



ONTARIO COLLEGE OF TRADES

ORDRE DES MÉTIERS DE L'ONTARIO

Apprenticeship
Training Standard

Residential (Low Rise)
Sheet Metal Installer

Trade Code: 308R

Development Date: 2010

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

However, because the Apprenticeship Training and Curriculum Standards documents were developed under either the *Trades Qualification and Apprenticeship Act* (TQAA) or the *Apprenticeship and Certification Act, 1998* (ACA), the definitions contained in these documents may no longer be accurate and may not be reflective of the *Ontario College of Trades and Apprenticeship Act, 2009* (OCTAA) as the new trades legislation in the province. The College will update these definitions in the future.

Meanwhile, please refer to the College's website (<http://www.collegeoftrades.ca>) for the most accurate and up-to-date information about the College. For information on OCTAA and its regulations, please visit: <http://www.collegeoftrades.ca/about/legislation-and-regulations>

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**COMPETENCY ANALYSIS PROFILE
RESIDENTIAL (LOW-RISE) SHEET METAL INSTALLER**

(All unshaded skill sets must be demonstrated/completed)

SKILL SETS

SKILLS

SAFE WORKING PRACTICES AND PROCEDURES 7211.0	Comply with federal, provincial, or municipal workplace legislation and regulations 7211.01	Use personal protective equipment 7211.02	Practise good housekeeping in the workplace 7211.03	Handle workplace hazardous materials 7211.04	Follow fire safety procedures 7211.05
	Follow basic first aid procedures 7211.06	Report injuries 7211.07	Work within safe physical limits 7211.08	Operate material handling equipment 7211.09	Use ladders and work platforms 7211.10
ENVIRONMENTAL PROTECTION PRACTICES 7212.0	Reduce waste 7212.01	Prevent toxic spills/emissions 7212.02	Protect natural environment 7212.03	Reuse or recycle materials 7212.04	
ORGANIZE WORK 7213.0	Interpret shop and architectural drawings 7213.01	Interpret job documentation 7213.02	Organize materials 7213.03	Use hand tools 7213.04	Use power tools 7213.05
	Use job site equipment 7213.06	Plan a new construction installation 7213.07	Plan a retrofit installation 7213.08	Remove old equipment 7213.09	Verify basic duct design 7213.10
	Complete documentation 7213.11				

SKILL SETS SKILLS

PREPARE THE WORKSITE	Rough-in duct to the air handling equipment location	Verify duct materials and design	Place air handling equipment	Prepare a material list for modifications	Communicate with others
7214.0	7214.01	7214.02	7214.03	7214.04	7214.05
INSTALL VENTILATION DUCT	Install sleeves or louvers	Install pre-fabricated flashing around duct penetrations	Install duct for HRV and ERV	Install duct for fans	
7215.0	7215.01	7215.02	7215.03	7215.04	
INSTALL MAIN DUCT	Verify duct materials	Install plenum and duct to the air handling equipment	Assemble fittings for the duct	Prepare duct	Install hangers and supports
7216.0	7216.01	7216.02	7216.03	7216.04	7216.05
	Install return air joist linings	Install designed accessories to duct	Install plenum take-offs (PTO's)	Install branch run-outs	Install grills and registers
	7216.06	7216.07	7216.08	7216.09	7216.10
	Verify main duct balancing devices	Verify retrofit duct air flow			
	7216.11	7216.12			

PREFACE

This training standard was developed by the Ministry of Training Colleges and Universities (MTCU), in partnership with the Provincial Advisory Committee and in consultation with representatives from the industry. This document is intended to be used by the apprentice, supervisor/trainer and sponsor/employer as a "blueprint" for training and as a prerequisite for completion and certification.

This training document becomes the apprentice's only record of workplace training performance.

Supervisor/trainer and apprentice are required to sign off and date the skills following each successful acquisition, unless a skill is shaded (optional).

The care and maintenance of this training document are the joint responsibility of the apprentice and the sponsor/employer. By signing off the skill, the supervisor/trainer and the apprentice are indicating that the apprentice has demonstrated competence in the skill. This training standard has been developed specifically for documenting the apprentice's acquisition of skills in the trade.

The technical and work processes that this apprenticeship program occupation/trade performs have been reviewed to include requirements for emerging "green" technologies, managing surplus, or scrap materials, conservation and preventing spills or escape of contaminated, toxic or hazardous gases and waste.

