LMFGG3017B
Fabricate and install commercial glazing

Learner Workbook
Version 1
Black and White

Training and Education Support
Industry Skills Unit
Meadowbank

Product Code: 5403
Acknowledgements

The TAFE NSW Training and Education Support Industry Skills Unit, Meadowbank would like to acknowledge the support and assistance of the following people in the production of this learner resource guide:

Members of the Glass and Glazing Section of Lidcombe College of TAFE
Construction and Transport Curriculum Centre
ALSPEC
CR Laurence
G James
Doorma Glass

Writers:
Michael Ryan
Garry Gates
TAFE NSW

Reviewers:
Mark Nicholls
TAFE NSW

Project Manager:
Sue Ellyard
Education Programs Manager
Training and Education Support Industry Skills Unit
TAFE NSW

Enquiries
Enquiries about this and other publications can be made to:
Training and Education Support Industry Skills Unit, Meadowbank
Meadowbank TAFE
Level 3, Building J,
See Street,
MEADOWBANK NSW 2114
Tel: 02-9942 3200  Fax: 02-9942 3257
# Contents

**LMFGG3017B**  
Fabricate and Install Commercial Glazing

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Assessment Guide</td>
<td>3</td>
</tr>
<tr>
<td>Glossary of Terms</td>
<td>5</td>
</tr>
<tr>
<td><strong>Section 1</strong> Design</td>
<td>13</td>
</tr>
<tr>
<td><strong>Section 2</strong> Site Measurement and Safety</td>
<td>27</td>
</tr>
<tr>
<td><strong>Section 3</strong> Fabrication</td>
<td>43</td>
</tr>
<tr>
<td><strong>Section 4</strong> Installation</td>
<td>61</td>
</tr>
<tr>
<td><strong>Section 5</strong> Glazing</td>
<td>87</td>
</tr>
<tr>
<td><strong>Section 6</strong> Aluminium Technology</td>
<td>119</td>
</tr>
<tr>
<td><strong>Section 7</strong> Balustrading</td>
<td>134</td>
</tr>
<tr>
<td><strong>Appendix 1</strong> Prices</td>
<td>145</td>
</tr>
<tr>
<td><strong>Resources</strong></td>
<td>155</td>
</tr>
</tbody>
</table>

A Copy of the training package is accessible at:  

Developed by Training & Education Support Industry Skills Unit, Meadowbank  
@ TAFE NSW 2010
What will I learn in this Section?

To identify the relevant standards and list shopfront components as well as an ability to recognise different design options in commercial glazing.

What must I do to complete this Section?

In this section you will:

- Identify the relevant building standards
- List different shopfront components
- Display an understanding of different shopfront and door designs.

Fast track

If you think you can display competence in these criteria ask your teacher for Assessment Task LMFGG3017B. If you are unsure or require help to achieve competency continue with this Section and complete the Learning Tasks in this workbook.

Section overview

The purpose of this Section is for you to develop an understanding of the relevant standards and the available designs and components used in fabricating and installing commercial glazing.

Materials required

Have available the following items:

- Workshop resources
- paper
- pen
- calculator
Introduction

Shopfronts give a building distinction and provide an appealing, unique style that generates interest for potential customers. The design of the shopfront must be attractive to look at as well as providing a functional part of building. The facades of many commercial buildings including office blocks, hospitals, libraries, etc., may be designed and constructed similar to those used in shopfronts.

Shopfronts will all vary to some degree, however they all comprise of a main shopfront frame, display area, doorway, signage, etc. The design of the shopfront should complement the existing structure and the design of the building itself whether traditional or modern.

When constructing shopfronts all building work must conform to the local regulations and relevant building standards. Such codes and regulations can affect the design and manufacturer of the shopfront. Specialist companies and architects create the design following these codes. The shopfront is then constructed by the fabricator, both off-site or on-site, installed and glazed.
Codes and regulations that affect design

- BCA. The building code of Australia
- AS 1170. Structural design, wind loads, moments of inertia
- AS 1288. Glass installation and safe wind loads
- AS 1664. Aluminium structures.
- AS 2047. Windows in buildings selection and installation
- AS 4284. Testing of Building Facades.

For more information check with your local building authority and Standards Australia (www.standards.com.au)

Photo number 2: modern commercial entry

Modern shopfronts are more stream lined in comparison with traditional shopfronts, having large glass areas with sophisticated door mechanisms. Some modern facades are constructed of glass only fixed with special architectural hardware, while others have an aluminium framing or panel system. Aluminium produces clean unbroken lines with maximum sight lines, by using pocket glazing. Various thickness glass panels can be used without the need of heavier framing sections.
Aluminium framing is produced by standard extrusion sections that can be assembled mechanically. The components can be fabricated off-site or on-site and most profiles can be square cut and screwed together without the need of special tools.

The extrusions are made in such a way that minimises water leakage into the building. Mullion sections clip to one another to achieve a water tight seal. Glazing gaskets can roll in against the glass into the pocket to obtain a satisfactory seal. Drainage slot or holes can be machined and with sub sills under the frame any water is diverted to the outside.

Being relatively maintenance free and with the ease and speed of fabrication and installation aluminium has become the standard product used for the framing of glazed shopfronts.

*Photo number 3: Entry to a modern shopping mall*
Main components of shopfronts

sill  lowest horizontal member of window frame
mullion  any vertical member within the frame
head  uppermost horizontal member of the frame
transom  horizontal internal member of the frame
mid-rail  horizontal member dividing the frame into smaller panels approximately 1 m from floor level
ventilator  grill or louver allowing free flow of air into the building
shutter  generally a rolling screen providing security on the outside of the shopfront may also be used as the entrance door
fascia  a wide board or other material fixed vertically on edge
flashing  material placed around the shopfront to prevent moisture from entering the building
doors  provide access to a building and may be automatic sliding swinging etc.
trims: angle fixed to perimeter of frame.

Subsill: drainage tray fitted under sill for exterior shopfronts

Subhead: fixing section fitted above head of frame.

Stile: vertical member of door frame.

Rail: horizontal member of door (top and bottom)

**Aluminium shopfront parts**

![Diagram of aluminium shopfront parts](image-url)
Design

Aluminium is lightweight yet strong and durable, with a large range of finishes and shapes available. Endless designs can be achieved. However limitations do exist when designing shopfronts. Exposure to high wind pressures, thermal movement and water proofing have to be taken into consideration especially on high rise buildings.

Standard framing systems are designed for installation in a continuous run, each fabricated frame being able to interlock with the adjoining frame. When installed on site some limitations apply e.g. manufactured size and transport. Most manufacturers have a standard system for fabricating and installation of their particular profile. Consideration must be given to any stress or load requirements before selecting a particular product for a given situation.