



ONTARIO COLLEGE OF TRADES

ORDRE DES MÉTIERS DE L'ONTARIO

Apprenticeship
Training Standard

Architectural Glass and
Metal Technician

Trade Code: 424A

Development Date: April 2008

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COMPETENCY ANALYSIS PROFILE

Architectural Glass & Metal Technician - 424A

(All unshaded skill sets must be demonstrated/ completed)

SKILL SETS

SKILLS

PRACTICE HEALTH AND SAFETY	Comply with all safety regulations and legislation	Report all hazards	Wear and maintain personal protective equipment	Apply correct body mechanics	Apply basic first aid
	1576.01	1576.02	1576.03	1576.04	1576.05
1576.0					

EMPLOY TRADE TOOLS AND EQUIPMENT	Use and maintain trade-specific hand tools and associated equipment	Use and maintain electrical, pneumatic, hydraulic and explosive-actuated fastening tools, power tools and associated equipment	Confirm material and site dimensions	Select and use moving and positioning equipment	
	1577.01	1577.02	1577.03	1577.04	
1577.0					

USE AND MAINTAIN MATERIAL HANDLING, SAFETY AND SITE ACCESS EQUIPMENT	Select and inspect rigging equipment	Position and employ rigging	Select and inspect hoisting and lifting equipment	Operate hoisting equipment	Select, inspect and erect scaffolding
	1578.01	1578.02	1578.03	1578.04	1578.05
1578.0	Work on scaffolding, work platforms and at heights	Dismantle and store scaffolding			
	1578.06	1578.07			

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SKILL SETS

SKILLS

PREPARE FOR ON-SITE INSTALLATION	Set up on site requirements	Liaise, communicate and sequence work	Organize work requirements	Load, unload and sort materials	Plan, prepare and schedule activities
1579.0	1579.01	1579.02	1579.03	1579.04	1579.05
	Set up and lay out grid and base lines	Lay out, cut, shape and drill flashing and components	Align, assemble and glue, tack or weld components to final assembly		
	1579.06	1579.07	1579.08		

SELECT AND INSTALL FASTENERS	Select and install or apply fasteners	Select and install torque fasteners	Select and install mirror clips and "J" mouldings	Select and install shear blocks	Select and apply expanding cements
1580.0	1580.01	1580.02	1580.03	1580.04	1580.05

INSTALL UNITIZED AND STICK CURTAIN WALL SYSTEMS	Install cast-in anchors	Install vision and spandrel area	Install curtain wall seals, back pans and terra cotta/ granite/ stone spandrels	Install flashings, pressure plates and caps	Install fire stops
1581.0	1581.01	1581.02	1581.03	1581.04	1581.05
	Form and install specialty coverings	Install air barrier systems	Install sunshades/louvers systems	Install two-sided and four-sided structural glazing systems	
	1581.06	1581.07	1581.08	1581.09	

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SKILL SETS

SKILLS

FABRICATE, ASSEMBLE AND INSTALL WINDOWS	Install fixed lite, hopper, awning, casement, sliding, and hung windows	Install, fasten, block and adjust windows	Install and adjust operating hardware	Cut and install screening	Measure, cut and install sills and flashings
1582.0	1582.01	1582.02	1582.03	1582.04	1582.05
INSTALL GLAZING SYSTEMS	Prepare for installation of glazing systems	Install seals, gaskets, stopping and backer rods	Install wet/dry glazing systems	Assemble and install slope-glazing systems	Assemble and install suspended glass systems
1583.0	1583.01	1583.02	1583.03	1583.04	1583.05
	Install structural glazing gaskets				
	1583.06				
CUT, SHAPE AND INSTALL GLASS	Cut shape and install standard glass	Cut shape and install laminated and ceramic/ fire-rated/ wire glass	Cut shape and install hard and soft-coated glass	Select and install single glass and thermal units	Select and install tempered glass and laminated glass
1584.0	1584.01	1584.02	1584.03		
	Cut, shape and install mirrors	Finish glass			
	1584.06	1584.07			
INSTALL SEALS, GASKETS AND CAULKING	Select and install seals and gaskets	Select and apply primers and cleaners	Select and use sealing and caulking compounds	Select and install backing rods	Install curtain wall and glazing system sealing
1585.0	1585.01	1585.02	1585.03	1585.04	1585.05