As apprenticeable trades and occupations are more mindful of the need for environmental sustainability, they are adopting materials, tools and procedures that offer environmental harm reduction.

DEFINITIONS

ACA

Apprenticeship and Certification Act, 1998

Certificate of Apprenticeship (CofA)

Certification issued to individuals who have demonstrated that they have completed an apprenticeship in Ontario.

Certificate of Qualification (CofQ)

Certification issued to C of Q applicants who have achieved a passing grade on the certification exam for their trade.

Competency Analysis Profile

A document that identifies the training needs of an individual trade and details the skills/skill sets that must be demonstrated.

Competence

The ability of an individual to perform a skill repeatedly and without assistance in the workplace to the standard set out in the Training Standard or Schedule of Training.

General Performance Objective (On-the-job Skill Set)

Describes set of skills which include all performance objectives under that skill set.

Industry Committee (IC) - under the ACA and Provincial Advisory Committee (PAC) under the TQAA

Under the ACA and TQAA, the Minister may appoint a provincial committee in any trade or group of trades to advise the Minister in matters relating to the establishment and operation of apprenticeship training programs and trades qualifications.

Journeyman or Equivalent

A person who has acquired the knowledge and skills in a trade, occupation or craft as attested to by a provincial or territorial authority.

Mandatory

Status assigned to unshaded individual skills, skill sets or general performance objective which must be signed off for the apprentice to complete their program.

Optional

Status assigned to shaded individual skills, skills sets or general performance objective for which sign-off is not required for the apprentice to complete the program.

Sign-off

Signature of the sponsor/employer of record or an individual, to whom that sponsor or employer has delegated signing authority, indicating an apprentice's achievement of competence.

Skill

Individual skill described in the Training Standard (note: does not mean the larger skill groups referred to in the Training Standard as Skill Sets, Training Units, or General Performance Objective, but the individual skills that make up those groups).

Skill Sets

Group of individual skills found in the Training Standard (may also be called Training Unit or General Performance Objective)

Skill Set Completion Form

Lists all skill sets and includes space for sign-off by sponsor/employer of record.

Sponsor/Employer

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, other occupation or skill set as part of an apprenticeship program approved by the Director.

Sponsor/Employer of Record

Refers to the sponsor or employer documented as the signatory to the current training agreement or contract. In order for an sponsor/employer to be considered for the training of apprentices, they must identify that the workplace has qualified journeypersons or equivalent on site and can identify that the workplace has the tools, equipment, materials, and processes which have been identified by Provincial Advisory Committees (PACs) or Industry Committees (ICs) to be required for the trade.

Supervisor

An individual who oversees the execution of a task, oversees the actions or work of others.

Trainer

A qualified trainer in a compulsory trade is a journeyperson with a Certificate of Qualification or in a voluntary trade is an individual who is considered equivalent to a journeyperson with a Certificate of Qualification.

TQAA

Trades Qualification and Apprenticeship Act.

Training Standard

A document that has been written in concise statements, which describe how well an apprentice must perform each skill in order to become competent. In using the document, trainers will be able to ensure that the apprentice is developing skills detailed for the occupation.

IMPORTANT DIRECTIONS

Apprentice

1. All complete skills or skill sets must be signed and dated by both the apprentice and sponsor/employer when either all terms of the contract have been completed or the apprentice leaves the employ of the employer.
2. It is the responsibility of the apprentice to inform the apprenticeship staff at the local Ministry of Training, Colleges and Universities office regarding the following changes:
 - change of sponsor/employer address
 - change of apprentice name or address
 - transfer to a new sponsor/employer.
3. The Skill Set Completion Form must be completed and signed by the current sponsor/employer and presented to the local Apprenticeship Office at the fulfillment of all terms of a Contract of Apprenticeship/Training Agreement.
4. The apprentice completion form with the Completed and Authorized Training Standard must be presented to the local Apprenticeship Office.

Sponsors/Employers and Supervisors/Trainers

The Training Standard identifies skills required for this trade/occupation and its related training program.

This Training Standard has been written in concise statements, which describe how an apprentice must perform each skill in order to become competent. Competence means being able to perform the task to the required standard.

In using this Training Standard, supervisors/trainers will be able to ensure that the apprentice is developing the skills detailed for the trade/occupation.

Supervisors/Trainers and apprentices are required to sign off and date the skills following each successful acquisition.

