

## GLAZIER *On-the-Job Training Guide*

*Glaziers cut, prepare, fabricate and install glass in residential, commercial and industrial structures, in furniture and in motor vehicles.*

**Training Requirements:** 7200 hours (4 years) including: four 6-week training sessions at SAIT in Calgary, Alberta.

Journeyman to apprentice ratio for this trade is: 1:3

The information contained in this pamphlet serves as a guide for employers and apprentices. Apprenticeship training is mutually beneficial to both employer and apprentice. The employer's investment in training apprentices results in skilled and certified workers. The pamphlet summarizes the tasks to be covered by the apprentice during the on-the-job portion of apprenticeship training. An apprentice spends approximately 85% of the apprenticeship term training on-the-job.

It is the employer's or journeyman's training responsibility to supervise an apprentice's practical skills development until a satisfactory level of proficiency has been reached.

### EMPLOYER TRAINING RESPONSIBILITY

- expose the apprentice to all appropriate tools and materials, and to approved safety practices
- provide guided, hands-on training in the techniques and knowledge of the trade
- provide training in company policies, procedures and technology

Employers should make every effort to expose their apprentices to work experience in as many areas of the trade as possible.

Below, in-school instruction is listed first; suggestions to help employers assist the apprentice to prepare for in-school training are listed next.

## **Level One - 6 weeks**

### **Standard Workplace Safety**

- Safety legislation, regulations and industry policy in the trades
- Climbing, lifting, rigging and hoisting
- Hazardous materials and fire protection
- Apprenticeship and industry training orientation
- Scaffolding and access equipment
- Swing stage scaffolding

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *providing WHMIS and OH&S training*
- *interpreting building codes and hazardous products*
- *providing company-specific safety training*
- *ensuring access to printed informational material*
- *identifying scaffold systems and structures, base conditions and tagging*
- *introducing the apprentice to swing stage safety, inspection and operation wherever possible*

### **Tools and Construction Products**

- Hand tools
- Portable power tools
- Stationary power tools
- Fasteners, adhesives and sealants

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *providing introductory hand and power tool training in the shop*
- *training in the identification and application of fasteners, adhesives and sealants*

### **Glass and Glass Fabrication 1**

- Glass types
- Glass storage and handling
- Glass manufacturing
- Glass cutting and edging

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *providing hands-on training in safe glass handling, i.e. suction cups, straps, tie downs, etc.*
- *allowing the apprentice to assist journeyperson*
- *training in the duties involved with glass cutting and handling in the shop*

### **Glazing and Service 1**

- Glazing tools
- Window screens
- Industry codes and standards
- Auto glass 1
- Flat glass

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *describing tools used to glaze wood, aluminum and steel sash*
- *explaining window screen components*
- *providing hands-on experience in auto glass installation with supervision*
- *introducing National Auto Glass Specifications (NAGS)*

## **Residential Windows and Commercial Frames**

- Residential windows and commercial frames
- Window installation and repair
- Fabrication and installation of light commercial frames

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *training in fabrication of windows from commercial metal*
- *training in caulking*
- *allowing the apprentice to assist in installing frames*

## **Window Systems**

- Residential window systems
- Commercial window systems

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *training the apprentice in residential window types*
- *identifying the materials used in residential windows*
- *describing to and training the apprentice in the methods of installation and repair for residential windows*
- *identifying types and materials for commercial windows*
- *describing methods of window installation and repair in different commercial substrate construction*
- *training the apprentice in fabrication and installation of a light commercial ribbon window system*

## **Math and Drawing Interpretation 1**

- Math fundamentals
- Ratio, proportion and percentage
- Glazing material calculations
- Residential and light commercial drawings
- Orthographic and isometric drawings

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *training the apprentice in the basic on-the-job calculations*
- *giving the apprentice an opportunity to use mathematical calculations to complete a task*
- *providing shop drawings and assisting with their interpretation*

## **Level Two - 6 weeks**

### **Glass and Glass Fabrication 2**

- Mirrors
- Specialty glass and installation
- Glass cutting
- Glass fabrication
- Sandblasting, etching and films

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *identifying types of mirrors and procedures for fabricating mirrors and installing them*
- *identifying tools and methods used to cut glass*
- *explaining the proper use of specific types of glass, i.e. tempered, laminate, semi-tempered, wired glass, coated glass*
- *describing the various procedures for the installation of specialty glass*
- *describing uses of various abrasives, coolants and lubricants used to cut and drill glass*
- *illustrating the removal of scratches from glass using a scratch polishing machine*
- *identifying methods for sand blasting glass*

## **Glazing and Service 2**

- Residential glazing
- Commercial glazing
- Store-front glazing
- Auto glass 2

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *identifying sash types, sash preparation and glazing*
- *describing the theory of energy-efficient glazing*
- *describing the methods used and the necessary precautions when replacing store front glass*
- *identifying fastening devices used for glass*
- *illustrating the removal and installation of auxiliary auto glass, including code interpretation*

## **Construction Product Application**

- Glazing, compounds and sealants
- Building envelope 1

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *introducing the proper use of glazing compounds and sealants*
- *demonstrating installation of glazing compounds to wood and metal*

