the Trainer(s) verifies, in writing, when each skill identified in the Logbook for the trade has been successfully completed by the Apprentice;
- To contact the Ministry should any changes in your capacity to train, your contact information, or your apprentice's status in the program change.

Resource	Link
Red Seal Program	red-seal.ca
Apprenticeship in Ontario	ontario.ca/page/apprenticeship-ontario
Employment Ontario	employmentontario.ca
Service Canada	servicecanada.gc.ca
Building Opportunities in the Skilled Trades Act, 2021	Building Opportunities in the Skilled Trades Act, 2021, S.O. 2021, c. 28 - Bill 288 (ontario.ca)
Ministry of Labour, Immigration, Training and Skills Development	ontario.ca/page/ministry-labour-training-skills-development
Exam Preparation Guide	Exam Resources – Skilled Trades Ontario
Skills Zone (Ontario Skills Passport)	http://www.skillszone.ca/
Electrical Safety Authority	https://www.esasafe.com
Canadian Standards Association	http://www.csagroup.org
Ontario Construction Secretariat	http://iciconstruction.com
Infrastructure Health and Safety Association	http://www.ihsa.ca
Workplace Safety and Insurance Board	http://www.wsib.on.ca
Technical Standards and Safety Authority	https://www.tssa.org
Electrical Contractors Association of Ontario	https://www.ecao.org
Ontario Electrical League	http://www.oel.org

**Please note, all website addresses are current at time of printing*

Methodology- Standard Development

A standard is developed with a broad group of trade representatives who form the initial working group. This includes subject matter experts/ tradespeople/ instructors and employers from a cross section of the sector/industry, with varying years of work experience in the field. The working group reviews, develops, and recommends revision to the content of the standard. Their role also involves harmonizing and updating other supporting content for the product.

An essential part of the standard development is the validation process. This is the opportunity to have a broader representation of the sector provide feedback on the content of draft standard. This process is conducted in various ways and may include sending out a survey or the draft document (or both) directly to the sector. The comments received are reviewed by the working group and revisions are made as required based on a consensus model.

Introduction to the Logbook

This "on-the job" Logbook is the training standard for **Electrician-Construction and Maintenance (309A)** was developed by Skilled Trades Ontario in consultation with representatives from industry. It identifies all the skills associated with and required to learn the trade.

The Logbook is divided into skill sets, which are further divided into skills. These skill sets and skills are written in statements that describe what the Apprentice must perform and to what standard, in order to be considered competent in that skill.

The successful performance of these skills is tracked in the Logbook. Once achieved, this skills' sign-off, along with the completion of in-school program requirements or equivalent, is how the apprenticeship program is completed and apprentices receive a Certificate of Apprenticeship.

The Sponsor/trainer and Apprentice are required to sign-off and date each skill after the Apprentice has demonstrated proficiency in these skills. However, if a skill is shaded, it is optional and does not need to be signed-off, though it has been defined as a part of the scope of practice for the trade.

All practices described in this standard must be performed by the apprentice according to the specific criteria identified.

In general, the standard of performance for the trade of **Electrician – Construction and Maintenance (309A)** is as follows:

Standard of Performance

All skills within the **Electrician-Construction and Maintenance (309A)** Apprenticeship Training Standard are to be performed, as applicable, according to and in compliance with the following:

- *Occupational Health and Safety Legislation and Regulations;*
- *Canadian Electrical Code (CEC) and/or Ontario Electrical Safety Code (OESC);*
- *Other applicable legislation, regulation, codes and standards;*
- *Manufacturer's specifications;*
- *Design specifications;*
- *Industry standards and best practices;*
- *Job specifications and site procedures;*
- *Company policies and procedures;*
- *Work orders;*
- *Client specifications.*

The information presented in this standard is, to the best of our knowledge, current at time of printing and is intended for general application. Please refer to the Skilled Trades Ontario website for the most accurate and up-to-date information: skilledtradesontario.ca

Roles and Responsibilities

Under the *Building Opportunities in the Skilled Trades Act, 2021* (BOSTA)

Skilled Trades Ontario (STO) is responsible for:

- Establishing and maintaining qualifications;
- Establishing Apprenticeship Programs and other training programs including training Standards, curriculum standards and certifying examinations;
- Issuing certificates for the purposes of this Act such as Certificates of Qualification;
- Maintaining a Public Registry for compulsory trades skilledtradesontario.ca/public-register/;
- Determining whether the experience and qualifications obtained by applicants for a certificate of qualification who do not complete an apprenticeship are equivalent to those received through completing an apprenticeship (Trade Equivalency Assessments)
- Promoting the skilled trades and conducting research.
- Conducting research and evaluate whether a trade should be prescribed as a trade for the purposes of this Act and to make recommendations on these matters to the Minister

Ministry of Labour, Immigration, Training and Skills Development (MLITSD) is responsible for:

- Classifying trades as compulsory trades;
- Prescribing scopes of practice for trades;
- Approving which persons may provide in-class training for apprenticeship programs (TDAs);
- Registering Training Agreements;
- Providing those who successfully complete an apprenticeship program with a certificate of apprenticeship (CofA);
- Administering examinations, including certifying examinations;
- Promoting the skilled trades and conducting research.
- Exercising such other powers and perform such other duties and functions as are provided for in this Act or the regulations.

For any matter related to your registered Training Agreement or completing your apprenticeship, you must contact your local Service Delivery Office.

Roles and Responsibilities of the Apprentice

An Apprentice is an individual who has entered into a registered Training Agreement (refer to Forward: *"Purpose, Terms and Conditions of TA" page 1)* with a Sponsor to receive training in a trade as part of an apprenticeship program established by Skilled Trades Ontario. As an Apprentice, you have certain roles and responsibilities to follow throughout your apprenticeship training:

1. As an Apprentice, you signed the Training Agreement and have entered into a contract with the Ministry of Labour, Immigration, Training and Skills Development and your Sponsor.

2. If you are registered as an Apprentice in a compulsory trade, your name will automatically appear in the Skilled Trades Ontario Public Register.

3. You are responsible for informing the staff at your local Service Delivery Office regarding changes to the following:

    - Your Sponsor's address;
    - Your name and address; and/or,
    - Your Sponsor, including starting employment with a new Sponsor

4. As an Apprentice, you are responsible for completing skills or skill sets in this Logbook (as detailed in the *"Eligibility for Apprenticeship Program Completion"* section of this document) and ensuring that they are dated and signed by both you and your Trainer.

5. Once you have demonstrated competency in all the mandatory skills and received a sign off on each skill by your sponsor/trainer, you must have the Skill Set Completion Form completed and signed by your current Sponsor.

6. Submit your Logbook to your local Service Delivery Office.

7. Present your Apprentice Completion Form (Please refer to Appendix B), along with your authorized Logbook to your local Service Delivery Office.

Roles and Responsibilities of Sponsors and Trainers

Sponsors are responsible for ensuring all terms are met as per the registered Training Agreement. They are named on the registered Training Agreement as the entity responsible for ensuring Apprentices receive the training required as part of an apprenticeship program. As a signatory to this agreement, they are designated as the 'Signing Authority' for the Apprentice's Skill Set Completion Form and are required to attest to successful achievement by signing the appropriate box at the completion of each skill set. Some sponsors may also act as the Trainer.

A **Trainer** is an individual who oversees the performance of a task and sets the workplace expectations and practices for the Apprentice.

In compulsory trades, a Trainer must hold a valid Certificate of Qualification and be registered with Skilled Trades Ontario.

In non-compulsory trades, a Trainer is an individual who holds one of the following:

- A Certificate of Qualification.
- A Certificate of Apprenticeship in the trade; or,
- Has completed both the workplace-based training (competencies and/or hours as applicable) and classroom training components of the trade's apprenticeship program; or,
- Has workplace experience equivalent to the apprenticeship program) and has the skills outlined in the Logbook.

Competency means being able to perform to the required standard (please refer to *"Introduction to the Logbook").* Trainers/Sponsors and Apprentices are required to sign-off and date the skills in the Logbook following each successful acquisition. The Logbook forms a record of this achievement.

The Trainer must provide their signature based on their assessment and professional judgment that the apprentice is competent in the skills described above. The Trainer's signature is not a general warranty or guarantee of the apprentice's future conduct. A classroom instructor is not permitted to sign-off the skills contained within this Logbook

Sponsors participating in this training program will be designated as the Signing Authority and are required to attest to successful achievement by signing the appropriate box included at the end of each skill set.

Health and Safety

Safe working procedures and conditions, accident prevention and the preservation of health are of primary importance for apprenticeship programs in Ontario. These responsibilities are shared and require the joint efforts of government, sponsors, employers, supervisors, workers, apprentices and the public to achieve the goal of making Ontario's workplaces safe and healthy.

The Occupational Health and Safety Act (OHSA) provides us with the legal framework and the tools to do this. It sets out the rights and duties of all parties in the workplace, placing ultimate responsibility on the employer for the health and safety of workers (in this case apprentices) by ensuring procedures, controls, and training are established for dealing with workplace hazards. Therefore, it is imperative that all parties become aware of circumstances that may lead to injury, illness or harm. Safe learning experiences and environments can be created by controlling the variables and behaviours that may contribute to or cause an accident injury or illness.

A sponsor who is not the employer is reminded that the employer has legal responsibilities respecting health and safety over the apprentice who is their worker. The sponsor should encourage safe work habits and adherence to the employer's occupational health and safety requirements for the workplace.

It is generally recognized that a positive attitude about safety in partnership with health and safety competency contributes to an accident-free environment. Everyone will benefit as a result of a healthy attitude towards the prevention of accidents.

Workers and apprentices can be exposed to a multitude of hazards and, therefore, should be familiar with the Occupational Health and Safety Act and regulations.

The Internal Responsibility System:

One of the primary purposes of the Occupational Health and Safety Act (OHSA) is to facilitate a strong Internal Responsibility System (IRS) in the workplace. To this end, the OHSA lays out the duties of employers, supervisors, workers, apprentices, constructors and workplace owners.

Workplace parties' compliance with their respective statutory duties is essential to the establishment of a strong IRS in the workplace.

Simply put, the IRS means that everyone in the workplace has a role to play in keeping workplaces safe and healthy. Workers and apprentices in the workplace who see a health and safety problem such as a hazard or contravention of the OHSA in the workplace have a statutory duty to report the situation to the employer or a supervisor. Employers and supervisors are, in turn, required to address those situations and acquaint workers with any hazard in the work that they do.

The IRS helps support a safe and healthy workplace. In addition to the workplace parties' compliance with their legal duties, the IRS is further supported by well-defined health and safety policies and programs, including the design, control, monitoring and supervision of the work being performed.

Roles and Responsibilities under the Occupational Health and Safety Act

Employer's Responsibilities include but are not limited to the following:

- Instruct, inform and supervise workers and apprentices to protect their health and safety.
- Appoint competent persons as supervisors.
- Inform a worker, apprentice, or a person in authority, about any hazard in the workplace and train them in the handling, storage, use, disposal and transport of any equipment, substances, tools, material, etc.
- Take every precaution reasonable in the circumstances for the protection of a worker/apprentice.
- In workplaces in which more than five workers are regularly employed, prepare and post a written occupational health and safety policy and set up and maintain a program to implement it.
- Prepare and post policies with respect to workplace violence and workplace harassment and develop programs supporting workplace harassment and workplace violence policies.
- Ensure knowledge of applicable legislative, regulatory, codes and standards so requirements to be followed are clear to all workers/apprentices.

Trainer/Supervisor Responsibilities include but are not limited to the following:

- Ensure that a worker or apprentice works in compliance with the Act and regulations.
- Ensure that any equipment, protective device or clothing required by the employer is used or worn by the worker or apprentice.
- Advise a worker/apprentice of any potential or actual health or safety dangers known by the supervisor.
- Take every precaution reasonable in the circumstances for the protection of workers.

Worker/Apprentice Responsibilities include but are not limited to the following:

- Work in compliance with the Act and regulations.
- Use or wear any equipment, protective devices or clothing required by the employer.
- Report to the employer or supervisor any known missing or defective equipment or protective device that may endanger the worker or another worker.
- Report any hazard or contravention of the Act or regulations to the employer or supervisor.
- Not remove or make ineffective any protective device required by the employer or by the regulations.
- Not use or operate any equipment or work in a way that may endanger any worker.

The Three Rights of Workers/Apprentices

The OHSA gives workers and apprentices three important rights:

1. The right to know about hazards in their work and get information, supervision and instruction to protect their health and safety on the job.
2. The right to participate in identifying and solving workplace health and safety problems either through a health and safety representative or a worker member of a joint health and safety committee.
3. The right to refuse work that they believe is dangerous to their health and safety or that of any other worker in the workplace.

For construction projects applying to construction trades a Constructor is also identified

On all projects, either the owner or someone hired by the owner is the constructor.

The intent of the Occupational Health and Safety Act is to have one person with overall authority for health and safety matters on a project. This person is the constructor of the project.

The constructor is the party with the greatest degree of control over health and safety at the entire project and is ultimately responsible for the health and safety of all workers and apprentices. The constructor must ensure that all the employers, apprentices and workers on the project comply with the Act and its regulations.

Constructor's duties include the following:

- To ensure that the measures and procedures in the Act and regulations are carried out.
- To ensure that every employer, apprentice and worker on the project complies with the Act and regulations.
- To ensure that the health and safety of workers/apprentices on the project are protected.

Ministry of Labour, Immigration, Training and Skills Development

The Ministry of Labour, Immigration, Training and Skills Development conducts periodic inspections of workplaces to ensure that safety acts and regulations are being followed. Please direct any questions to the Occupational Health and Safety Contact Centre at 1-877-202-0008.

Important Considerations for Electrical Work: De-energized vs Live Systems

Rules for Electrical Work

When performing work functions, individuals may be working with live or de-energized systems. The first rule of work for workers and apprentices is that systems should always be treated as live until de-energization is confirmed. When possible, work should always be completed in a de-energized state. Prior to beginning work, qualified individuals must determine if work can be done in a de-energized environment or obtain employer rationale for not being able to de-energize.

Training Guidelines & Parameters

For Electricians – Construction and Maintenance (309A) there are applicable legislative, regulatory, codes and standards that outline requirements to be followed when performing tasks outlined in this standard. In most cases, these references set out the criteria against which the skill is measured. For Electricians – Construction and Maintenance (309A), these may include:

- Canadian Electrical Code (CEC);
- Ontario Electrical Safety Code (OESC)
- Occupational Health and Safety Act (OHSA);
- Canadian Standards Association (CSA)
- Ontario Building Code (OBC)
- Ontario Fire Code (OFC);
- National Fire Protection Association (NFPA);
- Environmental Protection Act (EPA);
- Dangerous Goods Transportation Act (DGTA);
- Workplace Safety Insurance Act (WSIA);
- Institute of Electrical and Electronic Engineers (IEEE);
- Illuminating Engineering Society Standards (IESS);
- Technical Standards and Safety Authority (TSSA) Safety Legislation
- Electrical Safety Authority (ESA) Legislation;
- Underwriters Laboratory of Canada (ULC);
- Municipal/Sector Requirements;
- Z462 Workplace Electrical Safety;
- Z460 Control of hazardous energy – lockout and other methods;
- M421 Use of electricity in mines.

Apprenticeship Program Summary/Guidelines

Scope of Practice

The Scope of Practice for the trade of Electrician — Construction and Maintenance is set out in section 44 of Ontario Regulation 875/21 under BOSTA and reads as follows:

Electrician — construction and maintenance

44. (1) The scope of practice for the trade of electrician — construction and maintenance includes the following:

1. Laying out, assembling, installing, repairing, maintaining, connecting or testing electrical fixtures, apparatus, control equipment and wiring for systems of alarm, communication, light, heat or power in buildings or other structures.
2. Planning proposed installations from blueprints, sketches or specifications and installing panel boards, switch boxes, pull boxes and other related electrical devices.
3. Measuring, cutting, threading, bending, assembling and installing conduits and other types of electrical conductor enclosures that connect panels, boxes, outlets and other related electrical devices.
4. Installing brackets, hangers or equipment for supporting electrical equipment.
5. Installing in or drawing electrical conductors through conductor enclosures.
6. Preparing conductors for splicing of electrical connections, securing conductor connections by soldering or other mechanical means and reinsulating and protecting conductor connections.
7. Testing electrical equipment for proper function.

(2) The scope of practice for the trade of electrician — construction and maintenance does not include work performed by a person who is permanently employed in an industrial plant at a limited purpose occupation in the electrical trade.

*While the Logbook draws on the scope of practice regulation (Section 44 of Ontario Regulation 875/21 under BOSTA). The Logbook does not purport to add to or modify the scope of practice as provided in regulation. *

Program Guidelines

Total Training Hours

9000 hours

In-Class Training Duration

Current in-school hours necessary for an Apprentice to complete the in-school curriculum for this program is 840 hours. Please note that a new in-school curriculum is underway and in-school hours may change.

Journeyperson to Apprentice Ratio

Ratios in Regulation:
If a trade has been prescribed as being subject to an apprentice to journeyperson ratio, the number of apprentices who may be sponsored or employed by a person in the trade in relation to the number of journeypersons employed or otherwise engaged by the person in the trade **shall not exceed one apprentice for each journeyperson**; Further information can be found in the Apprenticeship section of the Government of Ontario website at ontario.ca/page/hire-apprentice.

Program Requirements

Compulsory and Non-compulsory Classification
Regulations *Building Opportunities in the Skilled Trades Act, 2021* and the classification of each trade as either "compulsory" or non-compulsory." The trade of Electrician – Construction and Maintenance (309A) is compulsory.

Eligibility for Apprenticeship Program Completion
The Apprentice must:

- Achieve competency in all mandatory (unshaded) skills as identified in the Logbook
- Complete the in-school training as outlined in the Curriculum Standard
- Complete on the job hours' benchmark as identified in the Logbook

It is the responsibility of an Apprentice to maintain a training record in the form of a Logbook. The Sponsor and Trainer are required to sign-off when competencies in the trade are achieved.

Skills for Success Summary

Skills for Success are needed in a quickly changing world for work, learning and life. They are foundational for building other skills and important for effective social interaction. Everyone benefits from having these skills as they help individuals get a job, progress at their current job and change jobs. They also help individuals become active members of their community and succeed in learning.

Through extensive research and consultations, the Government of Canada launched the new Skills for Success model renewing the previous Essential Skills framework to better reflect the needs of the current and future labour market.

The occupational specific Essential Skills profiles are available online. These will be updated over time to align with the new Skills for Success model found here: Skills for Success model .

