Technical Drawing Specifications Resource

A guide to support VCE Visual Communication Design study design 2018–22

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Introduction

This resource material provides advice and support on technical drawing specifications relating to key knowledge and key skills in VCE Visual Communication Design study 2018–22. The content of this resource document offers guidance for technical drawing conventions relevant to the fields of practice that Visual Communication Design students explore. This includes communication, industrial and environmental design. This resource document draws upon conventions from the Australian Standards (AS). Specified labeling has been included in this resource for teaching and learning purposes. Students undertaking Units 1–4 of this study are not expected to know and employ all conventions from the Australian Standards.

Australian Standards (AS)

Technical drawings are based on a set of standards that have been globally agreed upon by the International Standards Organisation (ISO). These standards are then tailored to the needs of each country, depending on their measuring system (metric or imperial), environmental conditions, manufacturing processes and developments in technology. The Australian Standard AS 1100 provides the technical conventions for all Australian engineers, architects, designers, surveyors and patternmakers to follow.

Australian standards for technical drawing can be found at: https://infostore.saiglobal.com/en-au/as1100many

Presentation drawings

Technical drawings are based on a set of standards that have been globally agreed upon by the International Standards Organisation (ISO). These standards are then tailored to the needs of each country, depending on their measuring system (metric or imperial), environmental conditions, manufacturing processes and developments in technology. The Australian Standard AS 1100 provides the technical conventions for all Australian engineers, architects, designers, surveyors and patternmakers to follow.

Key knowledge and key skills incorporating links to revised Visual Communication Design study design

This resource material supports the key knowledge and key skills required in the following Areas of Study:

Unit 1
Area of Study 1: Drawing as a means of communication

Unit 2
Area of Study 1: Technical drawing in context
Area of Study 3: Applying the design process

Unit 3
Area of Study 1: Analysis and practice in context
Area of Study 3: Developing a brief and generating ideas

Unit 4
Area of Study 1: Development, refinement and evaluation
Area of Study 2: Final presentations
Technical drawing methods used in VCE Visual Communication Design

Three-dimensional drawing

The types of three-dimensional representation drawings that are relevant to this study include paraline (isometric and planometric) and perspective (one and two point).

Paraline drawing methods

Objects drawn using this method use receding lines remaining parallel to each other (hence the term ‘paraline’ drawing). Paraline drawings are a most convenient way to create dimensionally accurate drawings because true measurements may be made to a consistent scale in each plane. Types of paraline drawings in this study include ‘isometric’ and ‘planometric’.

Isometric drawing

Isometric drawings are constructed with both sides receding from a corner edge at 30 degrees to the horizontal. The isometric drawing provides a comprehensive overall view of the object and is often used in Communication and Industrial design. Refer to Figure 1.

Figure 1  Isometric drawing
Planometric drawing

Planometric drawings are very similar to isometric drawings. However, the base (or plan) of the object retains its true form – the angle between two perpendicular sides receding from the front corner is 90 degrees. A Planometric drawing may be done where both receding planes are 45 degrees or one side is set at 30 degrees and the other is at 60 degrees. Planometric drawings are often used to depict interiors in environmental design. Refer to Figure 2.

Figure 2 Planometric drawings showing 45 degrees and 60/30 degrees.
Description and purposes of perspective drawing methods

‘Perspective’ is a system to depict objects and structures in a naturalistic manner consistent with human vision. Although perspective drawings may appear similar to paraline drawings in the creation of form, perspective receding lines converge towards the horizon (eye level) rather than remaining parallel to each other. The placement of a horizon line determines the height of the ‘viewer’ and provides capacity for different views of an object or the relationship of parts to each other. Refer to Figure 3.

Horizon line is a horizontal line drawn across the page that represents the eye level height of the viewer. The height of an object is then drawn in relation to the height of the eye level. Objects in perspective may be situated below, above or across the horizon line.

Figure 3  Illustration of terms used in perspective drawing.

Spectator point is the position an object is viewed from. The height and distance of spectator point from an object will determine how much of an object is visible.

Vanishing points are points to which parallel lines (in the actual world) converge. A perspective drawing may be set up with one or more vanishing points.
One-point perspective

Objects or structures are drawn ‘front on’ on the picture plane. Sides of the object recede with lines converging to one vanishing point on the horizon line. The vanishing point may be situated outside the object for an exterior view, or inside it for an interior view. Actual measurements may be applied consistently to the horizontal and vertical lines (parallel to the picture plane) but not to the receding lines. Refer to Figure 4.

![Figure 4](image1.png)

Two-point perspective

Objects or structures are drawn with a corner closest to the viewer and sides drawn with receding lines converging to two vanishing points on the horizon line. The corner closest the viewer may be placed anywhere between, but not outside, the vanishing points. Refer to Figure 5.