Sponsors/Employers 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.

NOTICE/DECLARATION FOR COLLECTION OF PERSONAL INFORMATION

1. At any time during your apprenticeship training, you may be required to show this training standard to the Ministry of Training, Colleges and Universities (the Ministry). You will be required to disclose the signed Apprenticeship Completion form to the Ministry in order to complete your program. The Ministry 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 Ministry will disclose information about your program completion and your certificate of apprenticeship to the Ontario College of Trades, as it is necessary for the College to carry out its responsibilities.
3. Your personal information is collected, used and disclosed by the Ministry under the authority of the Ontario College of Trades and Apprenticeship Act, 2009.
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 Training, Colleges and Universities
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.

ROLES & RESPONSIBILITIES OF APPRENTICE, SPONSOR/EMPLOYER AND SUPERVISOR/TRAINER

Apprentice “Apprenticeship is Learning On-the-job”

- Practice safe work habits.
- Use your apprenticeship training standard as a journal to keep track of which skills you have achieved.
- Talk over your training plan with your Training Consultant, Employer, Union, or Sponsor.
- Know what tools are required for your trade and how to use them.
- Ask questions and keep asking.
- Talk to your employer about your training needs.
- Demonstrate enthusiasm and good work habits.
- Ensure that you and your supervisor/trainer sign off skill/skill sets upon demonstration of competency.

Sponsor/Employer “Training is an Investment”

- Demonstrate safe work habits.
- Attest to successful achievement by signing the skill/skills sets.
- Provide opportunities and time for the apprentice to learn the trade.
- Offer practical trade training experiences that cover all of the skill sets.
- Foster work ethics that support training while minimizing productivity losses.
- Set out clear expectations, then recognize or reward performance excellence.
- Involve both the apprentice and supervisor/trainer in developing the training plan.
- Use the Training Standard as a monitoring tool and part of regular performance evaluations.
- Select supervisors/trainers with good communication skills and who work well with others.
- Encourage supervisors/trainers to take upgrading courses - (e.g. Train the Trainer, Mentor Coach, etc).
- Complete the Skill Set Completion Form once the apprentice has demonstrated competency in the training.
- Ensure that the apprentice always works under the direction of or has access to a qualified supervisor/trainer.
- Vary the apprentice’s exposure to all the skills set out in the training standard.

Supervisor/Trainer

- Demonstrate safe work habits.
- Treat apprentices fairly and with respect.
- Use the Training Standard as a guide to evaluating competence in each skill area. In using the Training Standard, supervisors/trainers will be able to ensure that the apprentice is developing skills detailed for the trade/occupation.
- Review the Training Standard with the apprentice and develop a training plan.
- Respond fully to all questions.
- Be patient. Explain what is to be done then, show how it is done, and then let the apprentice demonstrate the task.
- Provide continuous feedback.
- Sign off individual skills/skill sets once the apprentice demonstrates competence in the skill.

Suggestions for Assessing the Progress of the Apprentice in the Workplace

- Use informal daily observation.
- Provide constructive feedback to build confidence.
- Allow the supervisor/trainer time to teach and demonstrate the skills.
- Take prompt action wherever problems occur.
- Conduct regular performance reviews involving the apprentice, supervisor/trainer and sponsor/employer.
- Use the Training Standard as the reference for establishing the competency of the apprentice.

SKILL SET COMPLETION FORM

SKILL SET	TITLE	SIGNING AUTHORITY
7211.0	SAFE WORKING PRACTICES AND PROCEDURES	
7212.0	ENVIRONMENTAL PROTECTION PRACTICES	
7213.0	ORGANIZE WORK	
7214.0	PREPARE THE WORKSITE	
7215.0	INSTALL VENTILATION DUCT	
7216.0	INSTALL MAIN DUCT	

NOTE ON SHADED PERFORMANCE OBJECTIVES AND SKILLS:

- Shaded performance objectives and skill sets are optional. The shaded skills do not have to be demonstrated or signed-off for completion of the on-the-job component of the apprenticeship.
- The in-school curriculum learning outcomes will cover all of the skill sets, both shaded and unshaded.
- The Certificate of Qualification examination will test the whole of the trade and may test both shaded and unshaded performance skill sets.