Standard of Performance

All skills within the **Electrician-Construction and Maintenance (309A)** Apprenticeship Training Standard are to be performed, as applicable, according to and in compliance with the following:

- *Occupational Health and Safety Legislation and Regulations;*
- *Canadian Electrical Code (CEC) and/or Ontario Electrical Safety Code (OESC);*
- *Other applicable legislation, regulation, codes and standards;*
- *Manufacturer's specifications;*
- *Design specifications;*
- *Industry standards and best practices;*
- *Job specifications and site procedures;*
- *Company policies and procedures;*
- *Work orders;*
- *Client specifications.*

Other Suggested or Required Certification(s) and Training

Electricians – Construction and Maintenance (309A) may choose to obtain the following certifications or training depending on legislative, regulatory or other requirements:

- First Aid and CPR
- Workplace Hazardous Materials Information System (WHMIS)
- Working at Heights
- Lock out and tag out training
- Mandatory Worker Health and Safety Awareness
- Canadian Standards Association (CSA) Z462 training (including arc flash)
- Canadian Standards Association (CSA) Z463 training (guideline on maintenance of electrical systems)
- Confined Space Awareness
- Fire alarm certification
- Asbestos Awareness Training
- Electrical Safety Awareness
- Rigging and Hoisting
- Elevated Work Platforms
- Forklifts and Telehandlers

Training the Apprentice - Tips for Apprentices, Sponsors and Trainers

Tips for Apprentices

Remember, it takes time to learn. The following is a list of additional tips and tools to help make the most of your apprenticeship training:

- Practice safe work habits;
- Use your Logbook as a journal to keep track of the skills you have achieved;
- Review your training plan with your Training Consultant, Trainer, or Sponsor;
- Discuss your training needs with your Trainer and/or Sponsor;
- Listen to the suggestions of your Trainer;
- Ask your Trainer questions if you are unsure of any skill you need to perform or any tools or equipment you need to use to perform your duties;
- Show enthusiasm and develop good work habits; and,
- Upon demonstration of competency, ensure that you and your Trainer sign-off the individual skills.

To get the most from this mentoring experience, request exposure to the full scope of the trade; meet regularly with your Sponsor/Trainer to discuss your progress, ask questions and seek feedback.

Tips for Sponsors

- Select Trainers with good communication skills and who work well with others;
- Ensure that the Apprentice always works under the direction of or has access to a qualified Trainer;
- Encourage Trainers to take upgrading courses (e.g., Train the Trainer, Mentor, Coach, etc.);
- Set out clear expectations and involve both the Apprentice and Trainer in developing the training plan
- Encourage safe work habits;
- Allow time for the Trainer to train and demonstrate skills to the Apprentice;
- Provide opportunities and time for the Apprentice to learn the trade;
- Ensure that the Apprentice receives the varied on-the-job trade training experience outlined in this document;
- Recognize good performance;
- Observe frequently;
- Provide constructive feedback and conduct regular performance reviews involving the Apprentice and Trainer;
- Use the Logbook as a monitoring tool and a part of regular performance evaluations; and,
- Complete the Skill Set Completion Form once the Apprentice has demonstrated
- competency in the skills.
- The detailed content listed for each skill is not intended to represent an inclusive list; rather, it is included to illustrate the intended direction for the skill acquisition.

Tips for Trainers

Trainers are responsible for ensuring the Apprentice is developing the skills outlined in this document. Here is a list of tips and tools to help Trainers in their supervision of Apprentices:

- Demonstrate model safe work habits;
- Provide opportunities and time for the Apprentice to learn the trade;
- Treat Apprentices fairly and with respect;
- Review the Logbook with the Apprentice and develop a training plan;
- Set out clear expectations and recognize good performance;
- Expose Apprentices to the full scope of the trade by providing training on the skills outlined in this document;
- Encourage and respond to all questions;
- Be patient;
- Explain, show and demonstrate the skill;
- **Meet regularly with the apprentice to discuss the apprentice's progress**
- Provide continuous feedback;
- Sign-off skills when your Apprentice demonstrates competency, and,
- Use the Logbook as a guide to evaluate competence in each skill area. By using the Logbook, Trainers will be able to guide the process to and assist Apprentices to develop skills outlined in this document.

The best mentoring experience is when an Apprentice is given as much training/exposure to the full scope of the trade as possible. If this is not possible, help them to determine other ways this may be possible.

Notice of Collection of Personal Information

1. At any time during your apprenticeship training, you may be required to show this Logbook to the local Service Delivery Office. You will be required to submit the signed Apprenticeship Completion form to the Service Delivery Office in order to complete your program. The Service Delivery Office will use your personal information to administer and finance Ontario's apprenticeship training system, including confirming your completion and issuing your Certificate of Apprenticeship.

2. The Service Delivery Office will disclose information about your program completion and your Certificate of Apprenticeship to Skilled Trades Ontario, as it is necessary for Skilled Trades Ontario to carry out its responsibilities.

3. Your personal information is collected, used and disclosed by the Ministry of Labour, Immigration, Training and Skills Development under the authority of the *Building Opportunities in the Skilled Trades Act, 2021 (BOSTA).*

4. Questions about the collection, use and disclosure of your personal information by the Ministry may be addressed to the:

   Manager, Employment Ontario Contact Centre
   Ministry of Labour, Immigration, Training and Skills Development
   33 Bloor St. E, 2nd floor, Toronto, Ontario M7A 2S3
   Toll-free: 1-800-387-5656; Toronto: 416-326-5656
   TTY: 1-866-533-6339 or 416-325-4084

List of Trainers

Trainer's Name (Please Print)	Trainer's Signature	Date of start with Trainer (day/month/year)

9245 Protect Self, Others and the Environment

Skill Set Descriptor

While an Electrician- Construction and Maintenance (309A) Apprentice receives health, safety and occupational specific training and/or certification in a variety of fields during an apprenticeship, it is important to be aware that other occupational health and safety training and certification renewal or updating may also be required during a career before performing new types of work.

When performing work functions, Electricians-Construction and Maintenance (309A) may be working with live or de-energized systems. The first rule of work is that systems should always be treated as live until de-energization is confirmed. When possible, work should always be completed in a de-energized state. Prior to beginning work, Electricians-Construction and Maintenance should determine if work can be done in a de-energized environment. In performing these tasks, Electricians-Construction and Maintenance (309A) may be required to complete an electrical safety program.

Skills

9245.01 Comply with applicable Acts, regulations, codes and directives by:

- identifying the act, regulation, code or directive applicable;
- reading and interpreting the act, regulation, code or directive as it relates to the circumstances at hand;
- keeping up to date with changes; and
- applying requirements to job functions

according to legislation, regulation, codes, standards, manufacturer's specifications and company standards and policies.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

*** For a compulsory trade, a Trainer must hold a certificate of Qualification in that trade as per section 10(1) of BOSTA and be registered with Skilled Trades Ontario.**

9245.02 **Maintain a safe, clean and organized working environment** by:

- removing and disposing excess or unwanted materials;
- cleaning up spills and leaks;
- keeping work area clean and clear of obstructions;
- positioning equipment;
- identifying the location of first aid supplies and equipment;
- maintaining adequate heat, light and ventilation;
- storing flammable fuels and other materials as required;
- confirming the work site meets customer's expectations of cleanliness; and
- erecting protective barriers and signs

according to Occupational Health and Safety Act (OHSA), Environmental Protection Act (EPA), Technical Standards and Safety Authority (TSSA), Electrical Safety Authority (ESA) and other legislation, regulation, codes, standards, manufacturer's specifications, site procedures and company standards and policies.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9245.03 **Control hazards and potentially hazard causing conditions, equipment and material** such as work site conditions, confined spaces, heavy equipment operations, crane hoisting and lifting operations, overhead and trenching operations, material handling and storage, and welding operations by:

- identifying the hazard or hazardous condition;
- communicating and signalling;
- erecting protective barriers and guards;
- following fire safety and first aid procedures;
- following confined space procedures as required;
- removing materials and obstructions; and
- organizing and storing materials and equipment

according to Occupational Health and Safety Act (OHSA), Workplace Hazardous Materials Information System (WHMIS), other legislation, regulation, codes, standards, manufacturer's specifications and company standards and policies.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9245.04 **Handle hazardous substances** such as oil, asbestos, lead paint, silica dust and mercury vapour to protect self and others from harm and the environment from contamination by:

- reviewing list of designated substances prior to starting work;
- selecting and using personal protective equipment;
- following labels and SDS sheets;
- determining temperature as required;
- determining whether polychlorinated biphenyl (PCBs) are present;
- using specified handling, storage and transfer equipment and following recommended procedures;
- cleaning and disposing of substances and
- completing designated substance report

according to Environmental Protection Act (EPA), Occupational Health and Safety Act (OHSA), Workplace Hazardous Materials Information System (WHMIS), other legislation, regulation, codes, standards, manufacturer's specifications, site procedures and company standards and policies.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9245.05 **Use fire extinguishers and firefighting equipment** such as portable Class A, B and C extinguishers to suppress fires by:

- identifying the class applicable to the situation; and
- reading and following operational instructions

according to the Occupational Health and Safety Act (OHSA) and all applicable regulations, Infrastructure Health and Safety Association (IHSA), Ontario Fire Code (OFC), National Fire Protection Association (NFPA), Underwriters Laboratory of Canada (ULC), site procedures and company policy.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9245.06 **Comply with trench safety requirements and procedures** by:

- using trench boxes as applicable;
- considering soil conditions, sloping, shoring, soil stability, distance of materials from edge of trench; and
- considering size and sufficiency of work area in trench

according to Occupational Health and Safety Act (OHSA), legislation, regulation, codes, standards, manufacturer's specifications, site procedures and company standards and policies.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9245.07 **Comply with first aid procedures for emergency situations** to stabilize the condition of the victim and prepare for further treatment by:

- reading procedures in advance and staying up to date with changes;
- applying the procedure applicable to the incident/emergency (such as treatment of burns, abrasions, bleeding, cuts, wounds, chemical inhalation, electrical shock and contamination of eyes); and
- identifying designated contact persons

according to Occupational Health and Safety Act (OHSA), Workplace Safety and Insurance Board, the reporting requirements of the authority having jurisdiction and other legislation, regulation, codes, standards, manufacturer's specifications, site procedures and company standards and policies.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9245.08 **Comply with reporting requirements for electrical incidents** by:

- reading procedures in advance and staying up to date with changes;
- applying procedure applicable to the incident/emergency; and
- identifying designated contact persons

according to Occupational Health and Safety Act (OHSA), the reporting requirements of the authority having jurisdiction and other legislation, regulation, codes, standards, manufacturer's specifications, site procedures and company standards and policies.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9245.09 **Use personal protective apparel and equipment** such as hard hats, gloves, glasses, goggles, masks, face shields, ear protectors/plugs, coveralls, reflector vests, safety footwear and radiation badges (dosimeters) by:

- selecting the apparel and equipment applicable to the situation;
- checking certifications (such as expiry dates);
- inspecting conditions (such as worn, cracks, holes, deficiencies);
- removing damaged or expired apparel and equipment from service;
- verifying fit;
- adjusting for fit;
- calibrating as required; and
- optimizing protection for the user and the task being performed

according to Occupational Health and Safety Act (OHSA), legislation, regulation, codes, standards, manufacturer's specifications, site procedures and company standards and policies.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9245.10 **Maintain personal protective apparel and equipment** such as hard hats, gloves, glasses, goggles, masks, face shields, ear protectors/plugs, coveralls, reflector vests, safety footwear and radiation badges (dosimeters) to support the safety of the user and extend the service life of the equipment by:

- checking certifications (such as expiry dates);
- inspecting the apparel and equipment for breaks, signs of wear, tears, cracks, leakage, loose, defective and missing components;
- calibrating as required:
- analyzing equipment performance and function;
- placing and storing the equipment in a safe location to prevent damage;
- noting/tagging deficiencies; and
- removing from service if necessary

according to Occupational Health and Safety Act (OHSA), legislation, regulation, codes, standards, manufacturer's specifications, site procedures and company standards and policies.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9245.11 **Use arc flash rated personal protective equipment** such as gloves and face shields by:

- selecting the apparel and equipment applicable to the situation;
- following specified rating requirements;
- checking certifications (such as expiry dates);
- inspecting conditions (such as worn, cracks, holes, deficiencies);
- removing damaged or expired apparel and equipment from service as required; and
- adjusting for fit

according to Canadian Standards Association (CSA) Z462, Occupational Health and Safety Act (OHSA), other legislation, regulation, codes, standards, manufacturer's specifications, site procedures, company standards and policies.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9245.12 **Maintain arc flash rated personal protective equipment** such as gloves and face shields to support the safety of the user and extend the service life of the equipment by:

- checking certifications (such as expiry dates);
- inspecting the equipment for breaks, signs of wear, tears, cracks, leakage, loose, defective and missing components;
- analyzing equipment performance and function;
- placing and storing the equipment in a safe location to prevent damage;
- noting/tagging deficiencies; and
- removing from service if necessary

according to Canadian Standards Association (CSA) Z462, Occupational Health and Safety Act (OHSA), other legislation, regulation, codes, standards, manufacturer's specifications, site procedures, company standards and policies.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9245.13 **Perform lock out, tagging and hold-off procedures** to isolate and control sources of hazardous energy by:

- advising authorities having jurisdiction (AHJ);
- communicating with other trades and affected individuals/parties;
- installing lock out device and retaining the key;
- attaching and dating tags;
- de-energizing equipment;
- verifying isolation/de-energizing (zero-energy state);
- using energy isolating devices such as locks, spades, temporary protective grounding equipment;
- following hold off procedures as required;
- repairing the problem if required; and
- removing the lockout device on completion of work

according to Occupational Health and Safety Act (OHSA), Canadian Electrical Code (CEC), Ontario Electrical Safety Code (OESC), other legislation, regulation, codes, standards, manufacturer's specifications, site procedures and company standards and policies.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9245.14 **Determine if a system is live or de-energized** to prevent electrocution, electrical burns, fires, blasts or other injuries to the worker or public by:

- using personal protective equipment as required;
- testing for voltage; and
- following the system looking for lock out and tags

according to Canadian Standards Association (CSA) Z462, Occupational Health and Safety Act (OHSA), Canadian Electrical Code (CEC), Ontario Electrical Safety Code (OESC), other legislation, regulation, codes, standards, manufacturer's specifications, site procedures and company standards and policies.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9245.15 **De-energize live systems** by:

- isolating source voltages;
- draining existing stored energy;
- locking out all sources of power; and
- verifying isolation/de-energization

according to Canadian Standards Association (CSA) Z462, Occupational Health and Safety Act (OHSA), Canadian Electrical Code (CEC), Ontario Electrical Safety Code (OESC), other legislation, regulation, codes, standards, manufacturer's specifications, site procedures and company standards and policies.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9245.16 **Follow electrical safety program and procedures when performing live work** by:

- determining procedures for working live in a safe manner; and
- following safety precautions and procedures (including precautions related to hazardous atmospheres that could lead to explosions and fires)

according to Canadian Standards Association (CSA) Z462, Occupational Health and Safety Act (OHSA), Canadian Electrical Code (CEC), Ontario Electrical Safety Code (OESC), other legislation, regulation, codes, standards, manufacturer's specifications, site procedures and company standards and policies

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9245.17 **Shut down equipment** by:

- identifying equipment to be de-energized when shutting down;
- notifying affected personnel;
- applying temporary protective grounding equipment;
- using decommissioning documents, customer procedures, and industry standards for shut down sequence;
- consulting applicable current drawings, diagrams, and identification tags to pinpoint/locate all possible electrical sources connected to the equipment; and
- verifying the equipment is in a zero-energy state

according to Canadian Standards Association (CSA) Z460 and Z462, occupational health and safety requirements, industry standards and best practices, manufacturer's specifications, decommissioning documents, customer procedures, company policies and procedures, drawings and specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9245.18 **Start-up equipment** by:

- notifying all affected individuals;
- verifying that all work on the equipment has been completed by all involved;
- verifying that all guards and lock off devices have been removed;
- removing all devices used for locking out the equipment;
- checking for and confirming that all tools, foreign materials, and loose hardware are removed prior to start-up;
- verifying that the electrical energy supply to the equipment meets the requirements of the equipment's nameplate ratings;
- applying start-up sequencing required by the commissioning documents, customer procedures, and industry standards; and
- verifying equipment operation

according to occupational health and safety requirements, industry standards and best practices, manufacturer's specifications, decommissioning documents, customer procedures, company policies and procedures, drawings and specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9245.19 **Commission / decommission systems** by:

- identifying the individuals required for the team;
- checking documentation and nameplate data for operational parameters and conformance to design documents;
- confirming status and alarm systems are functional;
- performing operational checks;
- inspecting system for problems;
- adjusting components as required;
- verifying the start-up sequence;
- performing control system calibration;
- performing functional operational testing;
- identifying any training required;
- identifying maintenance and service requirements;
- completing the commissioning documentation; and
- identifying the decommissioning sequence and disposal of associated equipment

according to occupational health and safety requirements, industry standards and best practices, manufacturer's specifications, decommissioning documents, customer procedures, company policies and procedures, drawings and specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9246 **Create, Modify and Interpret Schematics, Drawings and Specifications**

Skill Set Descriptor

Electricians-Construction and Maintenance (309A) create, modify and interpret schematics, drawings and specifications as part of their job. When working with schematics, drawings and specifications it is important for Electricians-Construction and Maintenance (309A) to understand how to read and interpret electrical symbols as well as recognize and apply the different types of drawings and their uses. Electricians-Construction and Maintenance (309A) also use schematics, drawings and specifications to anticipate hazards on the worksite.

Skills

9246.01 **Create sketches** such as schematics, elevations, isometric, interference, wiring diagrams, and layout to facilitate completion of the work by:

- using available tools and technology;
- confirming and anticipating hazards such as weight bearing capacity, rating;
- referencing existing drawings and specifications such as vendor drawings, cut sheets;
- relating drawings and specifications to the actual site;
- visualizing completed project/system; and
- identifying distances, clearances, mounting heights, location of other equipment and components

according to industry and company standards, client and job specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

*** For a compulsory trade, a Trainer must hold a certificate of Qualification in that trade as per section 10(1) of BOSTA and be registered with Skilled Trades Ontario.**

9246.02 **Modify drawings** such as as-built, schematics, elevations, isometric, interference and logic to make sure the drawing set is complete and up to date and to facilitate the completion of the work to the requirements of the approving authority by:

- using available tools and technology;
- using metric or imperial scales as required;
- confirming and anticipating hazards such as weight bearing capacity, rating;
- obtaining approval for changes; and
- recording changes, additions and substitutions on the drawings

according to industry and company standards, client and job specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9246.03 **Interpret architectural drawings and specifications** such as structural and site drawings and specifications by:

- reading the drawing title block and/or title page;
- determining the logical sequence of the architectural and shop drawings;
- confirming and anticipating hazards such as weight bearing capacity, rating;
- cross-checking to verify that the set is complete;
- identifying and interpreting symbols used on drawings, charts, guides and schedules;
- identifying the scale type used on drawings; and
- verifying the latest revision/work document

according to industry standards.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9246.04 **Interpret mechanical drawings and specifications** by:

- reading the drawing title block and/or title page;
- confirming and anticipating hazards such as weight bearing capacity, rating;
- determining the logical sequence of mechanical and shop drawings;
- cross checking to verify the set is complete;
- identifying and interpreting symbols used on drawings, charts, guides and schedules;
- identifying the scale type used on drawings; and
- verifying the latest revision/work document

according to industry standards.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9246.05 **Interpret power distribution drawings and specifications** by:

- reading the drawing title block and/or title page;
- determining the logical sequence of power distribution drawings;
- confirming and anticipating hazards such as weight bearing capacity, rating;
- cross checking to verify the set is complete;
- identifying and interpreting the symbols used on the drawings, charts, guides and schedules;
- identifying the scale type used on drawings; and
- verifying the latest revision/working document

according to industry standards.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9246.06 **Interpret instrumentation and communication drawings and specifications** by:

- reading the drawing block title and/or title page;
- determining the logical sequence of the instrumentation, communication and shop drawings;
- confirming and anticipating hazards such as weight bearing capacity, rating;
- cross checking to verify the set is complete;
- identifying and interpreting symbols used on drawings, charts, guides and schedules;
- identifying the scale type used on drawings; and
- verifying the latest revision/working document

according to industry standards.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9246.07 **Interpret electrical drawings and specifications** by:

- reading the drawing title block and/or title page;
- determining the logical sequence of electrical drawings;
- confirming and anticipating hazards such as weight bearing capacity, rating;
- cross checking to verify the set is complete;
- identifying and interpreting the symbols used on the drawings, charts, guides and schedules;
- identifying the scale type used on drawings; and
- verifying the latest revision/working document

according to industry standards.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9246.08 **Interpret relay, solid state and logic drawings and specifications** by:

- determining the logical sequence of relay, solid state and logic drawings;
- confirming and anticipating hazards such as weight bearing capacity, rating;
- identifying and interpreting the symbols used on the drawings, charts, guides and schedules; and
- verifying the latest revision/working document

according to industry standards.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9246.09 **Create a materials and equipment list** based on drawings and specifications to complete the work by;

- reviewing and assessing material and equipment needs based on job specifications and regulatory/legislative requirements;
- communicating with client, coworkers, other trades; and
- planning for health and safety considerations

according to legislation, regulation, job specifications and client requirements.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9247 Use and Maintain Tools and Equipment

Skill Set Descriptor

Electricians-Construction and Maintenance (309A) use various tools and equipment to perform their job. These may include; hand tools, power tools, rigging/hoisting/pulling equipment, access equipment, scaffolding and elevated work platforms and other specialty tools and equipment. Electricians-Construction and Maintenance (309A) must make sure that these tools are used and maintained for the safety of themselves and the public. Electricians-Construction and Maintenance (309A) may receive training and certification in the use and maintenance of these tools and equipment.