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SKILL SETS

SKILLS

INSTALL DOORS AND ENTRANCE WAYS 1586.0	Install swinging, sliding and folding aluminum doors	Install swinging, sliding and folding all-glass doors	Install and adjust manual and automatic sliding doors	Install air, electric and hydraulically powered automatic doors	Install and adjust revolving doors
	1586.01	1586.02	1586.03	1586.04	1586.05
	Glaze and block door and entranceway installations				
	1586.06				

INSTALL OPERATING HARDWARE 1587.0	Install pivots and hinges	Install locks	Install panic hardware and push bars	Install door hardware	Install window and sash hardware
	1587.01	1587.02	1587.03	1587.04	1587.05
	Install closers	Install removable and fixed astragals, buggy bumpers, finger guards and guardrails			
	1587.06	1587.07			

INSTALL GLAZING FILM 1588.0	Inspect glazing system	Prepare glazing system	Install glazing films	Seam film	Carry out field quality control
	1588.01	1588.02	1588.03	1588.04	1588.05
	Clean film surfaces				
	1588.06				

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 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 skill 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.

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>

DEFINITIONS

ACA

Apprenticeship and Certification Act, 1998

Certificate of Apprenticeship (C of A)

Certification issued to individuals who have demonstrated that they have completed the trade or occupation in-school training and on-the-job training.

Certificate of Qualification (C of Q)

Certification issued to qualified applicants who have achieved a passing grade on the certification examination for their trade.

Competency Analysis Profile

A document that identifies, in compressed, graphic format, the training requirements of an individual trade and that 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 the skill set, including 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 apprentices 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 apprentices to complete their 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 apprentice 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 a sponsors/employers 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 to be required for the trade by Provincial Advisory Committees (PACs) or Industry Committees (ICs).

Supervisor

An individual, who oversees the execution of a task or 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, at a minimum, 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 local Apprenticeship Client Services 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 Client Services 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 Client Services Unit.

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.

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 successful acquisition.

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

NOTICE OF 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.

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SKILL SET COMPLETION FORM

SKILL SET	TITLE	SIGNING AUTHORITY
1576.0	PRACTICE HEALTH AND SAFETY	
1577.0	EMPLOY TRADE TOOLS AND EQUIPMENT	
1578.0	USE AND MAINTAIN MATERIAL HANDLING, SAFETY AND SITE ACCESS EQUIPMENT	
1579.0	PREPARE FOR ON-SITE INSTALLATION	
1580.0	SELECT AND INSTALL FASTENERS	
1581.0	INSTALL UNITIZED AND STICK CURTAIN WALL SYSTEMS	
1582.0	FABRICATE, ASSEMBLE AND INSTALL WINDOWS	
1583.0	INSTALL GLAZING SYSTEMS	
1584.0	CUT, SHAPE AND INSTALL GLASS	
1585.0	INSTALL SEALS, GASKETS AND CAULKING	
1586.0	INSTALL DOORS AND ENTRANCEWAYS	
1587.0	INSTALL OPERATING HARDWARE	
1588.0	INSTALL GLAZING FILM	

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.

1576.0 PRACTICE HEALTH AND SAFETY

GENERAL PERFORMANCE OBJECTIVE

Practice Health & Safety by complying with all safety legislation; reporting all hazards and accidents; wearing and maintaining personal protective equipment; apply correct body mechanics and apply basic first aid in accordance with safety legislation and company policies.

PERFORMANCE OBJECTIVES

SKILLS

1576.01 Comply with all safety regulations and legislation under The Occupational Health and Safety Act (OHSA) and Workplace Hazardous Materials Information System (WHMIS) and carry out Construction Safety Association recommended procedures including Fall Protection when working.

Date Completed

Apprentice

Supervisor/Trainer

1576.02 Report all hazards to co-workers and supervisors and accidents to supervisors, and complete all necessary paper work in accordance with company and WSIB requirements.

Date Completed

Apprentice

Supervisor/Trainer

1576.03 Wear and maintain personal protective equipment including protection for head, eyes, ears, hands, feet and lungs in accordance with WHMIS requirements.