![Figure 5](image2.png)
Ellipses in paraline drawing

Figure 6 is an explanation of how you can use a square to draft an ellipse. Figure 6a shows the relationship of the circle to the square. In Figure 6b both the square and circle are shown in isometric. The isometric circle is now called an ‘ellipse’.

A good method of drawing an ellipse is to use the box method:
1. Note the relationship between a circle and a square. The red and green dots are the points that you use to draft your ellipse.
2. Draw a square in isometric, add centre and diagonal lines
3. Mark out the positions where the circle cuts the diagonal lines in the isometric projection
4. Join all points with one flowing curved line to make the ellipse.

Refer to Figures 6, 7 and 8.
Figure 7  This figure shows how an ellipse can be applied to each face of an isometric cube. In each case the ellipse is the same but the major axis is rotated.

Figure 8  Ellipses can be applied to each face of a planometric cube in the same way. However, note that the ellipse angle is different to those shown in isometric drawing, and that because a planometric drawing is based on an undistorted ‘top’ view, circles remain true to their shape on the top of a planometric form.
Constructing and applying ellipses in perspective drawing

Ellipses are constructed in the same way for one- and two-point perspective as both drawing methods use receding planes. However, circles remain as circles on planes parallel to the picture plane (front) in a one-point perspective. Refer to Figure 9.

Original ellipse with halfway point in the middle, prior to putting into perspective

Figure 9 Constructing ellipses in perspective.

Unlike in paraline drawing ellipses must be formed within correctly proportioned squares in one or two-point perspective. The vertical centre line of the square and ellipse shift towards the vanishing point in keeping with the reduction in size of objects as they recede from the viewer.
Two-dimensional drawing

Types of two-dimensional representation drawings applicable to this study include packaging nets, third angle orthogonal, and floor plans and elevations. Two-dimensional drawings are used in all fields of design.

Communication design drawings

A communication designer may create form when they are designing objects such as album covers, bags and packaging. Communication designers may design both a three-dimensional package to be folded from a flat sheet such as paper or board, and the surface graphics to be printed on the package prior to assembly.

Packaging net

A packaging net is a drawing of a flat two-dimensional shape that when folded becomes a three-dimensional form. It can also be referred to as a development net. Often a packaging net will include tabs for stability and fastening. The drawings are to scale and involve the use of line conventions that indicate fold lines (broken lines) and cutting edge (solid outline). Refer to Figure 10.

Figure 10  Packaging net that when cut out and folded will form a simplified version of a car.
Industrial design drawings

There are occasions where a three-dimensional drawing may not provide enough information about an object for it to be constructed. Orthogonal drawing is a multi-view two-dimensional drawing system that resolves this problem.

Third-angle orthogonal drawing

Third-angle orthogonal drawings bear a direct relationship to three-dimensional paraline and perspective drawings produced in industrial design.

Each view of an object (front, sides and the base) is drawn separately using only two dimensions, but is kept aligned and to the same scale. Combining multiple views allows all three dimensions to be considered. ‘Third-angle’ projection refers to the layout of views and is identified by a special symbol placed on each sheet. Refer to Figure 11.

Plan your layout

It is important to plan your drawing and consider placement as a whole, before you start. A presentation drawing should first have been drafted in order to calculate the placement of all the views before transcribing them onto a final sheet. Figure 11 shows appropriate positioning using an A3 sheet of paper. An isometric view may also be positioned in the top right-hand corner to provide a connection between the two-dimensional shapes of orthogonal and more visually representative three-dimensional isometric form.
**Appropriate scales**

The actual size of the object and the scale of its representation will determine the size of the drawing. A scale is expressed as a ratio where the first number refers to the drawn view and the second to the actual object. For example, the scale 1:50 means the size of the drawing is fifty times smaller than the object.

In this study, the following scales are used for industrial design drawings:
- Where objects are too big to fit on a sheet choose from 1:2, 1:5, 1:10, 1:20, 1:50 and 1:100.
- Where objects are too small to be drawn in detail choose from 2:1, 5:1 or 10:1.

**The views**

Third-angle orthogonal drawings can include six views to communicate the features of an object. In practice only the views required to describe the object clearly are drawn. Hence you will often see only four views drawn as seen in Figure 11.

The views are known as:
- TOP VIEW
- FRONT VIEW
- LEFT SIDE VIEW or RIGHT SIDE VIEW
- BASE VIEW
- BACK VIEW

The conventions of this drawing method dictate that the FRONT VIEW is chosen as the view that communicates the most information about the object.

**Placement of views**

The TOP VIEW is always directly above the FRONT VIEW and the SIDE VIEWS are always ‘next to’ and ‘aligned to’ the FRONT VIEW. At times the views can be placed apart equidistantly. However, the views can be placed at different distances from the FRONT VIEW, depending on what information, such as dimensions, needs to be included.