Skills

9247.01 **Use hand tools (non-power)** such as wrenches, pliers, fastening tools, measuring tools, cutting tools, joining tools, levelling tools, rigging tools, A-frame and other material handling equipment by:

- selecting and using personal protective equipment;
- selecting the tool and verifying that the hand tool and accessory matches the application;
- verifying that the hand tool and accessories are in safe working condition;
- cleaning and lubricating as required; and
- refraining from using and/or removing defective tools and accessories from service

according to the Occupational Health and Safety Act (OHSA), legislation, regulation, codes, standards, manufacturer's specifications, industry standards, job specifications and site procedures, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

*** For a compulsory trade, a Trainer must hold a certificate of Qualification in that trade as per section 10(1) of BOSTA and be registered with Skilled Trades Ontario.**

9247.02 **Maintain hand tools (non-power)** such as wrenches, pliers, fastening tools, measuring tools, cutting tools, joining tools, levelling tools, rigging tools, A-frame and other material handling equipment by:

- inspecting tools for defects and taking remedial action such as repairing, replacing the tool or tool component;
- tagging defective tools;
- cleaning and lubricating as required;
- repairing or disposing of defective tools and accessories;
- storing in designated areas;
- ordering and replacing accessories and components;
- reporting defects; and
- taking equipment out of service as required

according to the Occupational Health and Safety Act (OHSA), legislation, regulation, codes, standards, manufacturer's specifications, industry standards, job specifications and site procedures, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9247.03 **Use power tools and accessories (electric, hydraulic, pneumatic)** such as drills, grinders, circular saws, drill presses, cut-off saws, hole saws, soldering equipment, drill bits, saw blades, and grinding wheels by:

- selecting and using personal protective equipment;
- selecting the tool, verifying that the power tool and accessory matches the application;
- verifying that the operator has been trained on the specific tool;
- verifying that the power tool and accessory are in safe working condition including inspecting cords, connecting devices, housings, control devices;
- verifying the tool is double insulated, grounded or ground fault circuit interrupted (GFCI) protected as required;
- verifying that the power tool and accessories have the required approval markings;
- cleaning and lubricating;
- monitoring tool function and performance;
- tagging defective tools;
- repairing or disposing of defective tools and accessories;
- ordering and replacing accessories and components;
- reporting defects as required; and
- refraining from using equipment that has been taken out of service

according to the Occupational Health and Safety Act (OHSA), legislation, regulation, codes, standards, manufacturer's specifications, industry standards, job specifications and site procedures, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9247.04 **Maintain power tools and accessories (electric, hydraulic, pneumatic)** such as drills, grinders, circular saws, drill presses, cut-off saws, hole saws, soldering equipment, drill bits, saw blades, and grinding wheels by:

- inspecting power tools and accessories for defects and taking remedial action such as repairing, replacing;
- tagging defective tools;
- cleaning and lubricating as required;
- repairing or disposing of defective tools and accessories;
- storing in designated areas;
- ordering and replacing accessories and components;
- reporting defects; and
- taking equipment out of service as required

according to the Occupational Health and Safety Act (OHSA), legislation, regulation, codes, standards, manufacturer's specifications, industry standards, job specifications and site procedures, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9247.05 **Use rigging, hoisting and pulling equipment** by:

- selecting and using personal protective equipment as required;
- confirming and anticipating hazards arising from ground and site conditions;
- selecting the applicable equipment;
- selecting the required signs, barriers, guards;
- verifying that the size and type matches the site location, operation and conditions;
- verifying the equipment is in specified and safe working order;
- monitoring equipment function and performance;
- making sure the operation is controlled by use of hand and/or voice signals;
- reporting defects or problems as required;
- controlling the release of stored energy (e.g. wire breaking under tension) for pulling equipment;
- verifying workers are informed and out of the danger zone; and
- taking equipment out of service as required

according to the Occupational Health and Safety Act (OHSA), legislation, regulation, codes, standards, manufacturer's specifications, industry standards, job specifications and site procedures, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9247.06 **Use scaffolds, lifting devices and elevating platforms** such as personnel lifts, scissor lifts, bucket lifts, swing stages and bosun's chairs by:

- selecting, using and maintaining personal protective equipment as required;
- selecting the applicable device or platform;
- verifying that the size and type matches the site location, operation and conditions;
- using guard rails and personal fall protection equipment as required;
- considering site hazards;
- avoiding electrical contact with existing installations;
- following limits of safe approach requirements;
- assembling parts and components;
- verifying the device or platform and components are in specified working order;
- controlling the operation by use of hand and/or voice signals;
- monitoring device function;
- reporting defects or problems; and
- taking equipment out of service as required

according to the Occupational Health and Safety Act (OHSA), legislation, regulation, codes, standards, manufacturer's specifications, industry standards, job specifications and site procedures, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9247.07 **Maintain scaffolds, lifting devices and elevating platforms** such as personnel lifts, scissor lifts, bucket lifts, swing stages and bosun's chairs by:

- verifying the device or platform and components are in specified working order;
- inspecting for defects and problems;
- documenting and/or tagging defects/problems;
- reporting defects or problems; and
- taking equipment out of service as required

according to the Occupational Health and Safety Act (OHSA), legislation, regulation, codes, standards, manufacturer's specifications, industry standards, job specifications and site procedures, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9247.08 **Store scaffolds, lifting devices and elevating platforms** such as personnel lifts, scissor lifts, bucket lifts, swing stages and bosun's chairs by:

- dismantling devices, platforms and components;
- storing and labelling devices, platforms and components;
- reporting defects or problems; and
- taking equipment out of service as required

according to the Occupational Health and Safety Act (OHSA), legislation, regulation, codes, standards, manufacturer's specifications, industry standards, job specifications and site procedures, company policies and procedures and engineering drawings.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9247.09 **Use ladders and other access equipment** by:

- selecting and using personal protective equipment;
- inspecting equipment prior to use;
- verifying the size and type matches the site location, operation and condition;
- using non-conductive ladders when in proximity to electrically energized systems;
- determining the installation requirements for specified ladder (extension, step);
- determining alternatives to ladder use through risk assessment;
- determining ladder grade; and
- monitoring equipment performance and function

according to the Occupational Health and Safety Act (OHSA), legislation, regulation, codes, standards, manufacturer's specifications, industry standards, job specifications and site procedures, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9247.10 **Maintain ladders and other access equipment** by:

- verifying the access equipment is in specified working order;
- verifying that the access equipment is in a secured position;
- inspecting for defects and problems;
- documenting and/or tagging defects/problems;
- reporting defects or problems; and
- taking equipment out of service as required

according to the Occupational Health and Safety Act (OHSA), legislation, regulation, codes, standards, manufacturer's specifications, industry standards, job specifications and site procedures, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9247.11 **Perform trade-specific oxy-fuel cutting and welding procedures** to install brackets, hangers and struts by:

- selecting and using personal protective equipment (e.g. welding screens, clothing);
- selecting the applicable cutting or welding device;
- verifying that the device matches the application;
- confirming the devices are in specified working condition through inspection;
- confirming fire extinguishers are available during welding and cutting operations;
- considering hazards related to burns, eye hazards and breathing;
- monitoring device performance, storage requirements and function;
- reporting defects; and
- taking equipment out of service as required

according to Occupational Health and Safety Act (OHSA), Canadian Welding Bureau (CWB), Canadian Standards Association (CSA), legislation, regulation, codes, standards, manufacturer's specifications, industry standards, job specifications and site procedures, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9247.12 **Receive electrical material and equipment** by:

- reviewing delivery schedules and confirming storage space is available;
- determining manual and material handling equipment to be used;
- checking that the items being received match shipping documents;
- identifying a hazard-free location for unloading;
- using personal protective equipment as required;
- taking into consideration ergonomic hazards;
- locating and sequencing the material requirements;
- unloading equipment and securing material;
- keeping a complete record of inventory materials;
- verifying all electrical equipment is approved; and
- maintaining an adequate supply on hand of frequently used items

according to government regulations, site specifications, manufacturer's specifications, company standards and policies.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9247.13 **Use bending and threading tools** such as manual and power threaders and benders by:

- selecting and using personal protective equipment;
- selecting the applicable tool and accessories;
- verifying that the tool and accessories match the application,
- verifying that the tool and accessories are in specified safe working condition:
- monitoring tool performance and function;
- reporting defects; and
- taking out of service as required

according to Occupational Health and Safety Act (OHSA), Canadian Standards Association (CSA), Ontario Electrical Safety Code (OESC) and Canadian Electrical Code (CEC), legislation, regulation, codes, standards, manufacturer's specifications, industry standards, job specifications and site procedures, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9247.14 **Maintain bending and threading tools** such as manual and power threaders and benders by:

- following a preventative and predictive maintenance schedule;
- testing tool function and performance;
- repairing or replacing the tool and components as required;
- verifying the tools are in safe working condition;
- inspecting for defects and problems;
- documenting and tagging defects/problems;
- reporting defects or problems; and
- taking tools out of service as required

according to Occupational Health and Safety Act (OHSA), Canadian Standards Association (CSA), Ontario Electrical Safety Code (OESC) and Canadian Electrical Code (CEC), legislation, regulation, codes, standards, manufacturer's specifications, industry standards, job specifications and site procedures, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9247.15 **Use explosive actuated tools** by:

- selecting and using personal protective equipment;
- obtaining required training and certification for the device;
- selecting the tool, verifying that the tool and accessories match the application;
- verifying the explosive actuated tool and accessories are in specified safe working condition;
- setting up the tool for the application;
- cleaning as required;
- following operating instructions;
- monitoring tool function and performance;
- repairing or disposing of defective tools and accessories; and
- removing failed or misfired cartridges/shots and disposing as per recommendations

according to the Occupational Health and Safety Act (OHSA), legislation, regulation, codes, standards, manufacturer's specifications, industry standards, job specifications and site procedures, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9247.16 **Maintain explosive actuated tools** by:

- inspecting the explosive actuated tool and accessories to verify they are in specified safe working condition;
- testing tool function and performance;
- cleaning as required;
- repairing or disposing of defective tools and accessories;
- removing failed or misfired cartridges/shots and disposing as per recommendations;
- ordering and replacing accessories and components;
- reporting defects;
- taking out of service as required; and
- securing and separating tools and cartridges/shots during storage and making sure they are not left unattended

according to the Occupational Health and Safety Act (OHSA), legislation, regulation, codes, standards, manufacturer's specifications, industry standards, job specifications and site procedures, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9247.17 **Use thermit welding tools** to bond (join) conductors to conductors, conductors to metallic components or metallic components to other metallic components by:

- using personal protective equipment such as gloves, eye and respiratory protection;
- removing hazards;
- taking precautions to prevent burns and inhalation of toxic fumes;
- assessing environmental conditions and ventilation control if necessary;
- confirming there is no moisture in the moulds;
- verifying fire extinguishers are readily available;
- verifying the moulds and charges match the application;
- confirming that the device matches the application;
- verifying the devices are in specified working condition through inspection;
- follow operating instructions; and
- reporting defects as required

according to Canadian Electrical Code (CEC), Ontario Electrical Safety Code (OESC), Occupational Health and Safety Act (OHSA), Canadian Standards Association (CSA), legislation, regulation, codes, standards, manufacturer's specifications, industry standards, job specifications and site procedures, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9248 Use and Maintain Testing and Measuring Equipment

Skill Set Descriptor

As technology evolves, the use of testing and measuring equipment continues to become important for Electricians-Construction and Maintenance (309A) to perform their jobs. These testing and measuring devices include; ammeters, multi-meters, oscilloscopes, thermographic imaging devices, ultrasonic testing equipment, resistance testers and others. Electricians-Construction and Maintenance (309A) must make sure that these tools and devices are used and maintained for the safety of themselves and the public. Electricians-Construction and Maintenance (309A) may receive training and certification in the use and maintenance of these testers and measuring equipment, especially with changes in technology.

Skills

9248.01 Use analog and digital multi-meters by:

- using arc flash rated and other personal protective equipment;
- selecting and setting the device that matches the application;
- verifying the item selected has the required category (CAT) rating, is approved, meets the voltage, current, resistance requirements applicable to the system being tested;
- calibrating the meter as required;
- verifying meter has specified leads for the application;
- verifying the meter operation against a known source before and after testing to verify function;
- following all recommended test procedures; and
- monitoring device function and performance

according to Canadian Standards Association (CSA) Z462 and Z463, manufacturer's specifications, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

*** For a compulsory trade, a Trainer must hold a certificate of Qualification in that trade as per section 10(1) of BOSTA and be registered with Skilled Trades Ontario.**

9248.02 **Maintain analog and digital multi-meters** by:

- following preventative and predictive maintenance schedule;
- inspecting device to verify it is in specified working condition;
- testing device function and performance;
- securing and storing as required;
- following recalibration requirements;
- reporting defects/problems; and
- taking out of service as required

according to CSA Z462 and Z463, manufacturer's specifications, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9248.03 **Use electronic test equipment** such as logic probes, milliamp loop calibrators, resistance temperature detector (RTD), thermocouple calibrators, signal generators and oscilloscopes by:

- using personal protective equipment;
- selecting the applicable equipment for the task;
- calibrating the equipment as required;
- verifying the equipment is approved as required;
- following recommended test procedures;
- verifying the meter operation against a known source before and after testing (to verify function); and
- monitoring equipment function and performance

according to the Occupational Health and Safety Act, manufacturer's specifications, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9248.04 **Maintain electronic test equipment** such as logic probes, milliamp loop calibrators, resistance temperature detector (RTD), thermocouple calibrators, signal generators and oscilloscopes by:

- inspecting equipment to verify it is in specified working condition;
- testing equipment function and performance;
- conducting preventative and predictive maintenance requirements;
- securing and storing as required;
- following recalibration requirements;
- reporting defects/problems; and
- taking out of service as required

according to the Occupational Health and Safety Act, manufacturer's specifications, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9248.05 **Use insulation testers** by:

- using arc flash rated and other personal protective equipment;
- selecting the applicable device for the task;
- calibrating the device as required;
- verifying the circuit or equipment being tested is de-energized and isolated;
- isolating public and other workers from the hazard or equipment as required;
- following all recommended test procedures; and
- monitoring tester function and performance

according to Canadian Electrical Code (CEC), Ontario Electrical Safety Code (OESC), manufacturer's specifications, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9248.06 **Maintain insulation testers** by:

- following preventative and predictive maintenance schedule;
- inspecting tester to verify it is in specified working condition;
- testing function and performance;
- securing and storing as required;
- following recalibration requirements;
- reporting defects/problems; and
- taking out of service as required

according to Canadian Electrical Code (CEC), Ontario Electrical Safety Code (OESC), manufacturer's specifications, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9248.07 **Use high voltage test equipment** such as voltage detectors, meters by:

- using arc flash rated and other personal protective equipment;
- selecting the applicable device that matches the application;
- calibrating the device as required;
- verifying the meter operation against a known source before and after testing (to verify function);
- following all recommended test procedures; and
- monitoring equipment function and performance

according to manufacturer's specifications, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9248.08 **Maintain high voltage test equipment** such as voltage detectors, meters by:

- following preventative and predictive maintenance schedule;
- inspecting equipment to verify it is in specified working condition;
- testing equipment function and performance;
- securing and storing as required;
- following recalibration requirements;
- reporting defects/problems;
- taking out of service as required; and
- obtaining recertification for the device as required

according to manufacturer's specifications, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9248.09 **Use computer-based testing and recording equipment** such as human machine interface (HMI), programmable logic controller (PLC) troubleshooting software, data collection software by:

- using arc flash rated and other personal protective equipment;
- selecting the equipment that matches application;
- programming the equipment as required; and
- monitoring equipment performance and function

according to manufacturer's specifications, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9248.10 **Maintain computer-based testing and recording equipment** such as human machine interface (HMI), programmable logic controller (PLC) troubleshooting software, data collection software by:

- following preventative and predictive maintenance schedule;
- inspecting equipment to verify it is in specified working condition;
- testing equipment function and performance;
- securing and storing as required; and
- reporting defects/problems as required

according to manufacturer's specifications, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9248.11 **Use special electrical test equipment** such as phase rotation meters, power meters, energy recorders and power quality analyzers by:

- using personal protective equipment such as arc flash gear;
- selecting the equipment for the task;
- calibrating the equipment as required;
- verifying the item selected has the category (CAT) rating, is approved, meets the voltage, current, resistance and impedance requirements as applicable to the system being tested;
- assessing hazardous conditions;
- following all recommended test procedures; and
- monitoring equipment function and performance

according to manufacturer's specifications, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9248.12 **Maintain special electrical test equipment** such as phase rotation meters, power meters, energy recorders and power quality analyzers by:

- following preventative and predictive maintenance schedule;
- inspecting equipment to verify it is in specified working condition;
- testing equipment function and performance;
- securing and storing;
- following recalibration requirements;
- reporting defects/problems; and
- taking out of service as required

according to manufacturer's specifications, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9248.13 **Use special test equipment** such as infrared thermography (IRT), non-contact sensing devices (such as temperature and voltage), illumination testers and vibration analyzers, ultrasound test equipment by:

- using personal protective equipment;
- selecting the equipment that matches application; and,
- calibrating or configuring the equipment as required;
- following all recommended test procedures; and
- monitoring equipment function and performance

according to legislation, regulation, manufacturer's specifications, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9248.14 **Maintain special test equipment** such as infrared thermography (IRT), non-contact sensing devices (such as temperature and voltage), illumination testers and vibration analyzers, ultrasound test equipment by:

- following preventative and predictive maintenance schedule;
- inspecting equipment to verify it is in specified working condition;
- testing equipment function and performance;
- securing and storing as required;
- following recalibration requirements;
- reporting defects/problems; and
- taking out of service as required

according to legislation, regulation, manufacturer's specifications, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9249 Install, Troubleshoot, Repair and Maintain Wiring Installations

Skill Set Descriptor

When working with wiring installations, Electricians-Construction and Maintenance (309A) must determine the system status (live or de-energized) and follow applicable safety protocols. Electricians-Construction and Maintenance (309A) should also consider using mechanical equipment and tools (e.g., pullers, benders) to reduce the physical demands associated with installation, troubleshooting, repair and maintenance of wiring installations.