**7211.0 SAFE WORKING PRACTICES AND PROCEDURES
GENERAL PERFORMANCE OBJECTIVE**

Protect self and others by: complying with federal, provincial, or municipal workplace legislation and regulations; using personal protective equipment; practising good housekeeping in the workplace; handling workplace hazardous materials; following fire safety procedures; applying basic first aid; reporting injuries; working within safe physical limits; operating material handling equipment; and using ladders and work platforms.

PERFORMANCE OBJECTIVES

SKILLS

7211.01 Comply with federal, provincial, or municipal workplace legislation and regulations including Occupational Health and Safety Act (OHSA), Worker’s Compensation Act (WCA), Ministry of Environment (MOE) Regulations, Dangerous Goods Transportation Act (DGTA), Workplace Hazardous Materials Information System (WHMIS), Ontario Fire Code (OFC), Canadian Electrical Code (CEC), Mechanical Refrigeration Code (B52), Energy Act (EA), and TSSA Act and Regulations.

Date Completed

Apprentice

Supervisor/Trainer

7211.02 Use personal protective equipment including safety and rubber boots, hard hats, gloves, glasses, goggles, masks, face shields, coveralls, fall-arrest equipment, and ear protectors, ensuring a correct fit and providing optimum protection to the wearer for the specific task being performed, in accordance with manufacturers’ specifications, company standards/policies, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7211.0 SAFE WORKING PRACTICES AND PROCEDURES ...cont'd

7211.03 Practise good housekeeping in the workplace by cleaning up spills and leaks, keeping work area clean and clear of obstructions, and storing tools or equipment, so that the potential for accident or injury is prevented and tools or equipment are in place and available, in accordance with company standards/policies and applicable Acts, Regulations, Legislation, and Codes.

Date Completed_____
Apprentice_____
Supervisor/Trainer

7211.04 Handle workplace hazardous materials by wearing personal protective equipment, following required disposal procedures, and using specified handling and storage equipment, so that individuals are protected from injury, the environment from contamination, and procedures are followed in accordance with applicable Acts, Regulations, Legislation, and Codes, manufacturers' specifications, and company standards/policies.

Date Completed_____
Apprentice_____
Supervisor/Trainer

7211.05 Follow fire safety procedures including: locating and assessing the severity of the fire; handling fire extinguishing equipment; suppressing minor fires; activating alarms; and, reporting incidents; in accordance with applicable Acts, Regulations, Legislation, and Codes, manufacturers' specifications, and company standards/policies.

Date Completed_____
Apprentice_____
Supervisor/Trainer

7211.06 Follow basic first aid procedures to treat conditions including sudden illness or minor injuries, burns, cuts, abrasions, falls, sprains, chemical inhalations, and contaminants in eyes, so that the victim is stabilized and prepared for further first aid treatment, in accordance with applicable Acts, Regulations, Legislation, and Codes, and company standards/policies.

Date Completed_____
Apprentice_____
Supervisor/Trainer

7211.0 SAFE WORKING PRACTICES AND PROCEDURES ...cont'd

7211.07 Report injuries to supervisor or first aid personnel promptly and clearly, ensuring that the injured person is attended to, and information is reported precisely and accurately describing how incident occurred, so that future recurrence of similar accidents is prevented and reporting complies with company standards/policies, applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7211.08 Work within safe physical limits by applying lifting procedures for bending, lifting, transporting, or climbing with heavy loads, so that personal injury is prevented in accordance with applicable Acts, Regulations, Legislation, or Codes, and company standards/policies.

Date Completed

Apprentice

Supervisor/Trainer

7211.09 Operate material handling equipment including ropes, straps, and hand carts/trucks, so that materials, parts, and equipment are moved, transported, and positioned, in compliance with company standards/policies, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7211.10 Use ladders and work platforms by ensuring that equipment is correct for the size of job, site conditions, and the task being performed, and that the equipment is erected, levelled, dismantling, and maintained, in accordance with manufacturers' specifications, company standards/policies, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

7212.0 ENVIRONMENTAL PROTECTION PRACTICES

GENERAL PERFORMANCE OBJECTIVE

Protect the environment by: reducing waste; preventing toxic spills or emissions; protecting the natural environment; and reusing/recycling materials.

PERFORMANCE OBJECTIVES

SKILLS

7212.01 Reduce waste by using work materials as efficiently and effectively as possible, in accordance with applicable regulations, environmental protocols, and company standards/policies.