If you want to place your views equidistantly then you can use the 45-degree method to place and project your views. The following steps describe the process.
1. The FRONT VIEW must be drawn first, then vertical lines should be projected up to give the width/length of the TOP VIEW.
2. Measure and complete the TOP VIEW.
3. Project the horizontal lines from the FRONT VIEW to give the height of the SIDE VIEW.
4. Where the maximum width and height projection lines on the FRONT VIEW meet, a 45 degree line is drawn.
5. Project horizontal lines from the TOP VIEW to meet the 45 degree line, then where they cross that line, draw them vertically down, until they return to the base line of the drawing. This method will create the width of the SIDE VIEW.
6. All line types should now be present on the TOP VIEW.
7. Referring to the FRONT and SIDE VIEW the various lines will need to be defined and drawn using the correct line type.
8. Once completed all views will be equidistant.

Refer to Figure 12.
Figure 12 Third-angle orthogonal drawing showing the ‘45-degree method’ of construction. Use this method to project the widths of your SIDE VIEW from the TOP VIEW. This keeps the views aligned and equidistant.
Labelling orthogonal drawings

In VCE Visual Communication Design each view must be labelled. Each view is:

- labeled using an uppercase, sans serif typeface.
- labels are to be 5mm in height
- view labels are located in a centred position under each view, 10mm below the view. Refer to Figure 13.

Figure 13 Procedure for setting out the naming of views.
Line styles and conventions

Line styles and weights

The use of different line styles and widths is important in technical drawing as they are used to describe
details and features of objects. Line styles make drawings easier to read: for example, solid lines used
to show the outline of an object will stand out from broken lines showing hidden details. For this study,
it is appropriate for students to use a minimum of two line weights to meet line style conventions when
completing final presentation drawings. This will include:

- A heavier line to draw the views that represent the object being drawn and dashed lines to represent
  hidden lines
- A thinner ‘half weight’ line to provide additional information such as centre, projection and dimension
  lines.

The table below depicts the appropriate line styles and conventions for third-angle orthogonal drawings
that are used in this study.

Table 1

<table>
<thead>
<tr>
<th>Line styles and conventions for manual drawing</th>
<th>Visible lines are used on each view; includes arcs/circles/curves/title block and border</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thick continuous</td>
<td></td>
</tr>
<tr>
<td>Thick dashed</td>
<td>Visible lines are used on each view. Dashes start and end with contact to a visible or hidden line.</td>
</tr>
<tr>
<td>Thin continuous</td>
<td>Thin continuous lines are used for dimension lines, projection lines, leaders, and type used in title block.</td>
</tr>
</tbody>
</table>
| Thin chain                                    | Centre lines. are for axes of solid forms, pitch lines (think of a roof line)
Note: centre lines show symmetry |

When using different line types the following rules apply.

- The length and spacing of dashes should be consistent on any particular drawing(s). It is recommended
  that only one thickness of dash line by used in any one drawing. Dashed lines should start and end with
  dashes in contact with the visible or hidden lines from which they originate. If a dashed line meets a
curved line tangentially, it should be with a solid portion of the line.
- Chain lines should start and finish with a long dash.
- When centre lines define centre points they should cross one another at dash portions of the line. Centre
  lines should extend only a short distance beyond the features unless required for dimensioning or other
  purposes. Centre lines should not stop at another line of the drawing.
Table 2

<table>
<thead>
<tr>
<th>Line styles and conventions for manual drawing</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visible lines are used on each view; includes arcs/circles/curves/title block and border</td>
<td>0.35</td>
</tr>
<tr>
<td>Hidden lines are used on each view. Dashes start and end with contact to a visible or hidden lines</td>
<td>0.35</td>
</tr>
<tr>
<td>Thin continuous lines are used for dimensioning lines, projection lines, leaders; type used in the title block.</td>
<td>0.18</td>
</tr>
<tr>
<td>Centre lines, are used for axes of solid forms, pitch lines (i.e.: a roof line) Note: centre lines show symmetry</td>
<td>0.18</td>
</tr>
</tbody>
</table>
Coinciding lines

Frequently in orthogonal drawing visible lines, hidden lines and/or centre lines coincide. In VCE Visual Communication Design there are two rules to follow:
1. Visible (or object) outlines are always shown in preference to hidden lines or centre lines.
2. Hidden lines take precedence over centre lines.

If a visible line obscures a centre chain line that extends beyond the outline of the object, the whole centre line is removed as in Figure 15.

Figure 14  How to interpret the depth of a circle.

Note: the depth of the circular hole can be confirmed when viewed in the TOP and SIDE VIEWS.
1. Visible line takes precedence over a hidden line.

2. Hidden line takes precedence over a centreline.

Figure 15  Lines taking precedence over other lines
Order of precedence is: visible line, hidden line and then centre line.