Date Completed

Apprentice

Supervisor/Trainer

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1576.0 PRACTICE HEALTH AND SAFETY...cont'd

1576.04 Apply correct body mechanics when moving or lifting heavy loads to prevent injury in accordance with WSIB requirements.

Date Completed

Apprentice

Supervisor/Trainer

1576.05 Apply basic first aid to self and others in emergency situations in accordance with WSIB Reg 1101 requirements

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

1577.0 EMPLOY TRADE TOOLS AND EQUIPMENT

GENERAL PERFORMANCE OBJECTIVE

Employ trade tools and equipment by using and maintaining trade-specific hand tools, power tools and associated equipment, confirming material and site dimensions using measuring instruments and devices; and selecting and using moving and positioning equipment so that tools and equipment are used for their intended purpose and are maintained at a standard of repair that is safe and functionally effective.

PERFORMANCE OBJECTIVES

SKILLS

1577.01 Use and maintain trade-specific hand tools and associated equipment, including cutting, drilling, shaping, lifting, hammering and fastening tools such as drills, taps, reamers, glasscutters, hacksaws, clamps, snips, shears, hammers, mallets, wrenches, spanners, sockets, pliers, screwdrivers, files and carrying tools by determining the correct tool for the job, selecting the tool and required components, applying it to the job and repairing or replacing user-maintainable parts so that tools are used for their intended purpose and are maintained at a standard of repair that is safe and functionally effective.

Date Completed

Apprentice

Supervisor/Trainer

1577.02 Use and maintain electrical, pneumatic, hydraulic and explosive-actuated fastening tools, power tools and associated equipment and supplies including drills, saws, routers, grinders, welding and cutting equipment, tap and screw guns and manual and power suction cups by identifying appropriate power supply sources, determining the correct tool and required components for the job, operating it, replacing consumables and repairing or replacing user maintainable parts so that tools are used for their intended purpose and are maintained at a standard of repair that is safe and functionally effective.

Date Completed

Apprentice

Supervisor/Trainer

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1577.0 EMPLOY TRADE TOOLS AND EQUIPMENT...cont'd

1577.03 Confirm material and site dimensions by using precision measuring instruments and checking devices, including rules, tapes, squares, straight edges, levelling devices (lasers and transits), water levels, and plumb bobs, to ensure that the size conforms to engineering drawing and job specifications.

Date Completed

Apprentice

Supervisor/Trainer

1577.04 Select and use moving and positioning equipment such as dollies, case movers, slings and clamps in a safe and efficient manner.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

1578.0 USE AND MAINTAIN MATERIAL HANDLING, SAFETY AND SITE ACCESS EQUIPMENT

GENERAL PERFORMANCE OBJECTIVE

Use and maintain material handling and safety equipment by selecting and inspecting rigging equipment; positioning, employing and identifying rigging for repair; selecting and inspecting hoisting equipment; operating hoisting equipment; selecting, inspecting and erecting scaffolding; working on scaffolding and at heights; dismantling and storing scaffolds and material handling equipment so that the rigging is appropriate to the job and is used and stored correctly, lifting and hoisting equipment is adequate for the job, the lift is correctly carried out and scaffolding is erected, used, dismantled and stored properly in accordance with employer-s procedures and CSA safety standards.

PERFORMANCE OBJECTIVES

SKILLS

1578.01 Select and inspect rigging equipment by choosing appropriate equipment required for the specific lift including cable clamps, chain block hoists, chains, chokers, come-along, connectors, ropes, slings and tuggers; performing preoperational check of rigging through visual checks for defects including damaged links, frayed cables, cuts in slings, threads on shackles, and other physical defects and replacing or identifying for repair defective rigging so that rigging is correct for the job per Ontario regulation requirements and defective rigging is replaced or identified for repair in accordance with employer-s procedures and CSA safety standards.

Date Completed

Apprentice

Supervisor/Trainer

1578.02 Position and employ rigging by determining the weight, balance and size of workpiece to be moved or lifted; placing or attaching the rigging to the load and dismantling and storing the rigging equipment after use so that correct rigging is selected, placed and used to move and/or lift the workpiece, and is stored correctly and in good repair in compliance with employer-s procedures, CSA safety standards, Ontario regulations and material handling guidelines.