Date Completed

Apprentice

Supervisor/Trainer

7212.02 Prevent toxic spills/emissions by wearing personal protective equipment, following required containment and storage procedures, and using specified handling and storage equipment, so that individuals are protected from injury, the environment from contamination, and procedures are followed in accordance with applicable regulations, environmental protocols and company standards/policies.

Date Completed

Apprentice

Supervisor/Trainer

7212.03 Protect the natural environment by setting up barriers or plastic sheeting, and placing work equipment, so that the environment is protected from damage and contamination, in accordance with applicable regulations, environmental protocols and company standards/policies.

Date Completed

Apprentice

Supervisor/Trainer

7212.0 ENVIRONMENTAL PROTECTION PRACTICES...cont'd

7212.04 Reuse or recycle materials in accordance with manufacturers' specifications, applicable regulations, environmental protocols, and company standards/policies.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

7213.0 ORGANIZE WORK

GENERAL PERFORMANCE OBJECTIVE

Organize work by: interpreting shop drawings, architectural drawings, and job documentation; organizing materials; using hand tools, power tools and job site equipment; planning sequence of installation for new construction; planning a retrofit installation; removing old equipment; verifying basic duct design; and completing documentation.

PERFORMANCE OBJECTIVES

SKILLS

7213.01 Interpret shop and architectural drawings by following required procedures including:

- identifying the location and route for ducts;
- identifying locations for air handling and ventilation equipment;
- identifying required structural alterations;
- identifying dimensions and details;
- using the scale readings to interpret sizing of actual dimensions;
- checking to identify conflicting information;
- visualizing the finished duct system;

so that the type of material, location of duct and installation methods are identified, in accordance with manufacturers' specifications, company standards/policies, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7213.0 ORGANIZE WORK ...cont'd

7213.02 Interpret job documentation including manufacturers' specifications, installation instructions, work orders, change orders, and material take-off list to:

- identify the scope of work;
- identify the type of material and the limitations;
- determine the number of parts;
- determine required material and equipment;
- identify installation specifications;
- check maintenance records;
- visualize finished product;
- determine the sequence order of operations;

so that duct system is identified, located, and installed, in accordance with manufacturers' specifications, company standards/policies, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7213.03 Organize materials by following required procedures including:

- identifying location of duct;
- reviewing work order and change orders;
- consulting drawings;
- listing required materials;
- preparing for delivery to site;
- selecting stock of materials such as consumables, fasteners, cleats, and sealants;
- storing materials for future use or movement;

so that material is organized and ready for delivery, in accordance with manufacturers' specifications, company standards/policies, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7213.0 ORGANIZE WORK ...cont'd

7213.04 Use hand tools by following required procedures including:

- selecting hand tool such as snips, tinner hammer, framing hammer, screw drivers, folding pliers, crimpers, scratch awl, wire cutters, tape measure, level, markers, chalk line, utility knife, wrench and bar folder;
- inspecting tools;
- maintaining tools
- storing tools;

so that hand tools selected are the correct ones for the application and tools are cleaned and ready for use, in accordance with drawings, work orders, manufacturers' specifications, company standards/procedures, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7213.05 Use power tools by following required procedures including:

- selecting power tool such as chain saw, circular saw, reciprocating saw, drills, screw gun, power shears, nailer, cut saw, and chop saw;
- inspecting tool;
- testing tool;
- maintaining tool;
- storing tool;
- tagging for further repair or maintenance;

so that power tool selected is the correct one for the application and tool limitations, in accordance with drawings, work orders, manufacturers' specifications, company standards/procedures, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7213.0 ORGANIZE WORK ...cont'd

7213.06 Use job site equipment by following required procedures including:

- selecting job site equipment such as generator, lifting devices, material handling, ladders, work platforms/scaffolds, and safety equipment;
- checking the equipment;
- identifying defective equipment;
- maintaining the equipment;
- tagging for further repair or maintenance;
- dismantling and storing the equipment;

so that job site equipment used is correct for the application and is cleaned and ready for use, in accordance with manufacturers' specifications, company standards/procedures, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7213.07 Plan a new construction installation by following required procedures including:

- identifying the position of the duct and equipment;
- determining the location of outlets;
- determining the route of duct;
- creating a schedule for the tasks;

so that new construction installation is planned and identified, in accordance with drawings, work orders, manufacturers' specifications, company standards/procedures, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7213.08 Plan a retrofit installation by following required procedures including:

- communicating with the customer;
- performing site evaluations;
- determining the access and removal routes;
- developing a schedule;

so that the retrofit installation is planned and identified, in accordance with drawings, work orders, manufacturers' specifications, company standards/procedures, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7213.0 ORGANIZE WORK ...cont'd

- 7213.09 Remove old equipment** by following required procedures including:
- ensuring that equipment is decommissioned;
 - disassembling the equipment;
 - preparing the work site;
 - checking for hazardous material;
 - using required tools and equipment;
 - removing old equipment;
 - wearing personal protective equipment;
- so that old equipment is removed, in accordance with work orders, company standards/procedures, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

- 7213.10 Verify basic duct design** by following required procedures including:
- checking that duct design matches the model of home;
 - checking that equipment matches the specifications;
 - checking that correct materials have been ordered;
 - making required adjustments to the material list;
 - creating a freehand sketch;
 - modifying design where applicable;
- so that the specifications in the basic duct design are checked and verified, in accordance with drawings, work orders, manufacturers' specifications, company standards/procedures, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7213.0 ORGANIZE WORK ...cont'd

- 7213.11 Completes documentation** by following required procedures including:
- filling in time cards, as-built sheets, work orders, change orders and requests for information (RFI);
 - completing accident and incident reports;
 - recording maintenance and repair information;
 - reporting recommendations for follow-up action;
 - completing safety inspection reports;
 - drawing sketches of parts to be installed;
 - performing calculations for dimensions of the assembly;
- so that the installation is recorded accurately and clearly, in accordance with job specifications, manufacturers' specifications, and company standards/procedures.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

7214.0 PREPARE THE WORKSITE

GENERAL PERFORMANCE OBJECTIVE

Prepare the worksite by: roughing-in duct to air handling location; checking duct design; verifying location of air handling equipment; preparing a material list; and communicating with others.

PERFORMANCE OBJECTIVES

SKILLS

7214.01 Rough-in duct to the air handling equipment location by following required procedures including:

- identifying supply and return air openings and duct routes;
- identifying obstructions or problems;
- securing partitions before cutting;
- cutting holes or penetrations for duct;
- reinforcing structural cuts;
- assembling pipes, boots, vents, return air exhausts, and kick plates;
- installing supports for ducts;

so that duct is roughed-in, in accordance with drawings, work orders, manufacturers' specifications, company standards/procedures, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7214.02 Verify duct materials and design by following required procedures including:

- identifying the correct drawing for the model of home;
- checking that the lot number matches the drawing;
- checking material (take-off) list;
- performing calculations to check size and dimensions of the duct;

so that the duct design and materials are in accordance with drawings, work orders, manufacturers' specifications, company standards/procedures, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7214.0 PREPARE THE WORKSITE ...cont'd

7214.03 Place air handling equipment by using drawings and conducting a visual inspection of work site, to ensure the equipment locations are suitable for the duct installation, in accordance with work orders, manufacturers' specifications, company standards/procedures, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7214.04 Prepare a material list for modifications by following required procedures including:

- comparing the duct design to the site conditions;
- making recommendations for adjustments;
- developing a list of required materials;

so that materials are selected for modifications and changes, in accordance with duct design, work orders, change orders, manufacturers' specifications, and company standards/procedures.

Date Completed

Apprentice

Supervisor/Trainer

7214.05 Communicate with others such as site supervisor, customers, suppliers, co-workers, and other trades to identify:

- installation and job information;
- availability of materials, tools, and equipment;
- design changes or adjustments;
- licensed trade jurisdictional responsibilities;
- scheduling requirements;
- technical information for the customer;
- warranty information;

and by using communication devices such as computers, two-way radios, cell phones and fax machines, ensuring that information communicated is clear, concise, and accurate in accordance with company standards/procedures.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

7215.0 INSTALL VENTILATION DUCT

GENERAL PERFORMANCE OBJECTIVE

Install ventilation duct by: installing sleeves or louvers; installing pre-fabricated flashing around duct penetrations; installing duct for heat recovery ventilators (HRV) and energy recovery ventilators (ERV); and, installing duct for fans