Skills

9249.01 Install busway systems such as feeder duct (bus duct), plug-in devices, supports, mechanical protection and fire stops by:

- selecting and using components that match the application:
- torquing the electrical connections as required;
- mounting and supporting (horizontally and vertically);
- terminating; and
- conducting tests to verify free from shorts and grounds

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), plans and specifications, environmental conditions, manufacturer's specifications and company policies.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

*** For a compulsory trade, a Trainer must hold a certificate of Qualification in that trade as per section 10(1) of BOSTA and be registered with Skilled Trades Ontario.**

9249.02 **Maintain busway systems** such as feeder duct (bus ducts), plug-in devices, supports, mechanical protection and fire stops by:

- inspecting to identify and correct deficiencies;
- verifying there is no connection deterioration (e.g., thermal and visual);
- cleaning the interior and exterior surfaces as required; and
- conducting tests to verify insulation integrity (no shorts or grounds)

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), plans and specifications, environmental conditions, manufacturer's specifications and company policies.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9249.03 **Install branch circuit wiring for loads** such as lighting, receptacles, heating and motors by:

- selecting and using components that match the application;
- laying out branch circuit wiring;
- providing bonding to ground;
- selecting overcurrent protection; and
- selecting conductor size, voltage rating, type and material (e.g. insulation, copper aluminium)

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), manufacturer's specifications, industry standards, company policies and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9249.04 **Troubleshoot branch circuit wiring for loads** such as lighting, receptacles, heating and motors by:

- inspecting and investigating to determine root cause of any faults;
- correcting and repairing problem;
- testing operation to confirm functionality is restored; and
- returning to operational service

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), manufacturer's specifications, industry standards, company policies and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9249.05 **Install cable trays for use with power, signalling and communication cable wiring systems** by:

- selecting cable trays and components that match the application (considering cable size, weight and application type);
- completing layout:
- installing supports (vertical and horizontal);
- bonding cable trays to ground as required;
- verifying clearance requirements are met;
- verifying ventilation requirements are met; and
- installing fire stops where required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), manufacturer's specifications, industry standards, company policies and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9249.06 **Install single conductor cables** such as single conductor non-metallic, metal-sheathed or armoured cables by:

- selecting cables and components that match the application (considering cable size, weight and application type);
- completing layout:
- installing supports (vertical, horizontal, non-ferrous) as required;
- bonding metallic sheaths (armoured) to ground as required;
- verifying spacing requirements between cables are met;
- verifying configuration of phases when running cables in parallel;
- installing fire stops where required;
- selecting termination fittings as required to match enclosure designation and cable type; and
- terminating as required to prevent flow (sheath and eddy current):

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), manufacturer's specifications, industry standards, company policies and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9249.07 **Install multi-conductor cables** such as metallic and non-metallic sheathed cables by:

- selecting cables and components that match the application (considering cable size, weight and application type);
- completing layout:
- installing supports (vertical, horizontal);
- bonding metallic sheaths (jackets) to ground as required;
- verifying clearance requirements between cables are met;
- installing fire stops where required;
- selecting termination fittings to match enclosure designation and cable type; and
- terminating as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), manufacturer's specifications, industry standards, company policies and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9249.08 **Install non-metallic conduits and tubing** such as poly vinyl chloride (PVC), reinforced thermosetting resin conduit (RTRC) and electrical non-metallic tubing (ENT) by:

- selecting conduit and tubing that match the application (considering conductor size, expansion and contraction, flame spreading requirements, exposure to sunlight and application type);
- completing layout;
- installing supports (vertical, horizontal, expansion and contraction);
- installing bonding conductors as required;
- confirming penetration of fire separations meet industry requirements;
- providing sealing to prevent the ingress of moisture and gas when entering a building; and
- matching fittings as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), manufacturer's specifications, industry standards, company policies and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9249.09 **Install metallic conduits and tubing** such as rigid, flexible, liquid-tight and electrical metallic tubing (EMT) by:

- selecting conduit and tubing that match the application (considering conductor size, vibration, expansion and contraction, and application type);
- completing layout;
- installing supports (vertical, horizontal, expansion and contraction);
- installing bonding conductors as required;
- confirming penetration of fire separations meet industry requirements;
- providing sealing to prevent the ingress of moisture and gas when entering a building; and
- matching fittings as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), manufacturer's specifications, industry standards, company policies and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9249.10 **Install electric heating systems** such as electric forced air furnace, electric boiler, convection heaters, radiant heaters, heat tracing cables, duct heater, heating cables, inline heaters (circulation and immersion), heat exchangers, thermostats, high and operating limit safeties by:

- selecting systems, equipment and components that match application and the heat loss calculation;
- completing layout;
- installing and terminating bonding as required;
- selecting overcurrent protection;
- connecting equipment and controls; and
- monitoring for ground faults as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), manufacturer's specifications, industry standards, company policies and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9249.11 **Troubleshoot electric heating systems** such as electric forced air furnace, electric boiler, convection heaters, radiant heaters, heat tracing cables, duct heater, heating cables, inline heaters (circulation and immersion), heat exchangers, thermostats, high and operating limit safeties by:

- conducting field assessments using diagnostic and test equipment to determine source of malfunction;
- checking for continuity;
- checking for faults;
- checking voltage;
- checking for current;
- checking control systems (e.g., high/low systems);
- checking connections and terminations; and
- referencing installation specifications and drawings

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), manufacturer's specifications, industry standards, company policies and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9249.12 **Repair electric heating systems** such as electric forced air furnace, electric boiler, convection heaters, radiant heaters, heat tracing cables, duct heater, heating cables, inline heaters (circulation and immersion), heat exchangers, thermostats, high and operating limit safeties by:

- identifying and removing defective heating components and controls;
- replacing heating components and controls as required;
- resetting controls;
- repairing identified faults;
- cleaning and adjusting components;
- conducting tests of systems and controls after repair; and
- recording tests and repairs as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), manufacturer's specifications, industry standards, company policies and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9249.13 **Install wiring for hazardous locations** including new installations and modifications by:

- following safety precautions and procedures (such as precautions related to hazardous atmospheres that could lead to explosions and fires);
- selecting systems, equipment, tools and components that match application;
- identifying zones and divisions as per the area classification;
- selecting wiring methods that match the application;
- completing layout;
- completing connections;
- sealing components as required; and
- testing operation of the system

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), Technical Safety and Standards Association (TSSA), manufacturer's specifications, industry standards, company policies and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9249.14 **Install overhead distribution systems** such as single-phase and three-phase power, data communication, signalling and fibre optic systems by:

- selecting systems, equipment and components that match application;
- completing layout;
- determining clearances from ground and buildings and existing electrical installations;
- selecting and installing conductor supports (e.g. poles, racks);
- checking maximum span;
- determining bonding and grounding requirements;
- installing bonding to ground;
- installing overcurrent protection, and
- guying

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), Infrastructure Health and Safety Association (IHSA), environmental conditions, supply authority Local Distribution Company (LDC) specifications, manufacturer's specifications, industry standards, company policies and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9249.15 **Install direct buried underground cables** for single-phase and three-phase power, data communication, signalling and fibre optic systems by:

- selecting cables, equipment and components that match application;
- locating area to be excavated prior to digging
- completing layout:
- selecting depth of coverage, mechanical protection, spacing in trench, and backfill;
- selecting and installing locating/marking tape;
- determining bonding and grounding requirements;
- determining expansion and contraction such movement and settlement caused by environmental conditions; and
- installing overcurrent protection as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), Infrastructure Health and Safety Association (IHSA), environmental conditions, supply authority Local Distribution Company (LDC) specifications, manufacturer's specifications, industry standards, company policies and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9249.16 **Install direct buried underground conduits** for single-phase and three-phase power, data communication, signalling and fibre optic systems by:

- selecting conduits, equipment and components that match application;
- locating area to be excavated prior to digging;
- completing layout;
- selecting depth of coverage, mechanical protection, spacing in trench, backfill, and supports;
- selecting and installing locating/marking tape;
- determining bonding and grounding requirements;
- determining expansion and contraction regarding movement and settlement caused by environmental conditions; and
- installing overcurrent protection as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), Infrastructure Health and Safety Association (IHSA), environmental conditions, supply authority Local Distribution Company (LDC) specifications, manufacturer's specifications, industry standards, company policies and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9249.17 **Install cathodic protection systems** such as rectifiers, sacrificial anodes and equipment connections by:

- reading and interpreting job reference material and drawings;
- selecting cabling, equipment and components that match application;
- mounting system and components;
- bonding and grounding system and components;
- selecting and verifying cable pathway;
- selecting and verifying cable installation;
- terminating;
- verifying the operation and proofing the performance;
- testing operation; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Occupational Health and Safety Act (OHSA), manufacturer's specifications, industry standards, company policies and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9249.18 **Maintain cathodic protection systems** such as rectifiers, sacrificial anodes and equipment connections by:

- conducting visual inspection of the system;
- conducting operational and functional tests;
- cleaning components;
- installing bypass jumpers as required; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Occupational Health and Safety Act (OHSA), manufacturer's specifications, industry standards, company policies and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9249.19 **Connect supply to heating, ventilation, air conditioning and refrigeration (HVAC/R) systems** by:

- determining connected load requirements;
- selecting and installing branch circuit wiring;
- terminating and labelling conductors;
- mounting isolation switches;
- bonding and grounding system and components;
- testing operation; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Occupational Health and Safety Act (OHSA), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9249.20 **Install heating, ventilation, air conditioning and refrigeration (HVAC/R) controls** by:

- reading and interpreting job reference material and drawings;
- selecting cabling, equipment and components that match application and meet the environmental condition;
- selecting input/output (I/O) devices to match the application and meet the environmental condition;
- selecting, locating and mounting control devices;
- selecting and verifying cable pathway;
- selecting and verifying cable installation;
- labelling and terminating conductors;
- verifying operation; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Occupational Health and Safety Act (OHSA), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9249.21 **Maintain heating, ventilation, air conditioning and refrigeration (HVAC/R) electrical connections and controls** by:

- locking out and tagging out;
- verifying isolation/de-energization;
- conducting visual inspection of the system;
- conducting operational and functional tests;
- cleaning components; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Occupational Health and Safety Act (OHSA), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9249.22 **Install support components** such as structures, brackets, hangers and fasteners by:

- fabricating supports as per drawings, equipment requirements and building specifications;
- checking the mounting area;
- placing and mounting supports; and
- fastening as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), National Building Code (NBC), Ontario Building Code (OBC), Occupational Health and Safety Act (OHSA), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9249.23 **Install boxes and enclosures** by:

- determining installation requirements (purpose, equipment requirements, location requirements);
- selecting boxes and enclosures (size, type and designation);
- determining location for boxes and enclosures based on application as well as needs of other trades;
- assembling, positioning, mounting and supporting boxes and enclosures;
- removing existing boxes and enclosures when applicable; and
- updating documentation

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), National Building Code (NBC), Ontario Building Code (OBC), Occupational Health and Safety Act (OHSA), manufacturer's specifications, industry standards, company policies and procedures, drawings and specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9250 Install and Maintain Power Distribution Equipment Systems

Skill Set Descriptor

Distribution equipment provides and facilitates the efficient distribution of power to electrical systems and equipment, thereby allowing for the safe use of electricity.

Skills

9250.01 **Install power and energy metering systems** such as revenue billing devices, energy monitoring systems, current transformers, potential transformers, metering equipment by:

- selecting the equipment that matches the system;
- completing layout;
- installing system, equipment and components;
- installing and terminating bonding and grounding as required;
- completing connections; and
- testing system operation

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), supply authority Local Distribution Companies (LDCs), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

*** For a compulsory trade, a Trainer must hold a certificate of Qualification in that trade as per section 10(1) of BOSTA and be registered with Skilled Trades Ontario.**

9250.02 **Install high voltage protection and control devices** such as disconnects, lightening arresters, fuses and circuit breakers by:

- selecting devices, equipment and components to match design drawings and specifications;
- completing layout of equipment and components;
- installing and completing connections and terminations using stress cones and potheads;
- installing and terminating bonding as required;
- setting overcurrent devices as per design and coordination requirements; and
- testing to verify functionality and commissioning

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Institute of Electrical and Electronics Engineers (IEEE), supply authority Local Distribution Companies (LDCs), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9250.03 **Maintain high voltage protection and control devices** such as disconnects, lightening arresters, fuses and circuit breakers by:

- communicating with affected individuals/parties including the utility and customer;
- completing lock out and tag out requirements as required;
- verifying electrically safe work conditions have been achieved;
- installing temporary protective grounding equipment as required;
- conducting tests such as visual, thermographic imaging, insulation resistance;
- troubleshooting reported defects or faults;
- making repairs and replacing components as required; and
- verifying test results

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Institute of Electrical and Electronics Engineers (IEEE), local distribution companies (LDCs), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9250.04 **Install low voltage protection and control devices** such as disconnects, lightening arresters, fuses and circuit breakers by:

- selecting devices, equipment and components to match calculations, design drawings and specifications;
- completing layout of equipment and components;
- installing and completing connections and terminations for items such as conductors and buses;
- providing bonding to ground where required;
- setting overcurrent devices as per design and coordination requirements; and
- testing to verify functionality and commissioning

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Institute of Electrical and Electronics Engineers (IEEE), supply authority Local Distribution Companies (LDCs), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9250.05 **Maintain low voltage protection and control devices** such as disconnects, lightening arresters, fuses and circuit breakers by:

- communicating with affected individuals/parties including the customer;
- completing lock out and tag out requirements as required;
- verifying that electrically safe work condition has been achieved;
- installing temporary protective grounding equipment as required;
- conducting tests such as visual, thermographic imaging, insulation resistance;
- troubleshooting reported defects or faults;
- making repairs and replacing components as required; and
- verifying test results

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Institute of Electrical and Electronics Engineers (IEEE), supply authority Local Distribution Companies (LDCs), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9250.06 **Install high voltage oil and dry type distribution transformers** by:

- selecting transformers based on size and type to match design drawings and specifications;
- completing layout;
- observing/monitoring hoisting and rigging practices;
- configuring and terminating primary and secondary conductors using items such as busbars, delta, wye, stress cones and potheads;
- selecting primary and secondary voltage taps;
- installing and terminating bonding and grounding as required;
- following manufacturer energization procedures such as soaking;
- testing to verify primary and secondary voltage; and
- testing to verify functionality of auxiliary equipment such as ventilation, oil pump, temperature sensors

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), supply authority Local Distribution Companies (LDCs), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9250.07 **Install low voltage oil and dry type distribution transformers** by:

- selecting transformers based on load, size and type to match calculations, design drawings and specifications;
- determining mounting requirements, including suitability to support the size of the selected transformer, such as ceiling, pole, wall, pad or floor;
- completing layout;
- observing/monitoring hoisting and rigging practices;
- configuring and terminating primary and secondary conductors using items such as busbars, delta, wye, autotransformers, zigzag;
- selecting primary and secondary voltage taps;
- installing and terminating bonding and grounding as required;
- following manufacturer energization procedures such as soaking;
- testing to verify primary and secondary voltage; and
- testing to verify functionality of auxiliary equipment such as ventilation, oil pump, temperature sensors

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), local distribution companies (LDCs), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9250.08 **Maintain high and low voltage oil and dry type distribution transformers** by:

- communicating with affected individuals/parties including the utility and customer;
- completing lock out and tag out requirements as required;
- verifying that electrically safe work condition has been achieved;
- selecting and using personal protective equipment as required;
- determining if transformer oil contains polychlorinated biphenyl (PCBs);
- determining oil temperature;
- conducting tests such as visual, thermographic imaging, insulation resistance, turn ratio, oil sampling;
- verifying isolation and de-energization;
- cleaning components such as insulators, ventilation louvers, filters as required;
- troubleshooting reported defects or faults;
- making repairs and replacing components as required;
- verifying test results; and
- completing documentation (including designated substance report) as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), supply authority Local Distribution Companies (LDCs), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9250.09 **Install power distribution panels** by:

- selecting panels by determining loads, size, and type to match the calculations, design drawings and specifications;
- selecting panel enclosures to match the application and environment;
- determining mounting requirements;
- completing layout by determining required clearances;
- terminating conductors including high and low voltage types;
- installing and terminating bonding and grounding as required;
- setting overcurrent devices as per design and coordination requirements;
- testing to verify functionality such as key interlocking, trip settings and coordination; and
- energizing the systems as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9250.10 **Maintain power distribution panels** by:

- communicating with affected individuals/parties including the customer;
- completing lock out and tag out requirements as required;
- conducting tests such as visual, thermographic imaging;
- verifying that electrically safe work condition has been achieved;
- cleaning components as required;
- troubleshooting reported defects or faults;
- making repairs and replacing components as required such as circuit breakers;
- verifying test results; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9250.11 **Install ground fault protection** by:

- selecting type of ground fault protection such as zero sequencing or ground return path to match design drawings and specifications, current and voltage levels;
- determining mounting requirements;
- completing layout;
- terminating conductors;
- installing and terminating bonding and grounding as required;
- setting trip settings such as leakage current settings; and
- testing to verify functionality

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9250.12 **Install ground fault detection** by:

- selecting type of ground fault detection to match design drawings and specifications, voltage levels;
- determining mounting requirements;
- completing layout;
- terminating conductors;
- installing and terminating bonding and grounding as required;
- setting trip settings as required; and,
- testing to verify functionality

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

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mm/dd/yy	Apprentice Print Name	Apprentice Signature

9250.13 **Maintain ground fault detection** by:

- communicating with affected individuals/parties including customer;
- completing lock out and tag out requirements as required;
- conducting testing as required including leakage current testing;
- troubleshooting reported defects or faults such as indicator failure and incorrect trip settings;
- making repairs and replacing components as required;
- verifying test results; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9250.14 **Install ground fault circuit interrupters (GFCI)** such as circuit breakers and other integrated devices (non-class A) by:

- selecting type of ground fault circuit interrupter (GFCI) to match design drawings and specifications, current and voltage levels;
- determining mounting requirements;
- completing layout;
- terminating conductors;
- installing and terminating bonding and grounding as required;
- setting trip settings as required; and
- testing to verify functionality

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9250.15 **Maintain ground fault circuit interrupters (GFCI)** such as circuit breakers and other integrated devices (non-class A) by:

- communicating with affected individuals/parties including the customer;
- conducting leakage current testing;
- troubleshooting reported defects or faults;
- making repairs and replacing components as required;
- verifying test results; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9250.16 **Install power factor correction equipment** such as capacitors, synchronous motors by:

- selecting type, size of equipment based on power correction calculation;
- completing layout;
- determining mounting requirements;
- completing connections;
- installing and terminating bonding and grounding as required;
- testing functionality as required; and
- validating the correction as per the calculations

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), supply authorities Local Distribution Companies (LDCs), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

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mm/dd/yy	Apprentice Name	Apprentice Signature

9250.17 **Maintain power factor correction equipment** such as capacitors, synchronous motors by:

- communicating with affected parties including customer;
- completing lock out and tag out as required;
- taking power factor readings;
- discharging stored energy as required;
- conducting tests such as thermographic imaging, dielectric strength;
- making repairs and replacing components as required;
- verifying functionality;
- disposing of components as per environmental requirements and regulations; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), supply authorities Local Distribution Companies (LDCs), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9250.18 **Install direct current (DC) power distribution systems** such as emergency equipment, renewable energy systems, data centre systems, energy storage systems, process-based systems by:

- selecting the system and equipment by determining loads, size, and type to match the calculations, design drawings and specifications;
- determining mounting requirements;
- completing layout by determining required clearances;
- terminating conductors;
- installing and terminating bonding and grounding as required;
- setting overcurrent devices;
- testing to verify functionality; and
- energizing the systems as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9250.19 **Maintain direct current (DC) power distribution systems** such as emergency equipment, renewable energy systems, data centre systems, energy storage systems, process-based systems by:

- communicating with affected individuals/parties including the customer;
- completing lock out and tag out requirements as required;
- verifying that electrically safe work condition has been achieved;
- conducting tests such as visual, thermographic imaging, insulation resistance, ventilation requirements;
- cleaning components as required;
- troubleshooting reported defects or faults;
- making repairs and replacing components as required such as circuit breakers, power supplies, rectifiers, ventilation;
- verifying test results; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9250.20 **Install direct current (DC) protective devices** such as arc fault circuit interrupters, lightening arresters, surge arresters, primary and secondary protectors, supplementary protectors, and ground fault protective devices by:

- selecting the device by determining loads, size, and type to match the calculations, design drawings and specifications;
- determining mounting requirements;
- completing layout;
- terminating conductors;
- installing and terminating bonding and grounding as required;
- testing to verify functionality; and
- energizing the device as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9250.21 **Install AC protective devices** such as arc fault circuit interrupters, lightening arresters, surge arresters, supplementary protectors, and ground fault circuit interrupter (GFCI) devices (class A) by:

- selecting the device by determining loads, size, and type to match the calculations, design drawings and specifications;
- determining mounting requirements;
- completing layout;
- terminating conductors;
- installing and terminating bonding and grounding as required;
- testing to verify functionality as required; and
- energizing the device as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9250.22 **Maintain AC/DC protective devices** such as arc fault circuit interrupters, lightening arresters, surge arresters, primary and secondary protectors, supplementary protectors, and ground fault protective devices, GFCI devices (class A) by:

- communicating with affected individuals/parties including the customer;
- completing lock out and tag out requirements as required;
- verifying that electrically safe work condition has been achieved;
- conducting tests such as visual, thermographic imaging, insulation resistance;
- troubleshooting reported defects or faults;
- making repairs and replacing components as required;
- verifying test results; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9251 Install and Maintain Lighting Systems

Skill Set Descriptor

Electricians-Construction and Maintenance (309A) who work on lighting systems, typically work at heights. The selection and use of ladders, lifting devices and work platforms to provide access to lighting systems is critical for the safety of the electrician and the public. Electricians-Construction and Maintenance (309A) must make sure that they have fall protection and/or guarding in place, De-energization is also important when working with lighting systems.

Skills

9251.01 Install non-ballasted lighting such as incandescent, compact florescent and LED by:

- selecting components that match application;
- determining quantity, type and wiring requirements;
- completing layout;
- terminating conductors;
- installing and terminating bonding as required;
- performing installation; and
- testing operation

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

*** For a compulsory trade, a Trainer must hold a certificate of Qualification in that trade as per section 10(1) of BOSTA and be registered with Skilled Trades Ontario.**

9251.02 **Maintain non-ballasted lighting** such as incandescent, compact florescent and LED by:

- communicating with affected individuals/parties as required;
- completing lock out and tag out requirements as required;
- conducting tests such as voltage and illumination levels;
- troubleshooting reported defects or faults such as reduced lighting levels, premature bulb failure, wiring connections;
- cleaning components such as reflectors, globes, lenses;
- repairing and replacing components such as lamps, sockets, holders as required;
- verifying operation; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9251.03 **Install ballasted lighting** such as florescent, compact fluorescent, neon and LED by:

- selecting units/systems such that match design drawings and specifications;
- determining quantity, type and wiring requirements;
- completing layout;
- terminating conductors;
- installing and termination bonding as required;
- performing installation; and
- testing operation

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9251.04 **Maintain ballasted lighting** such as florescent, compact fluorescent, neon and LED by:

- communicating with affected individuals/parties as required;
- completing lock out and tag out requirements as required;
- verifying that electrically safe work condition has been achieved;
- conducting tests such as voltage and illumination levels;
- troubleshooting reported defects or faults such as reduced lighting levels, premature bulb failure, noise level, wiring connections;
- cleaning components such as reflectors, globes, lenses;
- repairing, replacing or retrofitting (using approved kit) components such as lamps, sockets, holders, ballasts, power supply rectifiers as required;
- matching components between ballast and lamps as required;
- verifying operation; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9251.05 **Install high intensity discharge lighting** such as mercury vapour, metal halide and high/low pressure sodium by:

- selecting units/systems that match design drawings and specifications;
- determining quantity, type and wiring requirements;
- completing layout;
- terminating conductors;
- installing and terminating bonding as required;
- performing installation; and
- testing operation

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9251.06 **Maintain high intensity discharge lighting** such as mercury vapour, metal halide and high/low pressure sodium by:

- communicating with affected individuals/parties as required;
- completing lock out and tag out requirements as required;
- verifying that electrically safe work condition has been achieved;
- conducting tests such as maintenance log check (lamp life), voltage, illumination levels;
- troubleshooting reported defects or faults such as reduced lighting levels, premature bulb failure, wiring connections, lamp cycling;
- cleaning components such as reflectors, globes, lenses;
- repairing, replacing or retrofitting (using approved kit) components such as lamps, sockets, holders, ballasts as required;
- disposing of materials and components as required;
- matching components between ballast and lamps as required;
- verifying operation; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9251.07 **Install light dimming and control systems and components** such as dimmers, switching devices, timers, occupancy sensors, daylight harvesting, building monitoring systems by:

- selecting components and systems that match design drawings and specifications;
- determining quantity, type and wiring requirements;
- configuring components as required;
- completing layout;
- terminating conductors;
- installing and terminating bonding as required;
- performing installation; and
- testing operation

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9251.08 **Maintain light dimming and control systems and components** such as dimmers, switching devices, timers, occupancy sensors, daylight harvesting, building monitoring systems by**:**

- communicating with affected individuals/parties as required;
- completing lock out and tag out requirements as required;
- verifying that electrically safe work condition has been achieved;
- conducting tests for functionality of system and components;
- troubleshooting reported defects or faults;
- repairing, replacing or retrofitting components as required;
- matching components between ballast and control systems;
- verifying operation; and,
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9251.09 **Install exit and emergency lighting powered by unit equipment, emergency power supply** by:

- selecting components and systems that match design drawings and specifications;
- determining quantity, type and wiring requirements;
- making load calculations based on the voltage and wattage requirements with consideration of voltage drop;
- completing layout;
- mounting equipment and components;
- terminating conductors;
- installing and termination bonding as required; and
- testing operation

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9251.10 **Maintain exit and emergency lighting powered by unit equipment, emergency power supply** by:

- conducting tests for functionality of system and components as required;
- troubleshooting reported defects or faults;
- repairing, replacing or retrofitting components as required;
- matching components as required;
- verifying operation; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9252 Install and Maintain Rotating Equipment and Associated Control Systems

Skill Set Descriptor

Electricians-Construction and Maintenance (309A) install and maintain rotating equipment and their associated control systems. For safety reasons, especially during the troubleshooting, maintenance and testing stages of a job, de-energization is important in preventing the inadvertent starting of equipment that could injure workers and others. Lock out and tag out, guarding of moving parts and testing to verify equipment is immobilized and poses no risk are also important.

Skills

9252.01 Maintain brush assemblies, slip rings and commutators by:

- completing lock out and tag out requirements as required;
- verifying that electrically safe work condition has been achieved;
- conducting visual tests;
- troubleshooting defects or faults;
- making repairs and replacing components such as brushes, brush holders, springs as required;
- adjusting position;
- cleaning commutators, slip rings and brush holders;
- resurfacing commutators and slip rings as required;
- testing operation; and
- completing documentation as required

according to manufacturer's specifications and instructions, company policies and procedures, client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

*** For a compulsory trade, a Trainer must hold a certificate of Qualification in that trade as per section 10(1) of BOSTA and be registered with Skilled Trades Ontario.**

9252.02 **Install AC/DC motors and generators** by:

- selecting motors, generators, equipment and components that match design drawings and specifications;
- determining location, type and wiring requirements;
- meeting cable shielding requirements (variable frequency AC motors);
- calculating conductor size;
- selecting and terminating conductors;
- installing and terminating bonding as required; and
- testing operation

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9252.03 **Maintain DC motors and generators** by:

- completing lock out and tag out requirements as required;
- verifying that electrically safe work condition has been achieved when required;
- conducting tests such as insulation resistance, visual, vibration analysis, thermographic imaging, physical inspection;
- troubleshooting defects or faults;
- making repairs and replacing components as required;
- cleaning surfaces, ventilation, openings;
- testing operation; and
- completing documentation as required

according to the manufacturer's specifications and instructions, company policies and procedures, client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9252.04 **Maintain AC motors and generators** by:

- completing lock out and tag out requirements as required;
- verifying that electrically safe work condition has been achieved when required;
- conducting tests such as insulation resistance, visual, vibration analysis, thermographic imaging, physical inspection;
- troubleshooting defects or faults;
- making repairs and replacing components such as couplings, bearings, capacitors, centrifugal switches as required;
- cleaning surfaces, ventilation, openings;
- testing operation; and
- completing documentation as required

according to the manufacturer's specifications and instructions, company policies and procedures, client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9252.05 **Install auxiliary protective equipment** such as proximity switches, limit switches, speed switches and encoders, over-temperature devices by:

- selecting equipment and components that match design drawings and specifications;
- determining location, type and wiring requirements;
- selecting and terminating conductors; and
- testing operation

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9252.06 **Maintain auxiliary protective equipment** such as proximity switches, limit switches, speed switches, encoders, over-temperature devices by:

- completing lock out and tag out requirements as required;
- verifying that electrically safe work condition has been achieved when required;
- conducting functionality tests as required;
- troubleshooting defects or faults;
- making repairs and replacing components as required;
- cleaning and lubricating as required;
- testing operation; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9252.07 **Maintain lubrication systems and components** such as pumps, timers, level switches, pressure switches, flow switches by:

- completing lock out and tag out requirements as required;
- verifying that electrically safe work condition has been achieved when required;
- conducting functionality tests as required;
- troubleshooting defects or faults;
- making repairs and replacing components as required;
- testing operation; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9252.08 **Maintain braking and clutch systems and components** such as solenoids, limit switches, pressure switches by:

- completing lock out and tag out requirements as required;
- verifying that electrically safe work condition has been achieved when required;
- conducting functionality tests as required;
- troubleshooting defects or faults;
- checking friction surfaces;
- making repairs and replacing components as required;
- cleaning as required;
- testing operation; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9252.09 **Start-up and shut-down rotating equipment** by:

- identifying requirements for start-up and shut down;
- notifying affected individuals/parties as required;
- completing lock out and tag out requirements as required;
- verifying that electrically safe work condition has been achieved when required;
- following sequencing; and
- using associated control systems

according to the Occupational Health and Safety Act (OHSA), manufacturer's specifications, commissioning and decommissioning documents, company policies and procedures, client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9252.10 **Install relays, solid state devices and controls** by:

- selecting devices and components that match design drawings and specifications;
- determining location, type and wiring requirements;
- mounting devices and components;
- selecting and terminating conductors;
- configuring operation as required; and
- testing operation

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9252.11 **Maintain relays, solid state devices and controls** by:

- completing lock out and tag out requirements as required;
- verifying that electrically safe work condition has been achieved when required;
- conducting functionality and visual tests as required;
- troubleshooting defects or faults;
- making repairs and replacing components as required;
- testing operation; and,
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9252.12 **Install protective devices** such as overloads, relays, fuses, phase loss and voltage monitoring relays, and circuit breakers by:

- selecting devices and components that match design drawings and specifications and application such as fuse classifications, circuit breaker settings, self-protected combination motor controls;
- determining location, type and wiring requirements;
- mounting devices and components;
- selecting and terminating conductors;
- installing and terminating bonding as required;
- configuring operation as required; and
- testing operation

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9252.13 **Maintain protective devices** such as overloads, relays, fuses, phase loss and voltage monitoring relays, and circuit breakers by:

- completing lock out and tag out requirements as required;
- verifying that electrically safe work condition has been achieved when required;
- conducting functionality tests as required;
- troubleshooting defects or faults;
- making repairs and replacing components as required;
- testing operation; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9252.14 **Install control panels** such as start stop stations, equipment control stations by:

- selecting components that match application;
- determining location, type and wiring requirements;
- installing and wiring components within the enclosure as required;
- mounting panels and components;
- selecting and terminating conductors;
- installing and terminating bonding as required; and
- testing operation

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9252.15 **Install external field devices** such as limit switches, stop-start devices, status indicators by:

- selecting devices and components that match application;
- determining location, type and wiring requirements;
- mounting panels and components;
- selecting and terminating conductors;
- installing and terminating bonding as required; and
- testing operation

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9252.16 **Maintain external field devices** such as limit switches, stop-start devices, status indicators by:

- completing lock out and tag out requirements as required;
- verifying that electrically safe work condition has been achieved when required;
- conducting functionality tests as required;
- troubleshooting defects or faults;
- cleaning components such as limit switches, push buttons, optical detectors as required;
- making repairs and replacing components as required;
- testing operation; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9253 Install and Maintain Motor Drives and Associated Control Systems

Skill Set Descriptor

Electricians-Construction and Maintenance (309A) install and maintain motor drives and their associated control systems. For safety reasons, especially during the troubleshooting, maintenance and testing stages of a job, de-energization is important in preventing consequential movement and cycling that could injure workers and others.

Skills

9253.01 Install DC constant voltage drives by:

- selecting drives and components that match the motor;
- determining location, type and wiring requirements;
- mounting drives and components;
- selecting and terminating conductors;
- configuring operation as required; and
- testing operation

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

*** For a compulsory trade, a Trainer must hold a certificate of Qualification in that trade as per section 10(1) of BOSTA and be registered with Skilled Trades Ontario.**

9253.02 **Maintain DC constant voltage drives** by:

- completing lock out and tag out requirements as required;
- verifying that electrically safe work condition has been achieved when required;
- conducting operational tests as required;
- troubleshooting defects or faults;
- making repairs and replacing components as required;
- testing operation; and
- completing documentation as required

according to manufacturer's specifications, company policies and procedures, client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Name	Apprentice Signature

9253.03 **Install adjustable speed DC drives** by:

- selecting drives and components that match the motor;
- determining location, type and wiring requirements;
- mounting drives and components;
- selecting and terminating conductors;
- installing and terminating bonding as required;
- configuring operating parameters as required; and
- testing operation

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9253.04 **Maintain adjustable speed DC drives** by:

- completing lock out and tag out requirements as required;
- verifying that electrically safe work condition has been achieved when required;
- conducting operational tests as required;
- troubleshooting defects or faults;
- repairing and replacing components as required;
- reconfiguring operating parameters as required;
- testing operation; and
- completing documentation as required

according to manufacturer's specifications, company policies and procedures, client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9253.05 **Install AC constant voltage drives** by:

- selecting drives and components that match the motor;
- determining location, type and wiring requirements;
- mounting drives and components;
- selecting and terminating conductors;
- installing and terminating bonding as required;
- configuring operation as required; and
- testing operation

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9253.06 **Maintain AC constant voltage drives** by:

- completing lock out and tag out requirements as required;
- verifying that electrically safe work condition has been achieved when required;
- conducting operational tests as required;
- troubleshooting defects or faults;
- repairing and replacing components as required;
- testing operation; and
- completing documentation as required

according to manufacturer's specifications, company policies and procedures, client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9253.07 **Install adjustable speed AC drives** by:

- selecting drives and components that match the motor;
- determining location, type and wiring requirements;
- mounting drives and components;
- selecting and terminating conductors;
- installing and terminating bonding as required;
- configuring operating parameters as required; and
- testing operation

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9253.08 **Maintain adjustable speed AC drives** by:

- completing lock out and tag out requirements as required;
- verifying that electrically safe work condition has been achieved when required;
- conducting operational tests as required;
- troubleshooting defects or faults;
- repairing and replacing components as required;
- reconfiguring operating parameters as required;
- testing operation; and
- completing documentation as required

according to manufacturer's specifications, company policies and procedures, client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9253.09 **Install programmable logic controller (PLC) systems** by:

- selecting systems that match the design, specifications and application;
- determining location, type and wiring requirements;
- mounting system and components;
- selecting and terminating conductors;
- installing and terminating bonding as required;
- configuring and programming as required; and
- testing operation

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9253.10 **Maintain programmable logic controller (PLC) systems** by:

- verifying that electrically safe work condition and zero energy state has been achieved when required;
- conducting operational and functional tests as required;
- troubleshooting defects or faults;
- repairing and replacing components such as I/O module, power supplies, controllers;
- reconfiguring or reprogramming as required;
- testing operation; and
- completing documentation as required

according to manufacturer's specifications, company policies and procedures, client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9253.11 **Install safety systems and associated components** such as light curtains, safety mats, proximity sensors, safety programmable logic controllers (PLCs) and associated guarding, relays and controls by:

- selecting systems and components that match the design, specifications and application;
- determining location, type and wiring requirements;
- mounting system and components;
- selecting and terminating conductors;
- configuring and programming as required; and
- testing operation and function (confirming safety of tester(s) in a failure)

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9253.12 **Maintain safety systems and associated components** such as light curtains, safety mats, proximity sensors, safety programmable logic controllers (PLCs) and associated guarding, relays and controls by:

- completing lock out and tag out requirements as required;
- verifying that electrically safe work condition has been achieved when required;
- conducting operational and functional tests as required;
- troubleshooting defects or faults;
- repairing and replacing components as required;
- reconfiguring or reprogramming as required;
- testing operation and function (confirming safety of tester(s) in a failure); and
- completing documentation as required

according to manufacturer's specifications, company policies and procedures, client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9253.13 **Install robotic systems** by:

- selecting systems and components that match the design, specifications and application;
- determining location, type and wiring requirements;
- mounting system and components;
- terminating conductors;
- configuring, calibrating and programming as required; and
- testing operation and function (confirming safety of tester(s) in a failure)

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures and client specifications

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9253.14 **Maintain robotic systems** by:

- completing lock out and tag out requirements as required;
- verifying that electrically safe work condition and zero energy state has been achieved;
- conducting operational and functional tests as required;
- troubleshooting defects or faults;
- repairing and replacing components as required;
- reconfiguring re-calibrate or reprogramming as required;
- testing operation and function (confirming safety of tester(s) in a failure); and
- completing documentation as required

according to manufacturer's specifications, company policies and procedures, client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9254 **Install and Maintain Power Generating Systems and Associated Equipment**

Skill Set Descriptor

Power generating systems convert different types of energy into electricity. These may include battery and other stand-by systems that provide auxiliary power used during power failures, uninterruptible power supply (UPS) systems as well as renewable and alternate energy and storage systems such as fuel cells, wind turbines, photovoltaic modules and others. When working with these different systems, it is important for Electricians-Construction and Maintenance (309A) to understand their unique health and safety needs such as eye wash stations and showers for battery systems and fall protection requirements for renewable energy systems (e.g., wind turbines). In the case of some renewable energy systems that cannot be de-energized, Electricians-Construction and Maintenance (309A) need to make sure they take health and safety precautions.