Date Completed

Apprentice

Supervisor/Trainer

1578.0 USE AND MAINTAIN MATERIAL HANDLING, SAFETY AND SITE ACCESS EQUIPMENT...cont'd

1578.03 **Select and inspect hoisting and lifting equipment** by selecting equipment required including forklift, jib-crane, overhead hoist, portable boom and spreader bars; performing pre operational inspection of hoisting and lifting equipment by visually checking the cables and chains for defects including damaged links and frayed cables and identifying defective equipment so that the equipment is adequate for the job as per Ontario regulation requirements and defective hoisting and lifting equipment is identified for repair or replacement in accordance with CSA safety standards, Ontario regulations and manufacturer-s procedures.

Date Completed	Apprentice	Supervisor/Trainer
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1578.04 **Operate hoisting equipment** by moving and lifting workpieces using material handling tools and equipment; communicating with other workers using hand and voice signals and storing hoisting equipment so that correct lifting and moving procedures are used in appropriate weather conditions in accordance with employer-s procedures, manufacturer-s specifications, CSA safety standards or Ontario regulation requirements.

Date Completed	Apprentice	Supervisor/Trainer
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1578.05 **Select, inspect and erect scaffolding** by selecting scaffolding for the specific job; performing pre-use inspection by visually checking all of the components for defects and erects scaffolding ensuring it is sufficient for the task, has no visual defects, is placed on a firm footing in accordance with employer-s procedures, manufacturer-s specifications, CSA safety standards or Ontario regulation requirements.

Date Completed	Apprentice	Supervisor/Trainer
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1578.0 USE AND MAINTAIN MATERIAL HANDLING, SAFETY AND SITE ACCESS EQUIPMENT...cont'd

1578.06 Work on scaffolding, work platforms and at heights by selecting and utilizing a fall protection system, wearing the appropriate fall protection equipment and following fall protection procedures as required by employer-s procedures, CSA safety standards and Ontario regulation requirements.

Date Completed

Apprentice

Supervisor/Trainer

1578.07 Dismantle and store scaffolding by disassembling scaffolding and storing it correctly and in good repair as per employer procedures and/or Ontario regulation requirements.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

1579.0 PREPARE FOR ON-SITE INSTALLATION

GENERAL PERFORMANCE OBJECTIVE

Prepare for on-site installation by setting up on-site requirements; liaising, communicating and sequencing work; organizing work requirements; loading, unloading and sorting materials; planning, preparing and scheduling activities; setting up and laying out grid and base lines; laying out, cutting, shaping and drilling materials and aligning, assembling and fastening components in accordance with job specifications, shop and architectural drawings and bulletins.

PERFORMANCE OBJECTIVES

SKILLS

1579.01 Set up on-site requirements including electrical service, traffic management requirements, site safety and security, site locations and accessibility for auxiliary equipment, and job sequences and timing for coordinated site entry so that all requirements are accommodated on site in accordance with applicable regulations.

Date Completed

Apprentice

Supervisor/Trainer

1579.02 Liaise, communicate and sequence work with other trades on job site so that communications are clear, concise and accurate.

Date Completed

Apprentice

Supervisor/Trainer

1579.03 Organize work requirements by reading and interpreting specifications, shop, architectural drawings, structural drawings, diagrams and details to identify assembly and installation sequences and procedures.

Date Completed

Apprentice

Supervisor/Trainer

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1579.0 PREPARE FOR ON-SITE INSTALLATION...cont'd

1579.04 Load, unload and sort materials in preparation for assembly, installation and erection so that materials are securely stored and sorted into an arrangement that is efficient for locating and retrieving.

Date Completed

Apprentice

Supervisor/Trainer

1579.05 Plan, prepare and schedule activities by preparing a list of the required labour force, equipment and materials to perform the work, locating and acquiring the needed resources and bringing them on-site in the order necessary to the building or installation process.

Date Completed

Apprentice

Supervisor/Trainer

1579.06 Set up and lay out grid and base lines by using architectural and shop drawings and bench mark lines, employing transits or other measuring instruments and applying the right-angle (3-4-5) measuring technique so that lines are developed and positioned accurately.