PERFORMANCE OBJECTIVES

SKILLS

7215.01 Install sleeves or louvers by following required procedures including;

- reading mechanical and architectural drawings;
- using required tools and equipment;
- identifying locations for sleeves or louvers;
- identifying type of construction for installation methods;
- identifying sizing;
- cutting openings;
- placing sleeves or louvers;

so that sleeves or louvers are installed, in accordance with drawings, work orders, manufacturers' specifications, company standards/procedures, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7215.02 Install pre-fabricated flashing around duct penetrations by following required procedures including:

- reading drawings, manufacturers' specifications, work orders;
- identifying the type and location of penetrations;
- identifying the type of flashing material;
- using required tools and equipment;

so that pre-fabricated flashing is installed, in accordance with drawings, work orders, manufacturers' specifications, company standards/procedures, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7215.0 **INSTALL VENTILATION DUCT...cont'd**

7215.03 **Install duct for Heat Recovery Ventilators (HRV) and Energy Recovery Ventilators (ERV) by following required procedures including:**

- reading drawings and work orders;
- identifying locations for the HRV and ERV equipment;
- positioning the duct;
- installing ventilation duct;
- sealing all joints and penetrations;
- installing flexible insulation duct;
- checking air flow;
- using required tools and basic measuring equipment;

so that duct for HRVs and ERVs is installed, in accordance with drawings, manufacturers' specifications, company standards/procedures, work orders, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7215.04 **Install duct for fans by following required procedures including:**

- reading drawings and work orders;
- using required tools and basic measuring equipment;
- positioning the fans;
- positioning the duct;
- insulating ventilation duct;
- sealing exterior openings or hoods;

so that duct for fans is installed, in accordance with drawings, work orders, manufacturers' specifications, company standards/procedures, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

7216.0 INSTALL MAIN DUCT

GENERAL PERFORMANCE OBJECTIVE

Install main duct by verifying materials; installing plenum and duct to air handling equipment; assembling duct fittings; preparing duct; installing hangers and supports, return air joist linings, designed accessories to duct, plenum take-offs (PTO's), branch run-outs, and grills and registers; and, verifying main duct balancing devices.

PERFORMANCE OBJECTIVES

SKILLS

7216.01 Verify duct materials by following required procedures including:

- checking the material lists;
- measuring material dimensions;
- checking quantity of duct material;
- checking condition of duct materials;
- re-ordering missing or defective materials;

so that duct materials are the correct ones for the job and ready for installation, in accordance with drawings, work orders, manufacturers' specifications, company standards/procedures, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7216.02 Install plenum and duct to the air handling equipment by following required procedures including:

- reading drawings and job documentation;
- identifying correct equipment;
- locating and placing the air handling equipment;
- installing plenum and duct;
- connecting duct to the air handling equipment;
- notifying licensed sub-trades to connect and start-up air handling equipment;

so that plenum and duct are connected to air handling equipment, in accordance with drawings, work orders, manufacturers' specifications, company standards/procedures, and applicable Acts, Regulations, Legislation, and Codes

Date Completed

Apprentice

Supervisor/Trainer

7216.0 INSTALL MAIN DUCT

7216.03 Assemble fittings for the duct by following required procedures including:

- reading drawings and work orders;
- identifying the function and application of the fittings;
- assembling Pittsburgh seams and snap lock seams;
- assembling the fittings;
- using required tools and equipment;
- verifying the assembly and connection to the duct;

so that fittings are fitted and assembled, in accordance with drawings, work orders, manufacturers’ specifications, company standards/procedures, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7216.04 Prepare duct by following required procedures including:

- assembling duct and fittings;
- assembling connections;
- measuring take-off locations;
- cutting openings for duct take-offs;
- preparing hangers;
- preparing “S” and Drive cleats;
- installing take-offs;

so that duct is prepared and ready for installation, in accordance with drawings, work orders, manufacturers’ specifications, company standards/procedures, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7216.05 Install hangers and supports by following required procedures including:

- checking the duct locations;
- measuring the locations for supports and hangers;
- installing vibration insulators if required;
- securing the supports and hangers;
- using required hand and power tools;

so that hangers and supports are installed, in accordance with drawings, work orders, company standards/procedures, manufacturers’ specifications, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7216.0 INSTALL MAIN DUCT

7216.06 Install return air joist linings by following required procedures including:

- identifying the return air duct location;
- installing block ends in duct;
- checking that there is sufficient area for return air;
- connecting the return air to main trunk or duct;
- sealing the duct;
- using required hand and power tools;

so that return air joist linings are installed, in accordance with drawings, work orders, manufacturers' specifications, company standards/procedures, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7216.07 Install designed accessories to duct by following required procedures including:

- checking work orders and duct design;
- identifying accessories such as UV lights, coils, humidifiers, dehumidifiers, air cleaners, zone dampers, fans, and filters;
- interpreting installation instructions;
- determining locations for installation of accessories;
- mounting accessories on or in duct;
- modifying plenums or duct to accommodate accessories;
- notifying licensed sub-trades to connect and start-up accessories;

so that designed accessories are located, positioned, and installed, in accordance with drawings, work orders, manufacturers' specifications, company standards/procedures, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7216.0 INSTALL MAIN DUCT ...cont'd

7216.08 Install plenum take-offs (PTO's) by following required procedures including:

- sequencing the location of PTOs ;
- measuring locations on plenums;
- cutting out and installing PTOs on plenum;
- installing volume dampers;
- preparing and installing supports for duct;
- installing supply and return ducts;
- insulating ducts in unconditioned space;
- sealing finished joints;

so that PTOs are located, positioned, and installed, in accordance with drawings, work orders, manufacturers' specifications, company standards/procedures, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7216.09 Install branch run-outs by following required procedures including:

- laying out duct to minimize restriction of airflow;
- installing required dampers;
- preparing and installing supports for duct;
- installing the pipe;
- installing screws and tape;
- cutting pipe to length and end of runs;
- connecting to boots;
- nailing boots to sub-floor;
- insulating pipe in unconditioned space;
- using required hand and power tools;

so that the branch run-outs are laid out and installed, in accordance with drawings, work orders, manufacturers' specifications, company standards/procedures, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7216.0 INSTALL MAIN DUCT ...cont'd

7216.10 Install grills and registers by following required procedures including:

- identifying the type of grill and registers;
- identifying size and quantity of grill and registers;
- laying out the position of the grill and registers;
- installing supply air (S/A) and return air (R/A) grills;
- installing ventilation grills;
- installing registers;
- using required hand and power tools;

so that grills and registers are located and installed, in accordance with drawings, work orders, manufacturers' specifications, company standards/procedures, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7216.11 Verify main duct balancing devices by following required procedures including:

- checking damper locations and operating functions;
- checking grills and registers locations and operating functions;
- checking location and installation of filters;

so that air balancing devices are operational and functioning, in accordance with drawings, work orders, manufacturers' specifications, company standards/procedures, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

7216.0 INSTALL MAIN DUCT ...cont'd

- 7216.12 Verify retrofit duct air flow** by following required procedures including:
- checking damper locations and operating functions;
 - checking air flow at grills and registers;
 - checking vibrations, noise, supply air, return air, and filters;
 - adjusting dampers;
 - changing filters;
 - making recommendations for additional service;
- so that air flow is checked, in accordance with drawings, work orders, manufacturers' specifications, company standards/procedures, and applicable Acts, Regulations, Legislation, and Codes.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

APPRENTICE RECORD

APPRENTICE NAME (Print):

SPONSOR/EMPLOYER INFORMATION	
Training Agreement #	
Name	
Address	
Telephone	
E-mail Address	

SUMMARY OF TRAINING	
Employment Start Date	
Employment End Date	
Total hours of training & instruction between dates of employment.	

Date Completed

Apprentice

Supervisor/Trainer

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Employment Start Date	
Employment End Date	
Total hours of training & instruction between dates of employment.	

Date Completed

Apprentice

Supervisor/Trainer

APPRENTICE COMPLETION FORM

APPRENTICE INFORMATION	
Name (Print)	
Signature	
Client ID	

Skill Sets when completed should be signed by the Supervisor/Trainer and presented with this completion form to your local Apprenticeship Client Services Office. Any supporting documentation should also be attached.

In-school Completed Yes () No () Not applicable ()
(Proof to be provided)

Hours completed as
Per Contract: Yes () No () Not applicable ()

SPONSOR/EMPLOYER INFORMATION	
Name (Print)	
Address	
Telephone	
E-mail Address	
Signature of Signing Authority	

You will be required to disclose this signed form to the Ministry of Training, Colleges and Universities in order to complete your program. The Ministry will use your personal information to administer and finance Ontario's apprenticeship training system. For further information please see the notice/declaration for collection of personal information that is referenced in the table of contents of this training standard.