Skills

9254.01 **Install uninterruptible power supply (UPS) systems to provide stand-by power** by:

- selecting systems and components that match the design, specifications and application;
- determining location, type and wiring requirements;
- mounting system and components;
- selecting and terminating conductors;
- installing and terminating bonding and grounding as required;
- connecting stand-by energy source (batteries, fuel cells);
- configuring and programming as required; and
- testing operation

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

*** For a compulsory trade, a Trainer must hold a certificate of Qualification in that trade as per section 10(1) of BOSTA and be registered with Skilled Trades Ontario.**

9254.02 **Maintain uninterruptible power supply (UPS) systems to provide stand-by power** by:

- completing lock out and tag out requirements as required;
- verifying that electrically safe work condition has been achieved when required;
- conducting operational and functional tests as required;
- troubleshooting defects or faults;
- repairing and replacing components as required;
- reconfiguring system as required;
- testing operation; and
- completing documentation as required

according to manufacturer's specifications, company policies and procedures, client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9254.03 **Install battery stand-by systems to provide auxiliary power during power failure** by:

- selecting systems and components that match the design, specifications and application such as transfer switches, power supplies, rectifiers, battery chargers, disconnects;
- determining location, type, wiring and ventilation requirements;
- mounting system and components;
- selecting and terminating conductors;
- installing and terminating bonding and grounding as required;
- connecting batteries;
- configuring system such as depth of discharge and charging, transfer rates; and
- testing operation

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9254.04 **Maintain battery stand-by systems to provide auxiliary power during power failure** by:

- completing lock out and tag out requirements as required;
- verifying that electrically safe work condition has been achieved when required;
- confirming electrolyte levels, battery charger performance, connections as required;
- conducting operational and functional tests as required;
- troubleshooting defects or faults;
- repairing and replacing components as required;
- cleaning components such as the ventilator fan, terminal posts;
- reconfiguring system as required;
- testing operation; and
- completing documentation as required

according to manufacturer's specifications, company policies and procedures, client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9254.05 **Install stand-by generation equipment** by:

- selecting systems and components that match the design, specifications and application such as life safety, off-grid power, mandatory and non-mandatory emergency loads;
- determining location, type, size, wiring and ventilation requirements;
- mounting system and components;
- selecting and terminating conductors;
- installing and terminating bonding and grounding as required;
- configuring system as required; and
- testing operation

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), environmental legislation, manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9254.06 **Maintain stand-by generation equipment** by:

- completing lock out and tag out requirements as required;
- conducting operational and functional tests as required;
- troubleshooting defects or faults;
- repairing and replacing components as required;
- cleaning components as required;
- reconfiguring system as required;
- testing operation; and
- completing documentation as required

according to manufacturer's specifications, company policies and procedures, client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9254.07 **Install renewable energy and storage systems** such as fuel cells, wind turbines, photovoltaic modules, hydrokinetic, geothermal, hydraulic turbine, tidal, compressed air storage, flow batteries by:

- selecting systems and components that match the design, specifications and application;
- determining location, type, size, wiring requirements;
- mounting system and components;
- selecting and terminating conductors;
- bonding and grounding system and components;
- configuring system as required; and
- testing operation

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), Environmental Protection Act (EPA), Occupational Health and Safety Act (OHSA), supply authorities Local Distribution Company (LDC) specifications, manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9254.08 **Maintain renewable energy and storage systems** such as fuel cells, wind turbines, photovoltaic modules, hydrokinetic, geothermal, hydraulic turbine, tidal, compressed air storage, flow batteries by:

- completing lock out and tag out requirements as required;
- verifying that electrically safe work condition has been achieved when required;
- conducting operational and functional tests as required;
- troubleshooting defects or faults;
- repairing and replacing components as required;
- cleaning components as required;
- reconfiguring system as required;
- testing operation; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), Environmental Protection Act (EPA), Occupational Health and Safety Act (OHSA), supply authorities Local Distribution Company (LDC) specifications, manufacturer's specifications, industry standards, company policies and procedures and client specifications.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9255 Install, Troubleshoot and Maintain Voice, Video, Sound, Phone and Data Communications and Signalling Systems

Skill Set Descriptor

Electricians-Construction and Maintenance (309A) work with a variety of communication and signalling systems such as voice, video, sound, phone and data systems. Examples of these systems include but are not limited to fire alarm systems, low voltage communication systems such as audio-visual systems, patient care systems, security systems, paging systems, clock systems and automation systems.

Skills

9255.01 Install fibre optic cabling and equipment by:

- selecting cabling, equipment and components that match application;
- reading and interpreting job reference material and drawings;
- mounting system and components;
- bonding and grounding system and components;
- configuring system and device parameters;
- selecting and verifying cable pathway;
- selecting and verifying cable installation;
- splicing and terminating;
- certifying the operation and proofing the performance;
- testing operation; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), Telecommunications Industry Association (TIA), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

*** For a compulsory trade, a Trainer must hold a certificate of Qualification in that trade as per section 10(1) of BOSTA and be registered with Skilled Trades Ontario.**

9255.02 **Troubleshoot fibre optic cabling and equipment** by:

- checking status;
- checking for faults;
- checking for performance;
- conducting field assessments using diagnostic and test equipment to determine source of malfunction;
- referencing installation specifications and drawings;
- checking connections and terminations;
- determining root cause;
- repairing or replacing components as required;
- confirming operational requirements;
- returning the system to operational status; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), Telecommunications Industry Association (TIA), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9255.03 **Maintain fibre optic cabling and equipment** by:

- conducting visual inspection of the system;
- conducting operational and functional tests;
- cleaning components; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), Telecommunications Industry Association (TIA), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9255.04 **Install signalling and communication cables and equipment** by:

- selecting cabling, equipment and components that match application;
- reading and interpreting job reference material and drawings;
- mounting system and components;
- bonding and grounding system and components;
- configuring system and device parameters;
- selecting and verifying cable pathway;
- selecting and verifying cable installation;
- splicing and terminating;
- certifying the operation and proofing the performance;
- testing operation; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), Telecommunications Industry Association (TIA), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9255.05 **Troubleshoot signalling and communication cables and equipment** by:

- checking status;
- checking for faults;
- checking for performance;
- conducting field assessments using diagnostic and test equipment to determine source of malfunction;
- referencing installation specifications and drawings;
- checking connections and terminations;
- determining root cause;
- repairing or replacing components as required;
- confirming operational requirements;
- returning the system to operational status; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), Telecommunications Industry Association (TIA), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9255.06 **Maintain signalling and communication cables and equipment** by:

- conducting visual inspection of the system;
- conducting operational and functional tests;
- cleaning components; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), Telecommunications Industry Association (TIA), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9255.07 **Install fire alarm systems** by:

- reading and interpreting job reference material and drawings;
- mounting system and components;
- selecting and using components that match the application;
- laying out signalling, annunciation and auxiliary wiring;
- bonding and grounding system and components;
- selecting overcurrent protection;
- selecting conductor size, type and material:
- configuring system and device parameters;
- terminating;
- verifying the operation and proofing the performance;
- testing operation;
- working with manufacturer for system certification; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), National Building Code (NBC), Ontario Building Code (OBC), Ontario Fire Code (OFC), National Fire Protection Association (NFPA), Underwriter's Laboratory of Canada (ULC), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9255.08 **Maintain fire alarm systems** by:

- notifying all affected parties;
- conducting tests such as visual, physical inspection;
- checking signalling devices for compliance such as sound levels, visual display, vibration;
- checking activation and detecting devices such as heat, smoke, pull-station, flow switches;
- checking remote and local annunciators;
- checking ancillary devices such as door holders, fan shut down, elevator recall, external notification devices, pumps;
- setting the sensitivity;
- replacing components as required;
- cleaning surfaces, openings;
- testing operation;
- confirming system verification with manufacturer as required; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), National Building Code (NBC), Ontario Building Code (OBC), Ontario Fire Code (OFC), National Fire Protection Association (NFPA), Underwriter's Laboratory of Canada (ULC), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9255.09 **Troubleshoot fire alarm systems** by:

- checking status;
- checking for faults;
- checking for performance;
- conducting field assessments using diagnostic and test equipment to determine source of malfunction;
- referencing installation specifications and drawings;
- checking connections and terminations;
- determining root cause;
- replacing components as required;
- confirming operational requirements;
- returning the system to operational status;
- confirming system verification with manufacturer as required; and,
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), National Building Code (NBC), Ontario Building Code (OBC), Ontario Fire Code (OFC), National Fire Protection Association (NFPA), Underwriter's Laboratory of Canada (ULC), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9255.10 **Install low voltage signal and communications systems** such as audio-visual systems, patient care systems, security systems, paging systems, and clock system by:

- selecting cabling, equipment and components that match application;
- reading and interpreting job reference material and drawings;
- mounting system and components;
- bonding and grounding system and components;
- configuring system and device parameters;
- selecting and verifying conductor and cable pathway;
- selecting and verifying conductor and cable installation;
- splicing and terminating conductors and cables;
- verifying the operation and proofing the performance;
- testing operation; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), Telecommunications Industry Association (TIA), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9255.11 **Troubleshoot low voltage signal and communications systems** such as audio-visual systems, patient care systems, security systems, paging systems, and clock system by:

- checking status;
- checking for faults;
- checking for performance;
- conducting field assessments using diagnostic and test equipment to determine source of malfunction;
- referencing installation specifications and drawings;
- checking connections and terminations;
- determining root cause;
- repairing or replacing components as required;
- confirming operational requirements;
- returning the system to operational status; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), Telecommunications Industry Association (TIA), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9255.12 **Maintain low voltage signal and communication systems** such as audio-visual systems, patient care systems, security systems, paging systems, and clock system by:

- conducting visual inspection of the system;
- conducting operational and functional tests;
- cleaning components; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), Telecommunications Industry Association (TIA), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9255.13 **Install automation systems** such as building automation systems, control automation systems, campus systems, enterprise platforms, energy management systems and environmental management systems by:

- using communication protocols such as Ethernet, DeviceNet, Modbus
- monitoring energy systems such as supervisory control and data acquisition (SCADA);
- selecting cabling, equipment and components that match application;
- reading and interpreting job reference material and drawings;
- mounting system and components;
- bonding and grounding system and components;
- configuring system and device parameters;
- selecting and verifying conductor and cable pathway;
- selecting and verifying conductor and cable installation;
- splicing and terminating conductors and cables;
- verifying the operation and proofing the performance;
- testing operation; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), Telecommunications Industry Association (TIA), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9255.14 **Troubleshoot automation systems** such as building automation systems, control automation systems, campus systems, enterprise platforms, energy management systems and environmental management systems by:

- using communication protocols such as Ethernet, DeviceNet, Modbus
- monitoring energy systems such as supervisory control and data acquisition (SCADA);
- checking status;
- checking for faults;
- checking for performance;
- conducting field assessments using diagnostic and test equipment to determine source of malfunction;
- referencing installation specifications and drawings;
- checking connections and terminations;
- determining root cause;
- repairing or replacing components as required;
- confirming operational requirements;
- returning the system to operational status; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), National Building Code (NBC), Telecommunications Industry Association (TIA), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9255.15 **Maintain automation systems** such as building automation systems, control automation systems, campus systems, enterprise platforms, energy management systems, and environmental management systems by:

- conducting visual inspection of the system;
- conducting operational and functional tests;
- cleaning components; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), National Building Code (NBC), Telecommunications Industry Association (TIA), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9256 **Install, Troubleshoot and Maintain Instrumentation and Automated Control Devices and Systems**

Skill Descriptor

This skill set includes work performed by Electricians-Construction and Maintenance (309A) on instrumentation devices such as proportional control derivative devices and automated control systems (e.g., distributed control systems (DCS), programmable logic controllers (PLCs), human machine interfaces (HMI)). When working with these systems, Electricians-Construction and Maintenance (309A) must be mindful of health and safety requirements such as guarding and lockout requirements and verifying isolation and de-energization, as well as confirming controls are disabled from all locations to prevent remote controls from activating devices.

Skills

9256.01 **Install instrumentation devices** such as 4 to 20 mA, 0 to 5, 1 to 5 and 0 to 10-volt control devices (loop and output) and proportional control derivative devices by:

- selecting conductors and cabling, equipment and components that match application;
- reading and interpreting job reference material and drawings;
- mounting system and components;
- determining shielding cable requirements;
- bonding and grounding system and components;
- configuring system and device parameters;
- calibrating devices;
- selecting and verifying conductor and cable pathway;
- selecting and verifying conductor and cable installation;
- splicing and terminating conductors and cabling;
- verifying the operation and proofing the performance;
- testing operation; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

*** For a compulsory trade, a Trainer must hold a certificate of Qualification in that trade as per section 10(1) of BOSTA and be registered with Skilled Trades Ontario.**

9256.02 **Troubleshoot instrumentation devices** such as 4 to 20 mA, 0 to 5, 1 to 5 and 0 to 10-volt control devices (loop and output) and proportional integral derivative (PID) devices by:

- checking status;
- checking for faults;
- checking for performance;
- conducting field assessments using diagnostic and test equipment to determine source of malfunction;
- referencing installation specifications and drawings;
- checking connections and terminations;
- determining root cause;
- replacing components as required;
- recalibrating devices as required;
- confirming operational requirements;
- returning the system to operational status; and
- completing documentation as required:

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9256.03 **Maintain instrumentation devices** such as 4 to 20 mA, 0 to 5, 1 to 5 and 0 to 10-volt control devices (loop and output) and proportional integral derivative (PID) devices by:

- conducting visual inspection of the system;
- conducting operational and functional tests;
- cleaning components;
- completing documentation as required; and
- calibrating devices

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9256.04 **Install automated control systems** such as distributed control systems (DCS), programmable logic controllers (PLCs), human machine interfaces (HMI) by:

- selecting conductors, cabling, equipment and components that match application and meet the environmental condition;
- selecting input/output (I/O) devices to match the application and meet the environmental condition;
- identifying software and determining compatibility with other process control systems e.g. AC drives
- reading and interpreting job reference material and drawings;
- mounting system and components;
- determining shielding cable requirements;
- bonding and grounding system and components;
- identifying communication networks and protocols;
- installing operating software;
- connecting communication links;
- configuring system and device parameters;
- programming devices and systems;
- selecting and verifying conductor and cable pathway;
- selecting and verifying conductor and cable installation;
- splicing and terminating conductors and cables;
- verifying the operation and proofing the performance;
- conducting I/O verification;
- testing operation; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9256.05 **Troubleshoot automated control systems** such as distributed control systems (DCS), programmable logic controllers (PLCs), human machine interfaces (HMI) by:

- checking status;
- checking for faults;
- checking for performance;
- conducting field assessments using diagnostic and test equipment to determine source of malfunction;
- referencing installation specifications and drawings;
- checking connections and terminations of conductors and cabling;
- determining root cause;
- replacing components as required;
- recalibrating devices as required;
- using software to verify functionality;
- bypassing non-safety devices by installing jumpers or isolating as required;
- using diagnostic procedures and software;
- reloading or downloading software as required;
- confirming operational requirements;
- returning the system to operational status; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9256.06 **Maintain automated control systems** such as distributed control systems (DCS), programmable logic controllers (PLCs), and human machine interfaces (HMI) by:

- conducting visual inspection of the system;
- conducting operational and functional tests;
- cleaning components;
- replacing filters;
- optimizing software and system;
- updating and backing up programs and systems; and
- completing documentation as required

according to the Ontario Electrical Safety Code (OESC), Canadian Electrical Code (CEC), Canadian Standards Association (CSA), Ontario Building Code (OBC), manufacturer's specifications, industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9257 Demonstrate Business Practices

Skill Set Descriptor

While working in the field, it is important for Electricians-Construction and Maintenance (309A) to develop a vast array of communication skills to successfully, safely and positively interact and inter-relate with different individuals such as co-workers, other tradespeople, vendors and manufacturers. In Ontario, workplace violence and harassment policies are set out in legislation.