Date Completed

Apprentice

Supervisor/Trainer

1579.07 Layout, cut, shape and drill flashing and components to prepare for assembly in accordance with job specifications, shop and architectural drawings and bulletins.

Date Completed

Apprentice

Supervisor/Trainer

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1579.0 PREPARE FOR ON-SITE INSTALLATION...cont'd

1579.08 Align, assemble and glue, tack or weld components to final assembly
prior to installation in accordance with job specifications, shop and
architectural drawings and bulletins.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

1580.0 SELECT AND INSTALL FASTENERS

GENERAL PERFORMANCE OBJECTIVE

Select and install fasteners including torque fasteners, mirror clips, "J" mouldings, shear blocks and expanding cements in accordance with shop drawings and industry and manufacturers' specifications.

PERFORMANCE OBJECTIVES

SKILLS

1580.01 Select and install or apply fasteners such as nuts, bolts, dowels, screws, *Tapcons*, plugs, anchors and chemical adhesives, (such as, ultraviolet glue and epoxies) to assemble and install metal and glass partitions, walls, windows, showcases and specialty products in accordance with shop drawings and industry and manufacturers' specifications.

Date Completed	Apprentice	Supervisor/Trainer
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1580.02 Select and install torque fasteners in accordance with shop drawings and industry and manufacturers' specifications.

Date Completed	Apprentice	Supervisor/Trainer
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1580.03 Select and install mirror clips and "J" mouldings in accordance with shop drawings and industry and manufacturers' specifications.

Date Completed	Apprentice	Supervisor/Trainer
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1580.04 Select and install shear blocks to join window elements in accordance with shop drawings and industry and manufacturers' specifications.

Date Completed	Apprentice	Supervisor/Trainer
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1580.0 SELECT AND INSTALL FASTENERS...cont'd

1580.05 Select and apply expanding cements for applications in hollow wells, precast, railings, balustrades and floor closers in accordance with shop drawings, industry specifications and manufacturers' recommendations.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

1581.0 INSTALL UNITIZED AND STICK CURTAIN WALL SYSTEMS

GENERAL PERFORMANCE OBJECTIVE

Install unitized and stick curtain wall systems including cast-in anchors; vision and spandrel areas; seals, back pans and stone spandrels; flashing, pressure plates and caps; fire stops; specialty coverings; air and barrier systems; sunshade and louver systems and two/four sided structural glazing systems to maintain the rain screen principle and prevent harmonic vibration, as per manufacturers' recommendations and specifications.

PERFORMANCE OBJECTIVES

SKILLS

1581.01 Install cast-in anchors using bench marks and gridlines to specifications and recommendations.

Date Completed

Apprentice

Supervisor/Trainer

1581.02 Install vision and spandrel area including installation of mullion plugs on every second floor to prevent stacking action and air seals where required as per manufacturers' recommendations and specifications.

Date Completed

Apprentice

Supervisor/Trainer

1581.03 Install curtain wall seals, back pans, and terracotta/ granite/stone spandrels as per manufacturers' recommendations and specifications.

Date Completed

Apprentice

Supervisor/Trainer

1581.04 Install flashings, pressure plates and caps, ensuring proper water management and plate compression is achieved as per manufacturers' recommendations and specifications.

Date Completed

Apprentice

Supervisor/Trainer

ARCHITECTURAL GLASS AND METAL TECHNICIAN

1581.0 INSTALL UNITIZED AND STICK CURTAIN WALL SYSTEMS...cont'd

1581.05 Install fire stops as per manufacturers' recommendations and specifications.

Date Completed

Apprentice

Supervisor/Trainer

1581.06 Form and install specialty coverings including cladding, brake shapes, flashings and column covers to manufacturers' recommendations and specifications.

Date Completed

Apprentice

Supervisor/Trainer

1581.07 Install air barrier systems to ensure a complete seal between curtain wall and substrates, so that system passes the smoke and water tests as per manufacturers' recommendations and specifications.