## **Frames and Door Systems**

- Introduction to frames system applications
- Flashing and panels 1

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *providing metal installation manuals*
- *allowing hands-on opportunities to assist in fabrication and installation of frames and glass*
- *describing and practising the applications of flashing and panels*

## **Math and Drawing Interpretation 2**

- Perimeter and area
- Shop drawings 1
- Commercial drawings 1
- Material takeoff 1

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *demonstrating the use of mathematical equations specific to job requirements*
- *assisting the apprentice in the production of basic shop drawings*
- *using shop drawings to interpret window and door locations, door hardware schedules, etc.*

## **Level Three - 6 weeks**

### **Frames Systems 1**

- Aluminum frames
- Curtain walls 1
- Frame system applications 1
- Flashing and panels 2

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *explaining the uses of different extrusions and hardware on job sites*
- *describing types of curtain walls, anchors, structural requirement, expansion and sealing*
- *fabricating a curtain wall*
- *fabricating frames including transoms and side lights, using flush line material*
- *assisting the apprentices to interpret, design, fabricate and install flashings and panels.*

### **Door Systems 1**

- Commercial door types 1
- Door hardware 1
- Aluminum swing doors
- All-glass entrance systems

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *identifying types and components of commercial door systems*
- *supervising the apprentice in installing glass and glazing and performing service work*
- *describing frameless door installation*

### **Glazing and Service 3**

- Structural glazing systems
- Structural glazing installation
- Building envelope 2

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *supervising the apprentice in performing structural glazing installation*
- *troubleshooting structural glazing system malfunctions, and developing a repair plan*

### **Sloped Glazing Systems**

- Sloped glazing
- Skylights
- Skylight shop project

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *identifying special considerations concerning slope glazing*
- *describing project specifications from installation manuals*
- *identifying anchoring requirements, procedures, drainage requirements and repair for sloped glazing systems*

### **Math and Drawing Interpretation 3**

- Design factors
- Commercial drawings 2
- Project specifications 1
- Shop drawings 2
- Material takeoffs 2

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *calculating design loads*
- *continuing exposure to shop drawing calculations*
- *assisting in training with blueprints on the job*
- *training the apprentice in determining quantities of material types and applying material costs*

## **Level Four - 6 weeks**

### **Red Seal Programs and Specialty Products**

- Interprovincial Standards Red Seal program
- Workplace coaching skills
- Alberta's industry network
- Barrier free entrances
- Automatic doors
- Specialty products

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *identifying and encouraging the apprentice in the use of Red Seal products to prepare for the Interprovincial examination*
- *describing and training in barrier-free entrance systems*
- *assisting the apprentice in assessing automatic door operations*
- *training the apprentice in the specialty products and emerging technologies in the glazing industry*

## **Frame Systems 2**

- Curtain walls 2
- Frame systems application 2

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *identifying and describing curtain wall layouts and installation*
- *identifying and describing types of building envelope membranes*
- *assisting apprentice to fabricate and install curtain walls*

## **Door Systems 2**

- Commercial door types 2
- Door hardware 2
- Storefront frame/Door shop project

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *providing access to job specifications, installation manuals, specification books and wind load charts, and the use of all of the above*
- *laying out the components of a swing door and frame*
- *fabricating and installing a door frame*
- *installing a door and hardware in the frame*

## **Glazing and Service 4**

- Specialty glazing
- Specialty glazing hardware
- Building envelope 3

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *training in glazing balustrades, floors and ceilings and smoke baffles*
- *installing hinges, latch locks and panic exit devices*
- *training in sequential building envelope installation procedures*
- *interpreting drawings for a building envelope project*
- *installing perimeter seals and flashings*

## **Math and Drawing Interpretation 4**

- Shop drawings 3
- Commercial drawing interpretation 3
- Project specifications 2
- Estimating
- Site management

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *training in the design and procedures for creating a curtain wall frame*
- *assisting the apprentice in the interpretation of a commercial architectural drawing*
- *training the apprentice in estimating labour and material quantities for a project*
- *training of the apprentice in the management of an on-site project*

**Consider apprenticeship training as an investment in the future of your company and in the future of your workforce. Ultimately, skilled and certified workers increase your bottom line.**

**Get involved in the apprenticeship training system. Your commitment to training helps to maintain the integrity of the trade.**

**Do you have employees who have been working in the trade for a number of years but don't have trade certification? Contact your local apprenticeship office for details on how they might obtain the certification they need.**

**Saskatchewan Apprenticeship & Trade Certification Commission**

2140 Hamilton St Regina SK S4P 2E3

Tel: (306) 787-2444

Fax: (306) 787-5105

Toll Free: 1-877-363-0536

web site: [www.saskapprenticeship.ca](http://www.saskapprenticeship.ca)

**District Offices**

Estevan (306) 637-4930

La Ronge (306) 425-4385

Moose Jaw (306) 694-3735

North Battleford (306) 446-7409

Prince Albert (306) 953-2632

Saskatoon (306) 933-8476

Swift Current (306) 778-8945

Yorkton (306) 786-1394