Skills

9257.01 **Write job related documents** such as work orders, change orders, office memoranda, letters, accident reports and forms, logbook entries, risk assessments for workplace hazards by:

- documenting in a clear, legible and concise manner; and
- using industry and company terminology and formatting

according to legislation, regulation, industry standards, company polices and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

*** For a compulsory trade, a Trainer must hold a certificate of Qualification in that trade as per section 10(1) of BOSTA and be registered with Skilled Trades Ontario**

9257.02 **Communicate instructions (verbal, written and other) with others** such as co-workers, vendors, manufacturers, and other trades so that recipient can complete the assigned task and understands the instructions given by:

- using common trade or layperson's terminology as required;
- giving, receiving and conveying instructions;
- explaining processes and ideas in a clear, concise and precise manner;
- identifying steps to be followed;
- setting out conditions under which the instructions are to be completed;
- verifying comprehension by all parties:
- determining time frames; and
- documenting and recording as required

according to industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9257.03 **Demonstrate interpersonal relations** by:

- listening attentively;
- using verbal and non-verbal signals to convey messages;
- using language acceptable in the workplace;
- recognizing the chain of command on a work site;
- explaining problems and procedures;
- identifying alternate solutions and obtaining approvals; and
- obtaining verification feedback

according to legislation, regulation industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9257.04 **Present professional image** by:

- wearing designated or approved apparel;
- observing hygiene standards; and
- maintaining clean clothing

according to industry standards, company policies and procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9257.05 **Use communication devices and digital technology** such as public address systems, telephones, radios, computers, smart phones, tablets, user interface modules and other wireless devices by:

- following security and other established protocols and requirements;
- conveying accurate instructions and procedures for connection and operation;
- identifying and applying hardware and software required to connect to control systems;
- operating electronic devices;
- connecting electronic devices to control systems and other related equipment;
- using electronic devices to configure parameters of equipment and systems;
- monitoring and diagnosing problems; and
- retrieving, documenting and interpreting data

according to legislation, regulations and company policies and manufacturer's (commissioning) procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

9257.06 **Mentor other apprentices and colleagues** by:

- providing support and guidance;
- communicating ideas;
- identifying and communicating learning objectives;
- relating lesson to other lessons and the job;
- demonstrating performance of a skill or task;
- providing feedback, assessment and recommendations;
- creating an open and supportive climate for discussion;
- staying current with trade trends, changes, new technology and innovations;
- participating in continuous learning; and
- supporting a culture of diversity and anti-harassment in the workplace

according to industry and company standards/policies and best practices.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

Acronyms	
AC	Alternating current
AHJ	Authority having jurisdiction
CAT	Category
CEC	Canadian Electrical Code
CSA	Canadian Standards Association
CWB	Canadian Welding Bureau
DC	Direct current
DCS	Distributed control systems
DGTA	Dangerous Goods Transportation Act
EMT	Electric metallic tubing
ENT	Electric non-metallic tubing
EPA	Environmental Protection Act
ESA	Electrical Safety Authority
GFCI	Ground fault circuit interrupters
HMI	Human Machine Interfaces
HVAC/R	Heating, ventilation, air conditioning and refrigeration
IEEE	Institute of Electrical and Electronics Engineers
IESS	Illuminating Engineering Society Standards
IHSA	Infrastructure Health and Safety Association
I/O	Input/output
IRT	Infrared thermography
LED	Light emitting diode

NFPA	National Fire Protection Association
LDC	Local distribution companies
mA	milliamp
NBC	National Building Code
NFPA	National Fire Protection Association
OBC	Ontario Building Code
OESC	Ontario Electrical Safety Code
OFC	Ontario Fire Code
OHSA	Occupational Health and Safety Act
PCB	Polychlorinated biphenyl
PID	Proportional integral derivative
PLC	Programmable logic controllers
PVC	Poly vinyl chloride
RTRC	Reinforced thermosetting resin conduit
SCADA	Supervisory control and data acquisition
TIA	Telecommunications Industry Association
TSSA	Technical Safety and Standards Authority
ULC	Underwriters Laboratory of Canada
UPS	Uninterruptible power supply
WHMIS	Workplace Hazardous Materials Information System
WSIB	Workplace Safety Insurance Board

Definitions

Apprentice

- An individual who, pursuant to a registered training agreement, is receiving or is to receive training in a trade that is required as part of an apprenticeship program
- Holds a Registered Training Agreements with the Ministry of Labour, Immigration, Training and Skills Development in either compulsory or non-compulsory trades;
- Are subject to any ratios or wage rates that have been set out in regulation and or recommended by industry for their trade(s);
- Remain as an Apprentice until they receive their Certificate of Apprenticeship

BOSTA
Building Opportunities in the Skilled Trades Act, 2021 (BOSTA)

Certificate of Apprenticeship (C of A)
A certificate issued to individuals who have demonstrated that they have completed an apprenticeship program in Ontario.

Certificate of Qualification (C of Q)
A certificate issued to an individual who has completed an apprenticeship or equivalent AND passed the Certificate of Qualification examination.

Competence
The ability of an individual to perform a skill, consistently without assistance, in the workplace as set out in the Logbook.

Competency Analysis Profile (CAP Chart)
A chart that identifies the training needs of an individual trade and details the skills/skill sets that must be demonstrated during an apprenticeship program.

Journeyperson
Journeyperson means an individual who holds a certificate of qualification (in a compulsory or non-compulsory trade) and/or an individual who practices as a journeyperson in a non-compulsory trade who does not hold a certificate of qualification and has equivalent experience in that trade.

Mandatory Skill
Status assigned to unshaded individual skills, skill sets or general performance objectives which must be signed-off for the Apprentice to complete their program.

Optional Skill
Status assigned to shaded individual skills, skills sets or general performance objectives for which sign-off is not required for the Apprentice to complete the program.

Provisional Certificates of Qualification

- A Provisional Certificate of Qualification is issued to an individual who has obtained a Certificate of Apprenticeship (in both compulsory and non-compulsory trades) in a program that has a Certificate of Qualification examination, to which the individual has not yet passed the Certificate of Qualification examination.
- A Provisional Certificate of Qualification shall have the prescribed term or, if no term is prescribed, a term of one year.
- In a compulsory trade, the Provisional Certificate of Qualification allows a person to continue working legally in the trade for up to 12 months while they work to pass the certifying exam.
- Individuals with a Provisional Certificate of Qualification are subject to any ratios and/or wage rates that have been set out for their trade(s).

Ratios

For the purpose of an Apprenticeship program, a ratio is the maximum number of Journeypersons to Apprentices. The purpose of ratios is to provide consistent supervision, training and continuity of work.

Red Seal Program

The Interprovincial Standards Red Seal Program (also known as the Red Seal Program) was established more than 50 years ago to provide greater mobility across Canada for skilled workers and represents a standard of excellence for industry. Through the program, individuals are able to obtain a Red Seal endorsement on their provincial/territorial certificates by achieving 70% or higher on an interprovincial Red Seal examination.

The Interprovincial Standards Red Seal Program acknowledges their competence and ensures recognition of their certification throughout Canada without further examination. There are currently over 50 Red Seal designated trades. **The Red Seal Program is recognized as the interprovincial *standard of excellence* in the skilled trades.** The Interprovincial Standards Red Seal Program is a partnership between the Government of Canada, the Provinces, the Territories and various stakeholders.

Sign-off

Signature of the Sponsor of record, or an individual to whom that Sponsor has delegated signing authority, (e.g. Trainer) indicating an Apprentice's demonstration of competence.

Skill

Individual competency/task described in the Logbook.

Skill Sets

Group or selection of individual skills found in the Logbook.

Skill Set Completion for Sponsors

Listing for all skill sets and includes space for sign-off by Sponsor of record.

Sponsor
Means a person that has entered into a Registered Training Agreement under which the person is required to ensure that an individual is provided with workplace-based training in a trade as part of an apprenticeship program.

Sponsor of Record
Refers to the Sponsor documented as being signatory to the Registered Training Agreement or Contract of Apprenticeship. In order for a Sponsor to be considered for the training of Apprentices, they must identify that the workplace has qualified persons or the equivalent on site, and can identify that the workplace has the tools, equipment, materials, and processes which have been identified by the Industry representatives for the trade.

Trainer
An individual who oversees the performance of a task and sets the workplace expectations and practices for the Apprentice. For a compulsory trade, a qualified Trainer is an individual who holds a Certificate of Qualification. In a non-compulsory trade, a Trainer is an individual who either holds a CofQ, CofA, or is considered equivalent.

Ready to Write Your Exam?

Many of the skilled trades in Ontario have a final certification examination that you must pass to become certified in your trade. Passing the examination gives you the right to hold yourself out as a Journeyperson and receive a Certificate of Qualification in your trade.

There are two types of trade certification examinations in Ontario:

1. Provincial (Ontario) examinations - which lead to a Certificate of Qualification.
2. Red Seal examinations – which lead to a Certificate of Qualification with an Interprovincial Red Seal endorsement.

If a trade is designated as Red Seal in Ontario, you will be writing the Red Seal examination.
To access the Red Seal preparation guide please visit: red-seal.ca

Ontario's Exam Preparation Guide
Exam Resources – Skilled Trades Ontario

Basic Examination Details for You to Know

- You will have **up to four hours to write your examination.**
- Accommodations must be requested and approved prior to scheduling your examination.
- You can leave the examination centre if you complete the examination in less than four hours.
- Exam questions are multiple choice with four options from which you must choose the correct answer. Your examination may have between 90 and 150 multiple choice questions.
- You need a mark of 70% to pass.

Scheduling Your Examination
The examination scheduling process is currently outlined in detail on the Skilled Trades Ontario website: Exam Scheduling – Skilled Trades Ontario

Remember these 3 basic steps:

1. Confirm your eligibility to write the examination with Skilled Trades Ontario.
2. Contact Client Services at Skilled Trades Ontario to pay your examination fee.
3. Contact the local Service Delivery Office to schedule your examination in their examination centre: https://www.ontario.ca/page/employment-ontario-apprenticeship-offices

Instructions for Recording a Change in Sponsor

1. Record your first sponsor's information in Sponsor Record #1 – this would be the sponsor who has signed your initial apprenticeship Training Agreement for this trade.

2. If you do change sponsors prior to completing this apprenticeship, please contact your local Service Delivery Office immediately to update your sponsor record.

3. Please make sure you record all the information regarding any additional sponsors of record towards your apprenticeship using the Sponsor Records on the following pages (if applicable).

   You must fill out a Change of Sponsor Record each time you change your sponsor.

Sponsor Record #1

Sponsor Information		
Apprentice Name		
Registered Training Agreement #		**Date (mm/dd/yy)**
Sponsor Name		
Address		
Telephone		
E-mail Address		

Summary of Training	
Employment Start Date	
Employment End Date	
Total hours of training & instruction between dates of employment.	
Skill Sets Completed	

As the Sponsor, I hereby confirm that the above information is true and accurate to the best of my knowledge.

Signature: _____ Date: (mm/dd/yy)_____

The Sponsor is required to sign-off and date the skills after the Apprentice has proven competence in those skills. However, if a skill is shaded, it is optional and does not need to be signed-off.

***If you need additional copies of the Sponsor Record, visit SkilledTradesOntario.ca and search Sponsor Record Form.**

Change of Sponsor Record #2

Sponsor Information		
Apprentice Name		
Registered Training Agreement #		**Date (mm/dd/yy)**
Sponsor Name		
Address		
Telephone		
E-mail Address		

Summary of Training	
Employment Start Date	
Employment End Date	
Total hours of training & instruction between dates of employment.	
Skill Sets Completed	

As the Sponsor, I hereby confirm that the above information is true and accurate to the best of my knowledge.

Signature: _____ Date: (mm/dd/yy)_____

The Sponsor is required to sign-off and date the skills after the Apprentice has proven competence in those skills. However, if a skill is shaded, it is optional and does not need to be signed-off.

***If you need additional copies of the Sponsor Record, visit** SkilledTradesOntario.ca **and search Sponsor Record Form.**

Change of Sponsor Record #3

Sponsor Information		
Apprentice Name		
Registered Training Agreement #		**Date (mm/dd/yy)**
Sponsor Name		
Address		
Telephone		
E-mail Address		

Summary of Training	
Employment Start Date	
Employment End Date	
Total hours of training & instruction between dates of employment.	
Skill Sets Completed	

As the Sponsor, I hereby confirm that the above information is true and accurate to the best of my knowledge.

Signature: _____ Date: (mm/dd/yy)_____

The Sponsor is required to sign-off and date the skills after the Apprentice has proven competence in those skills. However, if a skill is shaded, it is optional and does not need to be signed-off.

***If you need additional copies of the Sponsor Record, visit SkilledTradesOntario.ca and search Sponsor Record Form.**

Appendix A — Instructions for Apprenticeship Program Completion

Once an Apprentice has completed all the classroom training and benchmark on-the-job hours specified for the trade and has acquired all the mandatory skills included in this Logbook.

The Apprentice and the Sponsor complete the Apprentice Completion Form and the Skill Set Completion for Sponsors Form located on the following pages.

1. They sign the forms and submit them to their local Service Delivery Office. To find the closest office, check the contact information at ontario.ca/page/employment-ontario-apprenticeship-offices *or call the Employment Ontario toll free number at (1-800-387-5656).*

2. For All Trades: All mandatory skills (or the combination indicated in the completion requirements for the trade) in the Logbook must be signed-off. The recommended hours are a benchmark. If the Sponsor is completing the Apprentice before the industry recommended training hours are done, staff may request further information regarding the Apprentice's on-the-job training. An example of a request would be a letter from the Sponsor confirming the Apprentice worked for some time in the trade before the initial Training Agreement was registered, thereby acquiring some skills beforehand.

If Apprentices are submitting the completion request form and supporting documentation to their local Service Delivery Office by mail, fax, or email (as a scanned document), they should not include their Logbook; if they are presenting this form in person at the local Service Delivery Office, they should bring their Logbook with them.

After staff verifies all the information in the completion request, they may contact either the Apprentice or the Sponsor for further information or documentation. Once the completion has been confirmed, the local Service Delivery Office will issue a Certificate of Apprenticeship to the Apprentice.

Skilled Trades Ontario will receive notification of this completion.

- If the Apprentice has completed a program in a **compulsory trade,** Skilled Trades Ontario will automatically register the Apprentice for a Provisional certificates of qualification to continue to work legally for one year while preparing for the certification examination.
- If an Apprentice completes their apprenticeship in a **non-compulsory trade** and there is a Certificate of Qualification exam, they must write and pass the exam to receive a Certificate of Qualification from Skilled Trades Ontario.

For permission to schedule an exam once completion is confirmed, the individual must first contact the Skilled Trades Ontario Client Services Department at 647-847-3000 or toll free at 1-855-299-0028 to pay the certification examination fee. Once you have paid your exam fee with Skilled Trades Ontario, book your exam by contacting your nearest Employment Ontario local Service Delivery Office.

Appendix B — Apprentice Completion Form

Please fill out both sides of this form, including the Skill Set Completion for Sponsors (see back of form). Once both sides are completed, submit the form to your local Service Delivery Office (find contact information at ontario.ca/page/employment-ontario-apprenticeship-offices or by calling Employment Ontario at (1-800-387-5656).

Apprentice Information	
Name (print)	
Client ID # Issued by Ministry	
Telephone Number(s)	

Sponsor Information	
Legal Name	
Address	
Telephone Number(s)	
Sponsor's Signing Authority *(print name)*	
E-mail Address	

Program Information			
Trade Name			
Number of hours required as per Training Agreement *(for hours-based trades only)*			
Hours completed? *(documentation attached)*	Yes ( )	No ( )	Not applicable ( )
Classroom training completed or exempt?	Yes ( )	No ( )	Not applicable ( )

I hereby confirm that the information submitted on both sides of this form is true and accurate.

X _____
Apprentice's Signature Date

X _____
Signature of Sponsor's Signing Authority Date

Appendix C — Skill Set Completion for Sponsors

You will find the skill set numbers and titles in the Logbook's Table of Contents. By signing off each skill set in the table below, you are providing final confirmation, as the Apprentice's Sponsor, that the Apprentice has demonstrated competency in all the mandatory skills included in the skill set.

Skill Set #	Skill Set Title	Signing Authority Signature
9245	Protect Self, Others and the Environment	
9246	Create, Modify and Interpret Schematics, Drawings and Specifications	
9247	Use and Maintain Tools and Equipment	
9248	Use and Maintain Test and Measuring Equipment	
9249	Install, Troubleshoot, Repair and Maintain Wiring Installations	
9250	Install and Maintain Power Distribution Equipment Systems	
9251	Install and Maintain Lighting Systems	
9252	Install and Maintain Rotating Equipment and Associated Control Systems	
9253	Install and Maintain Motor Drives and Associated Control Systems	
9254	Install and Maintain Power Generating Systems and Associated Equipment	
9255	Install, Troubleshoot and Maintain Voice, Video, Sound, Phone and Data Communications and Signalling Systems	
9256	Install, Troubleshoot and Maintain Instrumentation and Automated Control Devices and Systems	
9257	Demonstrate Business Practices	

Ministry of Labour, Immigration, Training and Skills Development use only:

Sponsor verified as most recent sponsor of record: Yes ( ) No ( )
Documentation to support completion of hours attached: Yes ( ) No ( )
Completion of classroom training verified: Yes ( ) No ( )

Staff Name _____ Signature _____ Date _____

Appendix D — Local Service Delivery Offices in Ontario

For current office listings visit: *ontario.ca/page/employment-Ontario-apprenticeship-offices*

Location	Contact	Location	Contact
Barrie 705-737-1431	55 Cedar Pointe Dr Unit 609, Barrie, ON L4N 5R7	**Marathon** 807-346-1550	52 Peninsula Road, Suite 103 Marathon, Ontario, P0T 2E0
Belleville 613-968-5558 1-800-953-6885	135 North Front St, Belleville, ON K8P 3B5	**Markham** 905-513-2695	140 Allstate Parkway, Suite 505, Markham, Ontario L3R 5Y8
Brantford 519-756-5197	505 Park Rd North Suite 201, Brantford, ON N3R 7K8	**North Bay** 705-495-8515 1-800-236-0744	200 First Ave West, North Bay, ON P1B 3B9
Chatham 519-354-2766 1-800-214-8284	870 Richmond St West 1st Floor, Chatham, ON N7M 5J5	**Ottawa** 613-731-7100 1-877-221-1220	Preston Square, 347 Preston Street, Suite 310, Ottawa, ON K1S 3H8
Cornwall 613-938-9702 1-877-668-6604	132 Second St East Ste 202, Cornwall, ON K6H 1Y4	**Owen Sound** 519-376-5790 1-800-838-9468	1450 1st Ave West, Suite 100, Owen Sound, ON N4K 6W2
Dryden 807-456-2665 1-800-734-9572	Provincial Government Building, 479 Government St, Dryden, ON P8N 3K9	**Peel** 905-279-7333 1-800-736-5520	The Emerald Centre, 10 Kingsbridge Garden Circle, Suite 404, Mississauga, ON L5R 3K6
Durham 905-433-0595 1-800-461-4608	78 Richmond Street West, Oshawa, ON L1G 1E1	**Pembroke** 613-735-3911 1-800-807-0227	615 Pembroke St East, Pembroke, ON K8A 3L7
Elliot Lake 1-800-236-8817	50 Hillside Dr North, Elliot Lake, ON P5A 1X4	**Peterborough** 705-745-1918 1-877-433-6555	901 Lansdowne St West, Peterborough, ON K9J 1Z5
Fort Frances 807-274-8634	922 Scott St 2nd Flr, Fort Frances, ON P9A 1J4	**Sarnia** 519-542-7705 1-800-363-8453	Bayside Mall, 150 Christina St North, Sarnia, ON N7T 7W5
Geraldton 807-854-1966	208 Beamish Avenue West Geraldton, Ontario P0T 1M0	**Sault Ste. Marie** 705-945-6815 1-800-236-8817	477 Queen St East 4th Flr, Sault Ste Marie, ON P6A 1Z5
Halton 905-842-5105 1-844-901-5105	700 Dorval Dr., Suite 201, Oakville, ON L6K 3V3	**St Catharines** 905-704-2991 1-800-263-4475	Garden City Tower, 301 St Paul St East, 10th Flr, St Catharines, ON L2R 7R4
Hamilton 905-521-7764 1-800-668-4479	Ellen Fairclough Bldg, 119 King St West 8th Flr, Hamilton, ON L8P 4Y7	**Sudbury** 705-564-3030 1-800-603-5999	159 Cedar St Ste 506, Sudbury, ON P3E 6A5
Kapuskasing 705-465-5785 705-235-1950	Ontario Government Complex, 122 Government Rd West, Kapuskasing, ON P5N 2X8	**Thunder Bay** 807-346-1550 1-800-439-5493	189 Red River Rd Suite 103, Thunder Bay, ON P7B 1A2
Kenora 807-468-2879 1-800-734-9572	227 1/2 Second St South, Kenora, ON P9N 1G4	**Timmins** 705-235-1950 1-877-275-5139	Ontario Government Complex, 5520 Highway 101 East Wing B, South Porcupine, ON P0N 1H0
Kingston 613-548-1151 1-866-973-4043	Alliance Business Centre, 299 Concession St Ste 201, Kingston, ON K7K 2B9	**Toronto Centre** 416-927-7366 1-800-387-5656	2 St Clair West, 11th floor Toronto, ON M4A 1L5
Kitchener 519-653-5758 1-866-877-0099	4275 King St East, Kitchener, ON N2P 2E9	**Toronto South** 416-326-5800	625 Church St 1st Fl, Toronto, ON M7A 2B5
London 519-675-7788 1-800-265-1050	1200 Commissioners Rd E, Unit 72, London, ON N5Z 4R3	**Windsor** 519-973-1441	Roundhouse Centre, 3155 Howard Ave 2nd Fl, Suite 200, Windsor, ON N8X 4Y8