Date Completed

Apprentice

Supervisor/Trainer

1581.08 Install sunshades/louver systems in accordance with shop drawings.

Date Completed

Apprentice

Supervisor/Trainer

1581.09 Install two-sided and four-sided structural glazing systems in accordance with shop drawings.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

1582.0 FABRICATE, ASSEMBLE AND INSTALL WINDOWS

GENERAL PERFORMANCE OBJECTIVE

Fabricate , assemble and install aluminum, wood, fibreglass, and vinyl windows by installing fixed lite, hopper, awning, casement, sliding, and hung windows; installing, fastening, blocking and adjusting windows; installing and adjusting operating hardware; cutting and installing screening; and measuring, cutting and installing sills and flashing in accordance with manufacturer’s specifications, shop drawings and the Ontario Building Code.

PERFORMANCE OBJECTIVES

SKILLS

1582.01 Install fixed lite, hopper, awning, casement, sliding, and hung windows, including aluminum, wood, fibreglass, and vinyl types to manufacturing/ industrial specifications.

Date Completed

Apprentice

Supervisor/Trainer

1582.02 Install, fasten, block and adjust windows in accordance with manufacturer’s specifications, shop drawings and the Ontario Building Code.

Date Completed

Apprentice

Supervisor/Trainer

1582.03 Install and adjust operating hardware in accordance with manufacturer’s specifications, shop drawings and the Ontario Building Code.

Date Completed

Apprentice

Supervisor/Trainer

ARCHITECTURAL GLASS AND METAL TECHNICIAN

1582.0 FABRICATE, ASSEMBLE AND INSTALL WINDOWS...cont'd

1582.04 Cut and install screening in accordance with manufacturer's specifications and shop drawings.

Date Completed

Apprentice

Supervisor/Trainer

1582.05 Measure, cut and install sills and flashing in accordance with manufacturer's specifications, shop drawings and the Ontario Building Code.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

1583.0 INSTALL GLAZING SYSTEMS

GENERAL PERFORMANCE OBJECTIVE

Install glazing systems by preparing for installation; installing seals, gaskets, stopping and backer rods; installing wet/dry glazing systems; assembling and installing slope-glazing and suspended glass systems; and installing structural glazing gaskets in accordance with manufacturer’s specifications, job requirements and industry standards.

PERFORMANCE OBJECTIVES

SKILLS

1583.01 Prepare for installation of glazing systems by cleaning work for installation, installing shim tape, glazing compounds and setting blocks and applying internal and external caulking and beading ensuring the compatibility of materials with system.

Date Completed	Apprentice	Supervisor/Trainer
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1583.02 Install seals, gaskets, stopping and backer rods for glazing applications to prevent penetration of air, water, sound or fire and in accordance with manufacturer’s specifications and applications requirements.

Date Completed	Apprentice	Supervisor/Trainer
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1583.03 Install wet/dry glazing systems by installing glass, retainers, and setting blocks, providing proper sealing and caulking for joints and tooling joints as required in accordance with job requirements and manufacturer’s specifications.

Date Completed	Apprentice	Supervisor/Trainer
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1583.04 Assemble and install slope-glazing systems ensuring continuity of water and air seals, to manufacturers’ specifications and industry standards

Date Completed	Apprentice	Supervisor/Trainer
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ARCHITECTURAL GLASS AND METAL TECHNICIAN

1583.0 INSTALL GLAZING SYSTEMS...cont'd

1583.05 Assemble and install suspended glass systems, including stabiliser fins, anchors and panel stiffeners by referring to shop drawings and selecting and installing patch fittings, spiderwall fittings, and fasteners in accordance with manufacturer's installation and torquing specifications.

Date Completed

Apprentice

Supervisor/Trainer

1583.06 Install structural glazing gaskets, including pre-cast opening, smoke baffle, and aluminum channel or middle fin types, being mindful of temperature restrictions in accordance with job requirements and manufacturer's specifications.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

1584.0 CUT, SHAPE AND INSTALL GLASS

GENERAL PERFORMANCE OBJECTIVE

Cut, shape and install glass including clear, ceramic, fire-rated, wire glass, laminated, select low "E" coated, patterned, leaded and tempered glass and finish glass by polishing, drilling and edging in accordance with industry specifications.

PERFORMANCE OBJECTIVES

SKILLS

1584.01 Cut, shape and install standard glass including clear glass for general applications, patterned glass for decoration and privacy, leaded glass for x-ray applications and art glass including sand blasted and stained glass in accordance with industry specifications.

Date Completed

Apprentice

Supervisor/Trainer

1584.02 Cut, shape and install laminated and ceramic/ fire-rated/ wire glass for safety, ultra violet and sound proofing applications in accordance with industry specifications.

Date Completed

Apprentice

Supervisor/Trainer

1584.03 Cut, shape and install hard and soft-coated glass for heat absorption and control applications in accordance with industry specifications.

Date Completed

Apprentice

Supervisor/Trainer

1584.04 Select and install single glass and thermal units in accordance with industry specifications.

Date Completed

Apprentice

Supervisor/Trainer

ARCHITECTURAL GLASS AND METAL TECHNICIAN

1584.0 CUT, SHAPE AND INSTALL GLASS...cont'd

1584.05 Select and install tempered glass and laminated glass for automotive and other safety applications in accordance with industry specifications.

Date Completed

Apprentice

Supervisor/Trainer

1584.06 Cut, shape and install mirrors, using fasteners such as mirror clips, “J” mouldings, and mirror mastic in accordance with industry specifications.

Date Completed

Apprentice

Supervisor/Trainer

1584.07 Finish glass by polishing, drilling and edging (flat, arris, bevelling, mitring, chamfering) in accordance with industry specifications.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

1585.0 INSTALL SEALS, GASKETS AND CAULKING

GENERAL PERFORMANCE OBJECTIVE

Install seals, gaskets and caulking by selecting and installing seals, gaskets, backing rods and caulking materials, applying glass primers and cleaners and installing systems seals such as expansion joints, air seals, weather seals, fire stops, bond breakers, self-adhesive membranes, and acoustical or structural sealants according to manufacturers' specifications.

PERFORMANCE OBJECTIVES

SKILLS

1585.01 Select and install seals and gaskets compatible with glazing applications and to manufacturers' specifications.

Date Completed

Apprentice

Supervisor/Trainer

1585.02 Select and apply primers and cleaners, including Xylol and Methyl Ethyl Ketone (MEK), prior to installation, ensuring all safety bulletins are adhered to and in accordance with manufacturers' recommendations.

Date Completed

Apprentice

Supervisor/Trainer

1585.03 Select and use sealing and caulking compounds such as polysulphides (1 and 2 part), acrylics, butyls, silicones (1 and 2 part), urethanes and latex in accordance with manufacturers' recommendations.

Date Completed

Apprentice

Supervisor/Trainer

ARCHITECTURAL GLASS AND METAL TECHNICIAN

1585.0 INSTALL SEALS, GASKETS AND CAULKING...cont'd

1585.04 Select and install backing rods including open and closed cell, foam rubber, soft-cell and bond breakers in accordance with manufacturers' recommendations.

Date Completed

Apprentice

Supervisor/Trainer

1585.05 Install curtain wall and glazing system sealing such as expansion joints, air seals, weather seals, fire stops, bond breakers, self-adhesive membranes, and acoustical or structural sealants to specifications and manufacturers' recommendations.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

1586.0 INSTALL DOORS AND ENTRANCEWAYS

GENERAL PERFORMANCE OBJECTIVE

Install doors and entranceways such as swinging, sliding and folding aluminum and all-glass doors; manual and automatic sliding doors; air, electric and hydraulically-powered automatic doors; revolving doors and entrance systems in accordance with specifications and manufacturers' recommendations.

PERFORMANCE OBJECTIVE

SKILLS

1586.01 Install swinging, sliding and folding aluminum doors in accordance with specifications and manufacturers' recommendations.

Date Completed

Apprentice

Supervisor/Trainer

1586.02 Install swinging, sliding and folding all-glass doors, including top and bottom rail types including installation and adjustment of patch fittings, pivots, concealed closers and finger guards to specifications and manufacturers' recommendations.

Date Completed

Apprentice

Supervisor/Trainer

1586.03 Install and adjust manual and automatic sliding doors including, single and multi-track, egress, patio, and inline to specifications and manufacturers' recommendations.