9245 Protect Self, Others and the Environment

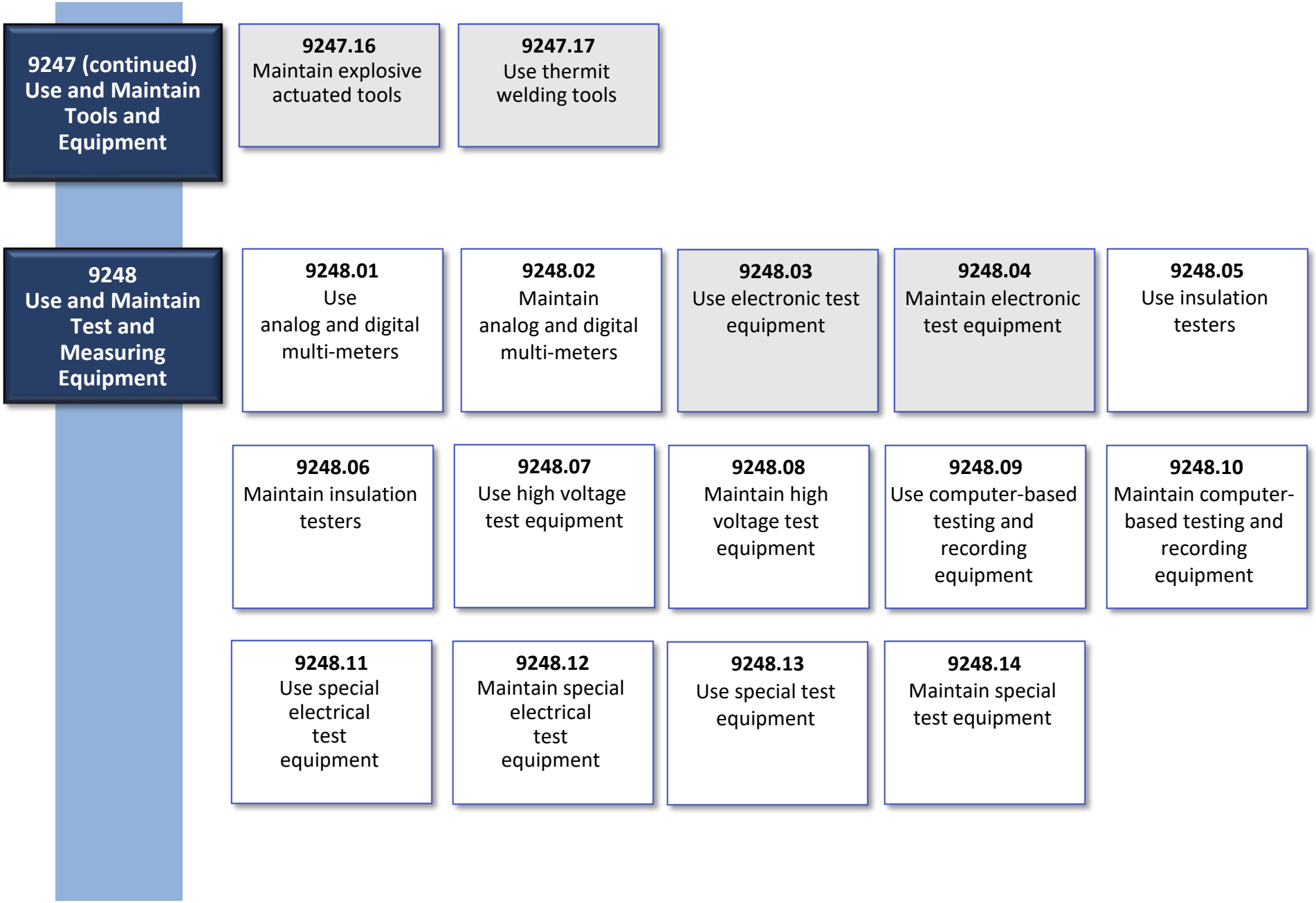
9245.01 Comply with applicable Acts, regulations, codes and directives	**9245.02** Maintain a safe, clean and organized work environment	**9245.03** Control hazards and potentially hazard causing conditions, equipment and material	**9245.04** Handle hazardous substances	**9245.05** Use fire extinguishers and firefighting equipment
9245.06 Comply with trench safety requirements and procedures	**9245.07** Comply with first aid for emergency situations	**9245.08** Comply with reporting requirements for electrical incidents	**9245.09** Use personal protective apparel and equipment	**9245.10** Maintain personal protective apparel and equipment
9245.11 Use arc flash rated personal protective equipment	**9245.12** Maintain arc flash rated personal protective equipment	**9245.13** Perform lock out, tagging and hold-off procedures	**9245.14** Determine if a system is live or de-energized	**9245.15** De-energize live systems
9245.16 Follow electrical safety program and procedures when performing live work	**9245.17** Shut down equipment	**9245.18** Start-up equipment	**9245.19** Commission / decommission systems	

9246 Create, Modify and Interpret Schematics, Drawings and Specifications

9246.01 Create sketches	**9246.02** Modify drawings	**9246.03** Interpret architectural drawings and specifications	**9246.04** Interpret mechanical drawings and specifications	**9246.05** Interpret power distribution drawings and specifications
9246.06 Interpret instrumentation and communication drawings and specifications	**9246.07** Interpret electrical drawings and specifications	**9246.08** Interpret relay, solid state and logic drawings and specifications	**9246.09** Create a materials and equipment list	

9247 Use and Maintain Tools and Equipment

9247.01 Use hand tools (non-power)	**9247.02** Maintain hand tools (non-power)	**9247.03** Use power tools and accessories (electric, hydraulic, pneumatic)	**9247.04** Maintain power tools and accessories (electric, hydraulic, pneumatic)	**9247.05** Use rigging, hoisting and pulling equipment
9247.06 Use scaffolds, lifting devices and elevating platforms	**9247.07** Maintain scaffolds, lifting devices and elevating platforms	**9247.08** Store scaffolds, lifting devices and elevating platforms	**9247.09** Use ladders and other access equipment	**9247.10** Maintain ladders and other access equipment
9247.11 Perform trade-specific oxy-fuel cutting and welding procedures	**9247.12** Receive electrical material and equipment	**9247.13** Use bending and threading tools	**9247.14** Maintain bending and threading tools	**9247.15** Use explosive actuated tools


9247 (continued) Use and Maintain Tools and Equipment
9247.16 Maintain explosive actuated tools
9247.17 Use thermit welding tools
9248 Use and Maintain Test and Measuring Equipment
9248.01 Use analog and digital multi-meters
9248.02 Maintain analog and digital multi-meters
9248.03 Use electronic test equipment
9248.04 Maintain electronic test equipment
9248.05 Use insulation testers
9248.06 Maintain insulation testers
9248.07 Use high voltage test equipment
9248.08 Maintain high voltage test equipment
9248.09 Use computer-based testing and recording equipment
9248.10 Maintain computer-based testing and recording equipment
9248.11 Use special electrical test equipment
9248.12 Maintain special electrical test equipment
9248.13 Use special test equipment
9248.14 Maintain special test equipment

9249 Install, Troubleshoot, Repair and Maintain Wiring Installations

9249.01 Install busway systems	**9249.02** Maintain busway systems	**9249.03** Install branch circuit wiring for loads	**9249.04** Troubleshoot branch circuit wiring for loads	**9249.05** Install cable trays for use with power, signaling and communication cable wiring systems
9249.06 Install single conductor cables	**9249.07** Install multi-conductor cables	**9249.08** Install non-metallic conduits and tubing	**9249.09** Install metallic conduits and tubing	**9249.10** Install electric heating systems
9249.11 Troubleshoot electric heating systems	**9249.12** Repair electric heating systems	**9249.13** Install wiring for hazardous locations	**9249.14** Install overhead distribution systems	**9249.15** Install direct buried underground cables
9249.16 Install direct buried underground conduits	**9249.17** Install Cathodic Protection systems	**9249.18** Maintain Cathodic Protection systems	**9249.19** Connect supply to heating, ventilation, air conditioning and refrigeration (HVAC/R) systems	**9249.20** Install heating, ventilation, air conditioning and refrigeration (HVAC/R) controls
9249.21 Maintain heating, ventilation, air conditioning and refrigeration (HVAC/R) electrical connections and controls	**9249.22** Install support components	**9249.23** Install boxes and enclosures		

9250 Install and Maintain Power Distribution Equipment Systems

9250.01 Install power and energy metering systems	**9250.02** Install high voltage protection and control devices	**9250.03** Maintain high voltage protection and control devices	**9250.04** Install low voltage protection and control devices	**9250.05** Maintain low voltage protection and control devices
9250.06 Install high voltage oil and dry type distribution transformers	**9250.07** Install low voltage oil and dry type distribution transformers	**9250.08** Maintain high and low voltage oil and dry type distribution transformers	**9250.09** Install power distribution panels	**9250.10** Maintain power distribution panels
9250.11 Install ground fault protection	**9250.12** Install ground fault detection	**9250.13** Maintain ground fault detection	**9250.14** Install ground fault circuit interrupters (GFCI)	**9250.15** Maintain ground fault circuit interrupters (GFCI)
9250.16 Install power factor correction equipment	**9250.17** Maintain power factor correction equipment	**9250.18** Install direct current (DC) power distribution systems	**9250.19** Maintain direct current (DC) power distribution systems	**9250.20** Install direct current (DC) protective devices
9250.21 Install AC protective devices	**9250.22** Maintain AC/DC protective devices			

9251 Install and Maintain Lighting Systems

9251.01 Install non-ballasted lighting	**9251.02** Maintain non-ballasted lighting	**9251.03** Install ballasted lighting	**9251.04** Maintain ballasted lighting	**9251.05** Install high intensity discharge lighting
9251.06 Maintain high intensity discharge lighting	**9251.07** Install light dimming and control systems and components	**9251.08** Maintain light dimming and control systems	**9251.09** Install exit and emergency lighting powered by unit equipment, emergency power supply	**9251.10** Maintain exit and emergency lighting powered by unit equipment, emergency power supply

9252 Install and Maintain Rotating Equipment and Associated Control Systems

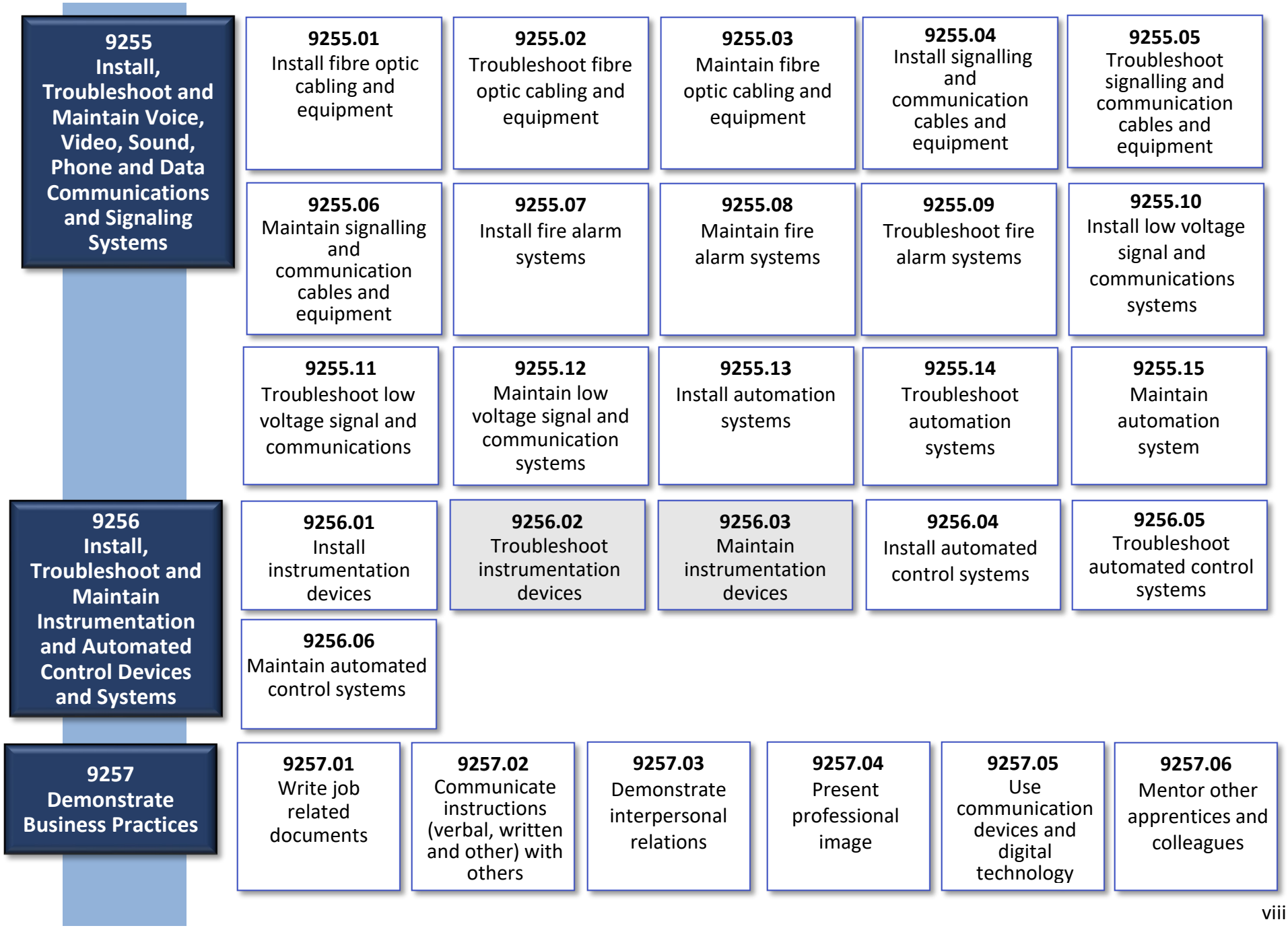
9252.01 Maintain brush assemblies, slip rings and commutators	**9252.02** Install AC/DC motors and generators	**9252.03** Maintain DC motors and generators	**9252.04** Maintain AC motors and generators	**9252.05** Install auxiliary protective equipment
9252.06 Maintain auxiliary protective equipment	**9252.07** Maintain lubrication systems and components	**9252.08** Maintain braking and clutch systems and components	**9252.09** Start-up and shut-down rotating equipment	**9252.10** Install relays, solid state devices and controls
9252.11 Maintain relays, solid state devices and controls	**9252.12** Install protective devices	**9252.13** Maintain protective devices	**9252.14** Install control panels	**9252.15** Install external field devices
9252.16 Maintain external field devices				

9253 Install and Maintain Motor Drives and Associated Control Systems

- **9253.01** Install DC constant voltage drives
- **9253.02** Maintain DC constant voltage drives
- **9253.03** Install adjustable speed DC drives
- **9253.04** Maintain adjustable speed DC drives
- **9253.05** Install AC constant voltage drives
- **9253.06** Maintain AC constant voltage drives
- **9253.07** Install adjustable speed AC drives
- **9253.08** Maintain adjustable speed AC drives
- **9253.09** Install programmable logic controller (PLC) systems
- **9253.10** Maintain programmable logic controller (PLC) systems
- **9253.11** Install safety systems and associated components
- **9253.12** Maintain safety systems and associated components
- **9253.13** Install robotic systems
- **9253.14** Maintain robotic systems

9254 Install and Maintain Power Generating Systems and Associated Equipment

- **9254.01** Install uninterruptible power supply (UPS) systems to provide stand-by power
- **9254.02** Maintain uninterruptible power supply (UPS) systems to provide stand-by power
- **9254.03** Install battery stand-by systems to provide auxiliary power during power failure
- **9254.04** Maintain battery stand-by systems to provide auxiliary power during power failure
- **9254.05** Install stand-by generation equipment
- **9254.06** Maintain stand-by generation equipment
- **9254.07** Install renewable energy and storage systems
- **9254.08** Maintain renewable energy and storage systems


9255
Install, Troubleshoot and Maintain Voice, Video, Sound, Phone and Data Communications and Signaling Systems
9255.01 Install fibre optic cabling and equipment
9255.02 Troubleshoot fibre optic cabling and equipment
9255.03 Maintain fibre optic cabling and equipment
9255.04 Install signalling and communication cables and equipment
9255.05 Troubleshoot signalling and communication cables and equipment
9255.06 Maintain signalling and communication cables and equipment
9255.07 Install fire alarm systems
9255.08 Maintain fire alarm systems
9255.09 Troubleshoot fire alarm systems
9255.10 Install low voltage signal and communications systems
9255.11 Troubleshoot low voltage signal and communications
9255.12 Maintain low voltage signal and communication systems
9255.13 Install automation systems
9255.14 Troubleshoot automation systems
9255.15 Maintain automation system
9256
Install, Troubleshoot and Maintain Instrumentation and Automated Control Devices and Systems
9256.01 Install instrumentation devices
9256.02 Troubleshoot instrumentation devices
9256.03 Maintain instrumentation devices
9256.04 Install automated control systems
9256.05 Troubleshoot automated control systems
9256.06 Maintain automated control systems
9257
Demonstrate Business Practices
9257.01 Write job related documents
9257.02 Communicate instructions (verbal, written and other) with others
9257.03 Demonstrate interpersonal relations
9257.04 Present professional image
9257.05 Use communication devices and digital technology
9257.06 Mentor other apprentices and colleagues

Completing Your Apprenticeship Program

Once your sponsor agrees you are competent in the required skills, your hours are complete and you have completed all the levels of classroom training required for your trade:

- ✓ Follow the completion instructions on the Completion Form (Appendix A) in the Logbook.
- ✓ Answer any questions that MLITSD staff may have and provide any additional completion documentation that may be required.
- ✓ Once completion is confirmed, MLITSD will issue you a Certificate of Apprenticeship and notify Skilled Trades Ontario.

After Your Apprenticeship

If you are in a trade with a certification exam, Skilled Trades Ontario will receive notice of your completion.

For compulsory trades, you will be issued a Provisional Certificate of Qualification which will allow you to work legally for up to 12 months until you write and pass your examination.

For a non-compulsory trade, once you pass your examination, you will be issued a Certificate of Qualification for your trade.

Preparing For Your Exam

- **To pay for a Certificate of Qualification examination, contact Skilled Trades Ontario** Client Services Department at: 647-847-3000 or toll free at 1-855-299-0028
- **To schedule your exam:** Once you have paid, contact your local Service Delivery Office to book your exam.
- **Download Skilled Trades Ontario exam preparation guide at:** Exam Resources – Skilled Trades Ontario **and/or view the exam preparation guide for Red Seal trades at:** red-seal.ca

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