Date Completed

Apprentice

Supervisor/Trainer

ARCHITECTURAL GLASS AND METAL TECHNICIAN

1586.0 INSTALL DOORS AND ENTRANCEWAYS...cont'd

1586.04 Install air, electric and hydraulically powered automatic doors
complete with motion activation mechanisms such as electric eye scanner,
pressure floor mat and push button in accordance with specifications and
manufacturers' recommendations.

Date Completed

Apprentice

Supervisor/Trainer

1586.05 Install and adjust revolving doors to specifications and manufacturers'
recommendations.

Date Completed

Apprentice

Supervisor/Trainer

1586.06 Glaze and block door and entranceway installations in accordance with
specifications and manufacturers' recommendations.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

1587.0 INSTALL OPERATING HARDWARE

GENERAL PERFORMANCE OBJECTIVE

Install operating hardware including pivots and hinges; locks; panic hardware; door hardware; window and sash hardware and various fittings in accordance with specifications and manufacturers' recommendations.

PERFORMANCE OBJECTIVES

SKILLS

1587.01 Install pivots and hinges including, offset, centre hung, butt, double-acting and piano types and ensure functionality of hardware in accordance with specifications and manufacturers' recommendations.

Date Completed

Apprentice

Supervisor/Trainer

1587.02 Install locks including, latch, security, deadbolt, electric strike, flush bolt, passage set, thumb turn, panic and magnetic types and ensure functionality of hardware in accordance with specifications and manufacturers' recommendations.

Date Completed

Apprentice

Supervisor/Trainer

1587.03 Install panic hardware and push bars and ensure functionality of hardware in accordance with specifications and manufacturers' recommendations.

Date Completed

Apprentice

Supervisor/Trainer

1588.0 INSTALL GLAZING FILM

GENERAL PERFORMANCE OBJECTIVE

Install glazing films including those for patching, solar control, security and sand blasting by inspecting the glazing system, cleaning it, installing films, seaming films, carrying out quality control and cleaning film surface in accordance with manufacturer's written instructions and approved shop drawings.

PERFORMANCE OBJECTIVES

SKILLS

1588.01 Inspect glazing system to verify that existing conditions are adequate for proper application and performance of glazing films including examination of glass and frames, verification that glass is not cracked, chipped, broken, or damaged and that frames are securely anchored and free of defects.

Date Completed

Apprentice

Supervisor/Trainer

1588.02 Prepare glazing system for film application by cleaning glass of dust, dirt, paint, oil, grease, mildew, mould, and other contaminants that would inhibit adhesion of glazing films by thoroughly washing glass with neutral cleaning solution and protecting adjacent surfaces.

Date Completed

Apprentice

Supervisor/Trainer

1588.03 Install glazing films such as glass patch, aesthetic films, solar control films, security films and sandblast film by ensuring that surface temperature is less than 40° F or 4° C, accurately cutting film with straight edges to required sizes, removing release liner immediately prior to adhering film to glass, applying film using solution to activate adhesive and avoiding air bubbles, wrinkles or other defects in accordance with manufacturer's written instructions and approved shop drawings.

Date Completed

Apprentice

Supervisor/Trainer

ARCHITECTURAL GLASS AND METAL TECHNICIAN

1588.0 INSTALL GLAZING FILM...cont'd

1588.04 Seam film as required to accommodate material sizes by forming seams vertically without overlaps or gaps, and not installing with horizontal seams in accordance with manufacturer's written instructions and approved shop drawings.

Date Completed

Apprentice

Supervisor/Trainer

1588.05 Carry out field quality control by inspecting film against light-coloured background from approximately 10 feet to ensure appearance is uniform without streaks, bands, thin spots, and pinholes. Remove and replace film with defects.

Date Completed

Apprentice

Supervisor/Trainer

1588.06 Clean film surfaces and adjacent frames with soft cloth, clean water, and detergent, remove excess sealants and other glazing materials from adjacent finished surfaces and remove labels and protective covers as recommended by film manufacturer.

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

APPRENTICE RECORD

APPRENTICE NAME (Print):

SPONSOR/EMPLOYER INFORMATION

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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	
Social Insurance Number	

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 Yes () No () Not applicable ()
 Per Contract:

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.