Dimensioning orthogonal drawings

Dimensioning guidelines and styles

The following dimensioning guidelines and styles apply to this study:

- The position where dimension lines should be placed is based on easy access. Placement between the views, with consideration of where other dimensions would need to be placed, is a good starting point.
- Wherever possible place dimensions outside the outline of the object.
- It is a convention that all measurements are shown in millimetres. However, do not write ‘mm’ after every measurement; write ‘ALL DIMENSIONS IN MM’ in the title block.
• Dimension figures are written on top of the dimension lines. When placing dimension figures on vertical dimension lines, rotate your page or drawing once to the right. Then continue to place dimension figures. Refer to Figure 16.

• Never repeat a dimension. Always check that dimensions are not repeated on another view. Place dimensions on the view that shows a detail most clearly. If there are repeated components, such as holes of the same size, only one is required to be dimensioned.

• Ensure that there are dimensions for the height, width and depth.

• Ensure that all crucial dimensions are included to allow the object to be interpreted.

• Try to avoid dimensioning hidden lines.

• Space dimension lines so that the dimensions are not over-crowded.

*Figure 16* Examples of dimension lines, projection lines and arrowheads.

**Dimension placement**

**Projection lines** are thin lines which are placed 1mm from the drawing and extend beyond the last dimension line by 2mm. They define the area being dimensioned and never touch the actual object.

**Dimension lines** are thin continuous lines with arrowheads placed at each end touching the projection line. Each dimension line starts 10mm from the object and is then 10mm apart from the next. Smaller dimensions are placed closer to the object. Longest dimension lines are furthest away from a view (for example, total height).

**Arrowheads** are drawn 3mm long by 1mm wide. They can be open or solid and always touch (but do not cross) projection lines.

Refer to Figure 16.
**Dimensioning circles and arcs**

**Curves** such as rounded corners are shown as an arc. The full circle may be shown as a construction line and its centre is shown as it occurs within the arc. The arc is dimensioned by its **radius** and the centre is marked with the ‘chain line’ cross (Figure 17).

**Holes** are shown as circles using the correct line for outlines. They are dimensioned by their **diameter** with the ‘Ø’ symbol and are marked with the ‘chain line’ cross.

When dimensioning a circle often a **leader** is used. Leaders stop with an arrowhead touching a line. They are always ‘sloped’ and are used to carry dimension numbers for diameters (Ø) and radii. They may carry a notation, for example, Ø20 (Figure 18).

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**Figure 17** Example of dimensioning holes and arcs.
Naming and identifying your drawing

When creating a technical drawing for a final presentation, you should include a ‘title’ block which includes:

- title of the work
- name of the author
- date drawn
- scale including a reference to the units used in the drawings

Refer to Figure 19.

Figure 18  Alternative methods for dimensioning arcs and circles.

Figure 19  Size and placement of written information in the title block.
Third angle orthogonal projection symbol

All drawings must show the correct projection symbol to identify the projection system used. The projection symbol is part of labelling requirements and is placed on the drawing along with the labelling of views. When drawing this symbol you should maintain the same proportions and line conventions as seen in Figure 20 and place your symbol in the top right hand corner as seen in Figure 21.

Figure 20  Third angle orthogonal symbol.

Figure 21  Third angle orthogonal drawing showing views, dimensions, naming of views, third angle orthogonal symbol and isometric view.
Environmental design drawings

Environmental drawings are for the communication of information regarding architectural, interior design or landscape structures to specific audiences. In this study, there are different types of drawings for environmental design, ranging from freehand visualization drawings showing broad concepts for communication of initial ideas to clients, to multi-sheet, highly detailed presentation drawings.

Figure 22  An urban landscape design drawn in planometric view.

Three-dimensional drawing – architectural design

In addition to the information given earlier in this resource planometric drawings are recommended for drawing of measured environmental spaces such as interior or landscape views. Two-point perspective is also an ideal way to visualize form and spaces when precise measurements are not required.
Two-dimensional drawing – architectural design

Plans and elevations developed by students in VCE Visual Communication Design may include:

• a site plan (showing relationship of the building to site, orientation of site with title boundary, larger foliage or landscape features)
• landscape plans (design concepts for external landscaping for gardens, parks etc.)

Environmental Design drawings may include:

• overhanging roof lines
• openings including windows and doors
• stairways
• key dimensions for overall sizes, rooms, doors and windows where appropriate
• labelling; for example, rooms and key descriptive notes
• north point symbol
• a title block including scale, date drawn, author’s name, drawing number and site address if applicable

Figure 23 ‘Ground floor plan’ at 1:100 (not reproduced at scale) showing an overview of line conventions used for architectural drawings.
Conventions for environmental design

Appropriate scales

Environmental drawings usually depict large objects. Some drawings may depict a group of buildings together, yet others show a section of a room. For this reason, designers who work in this field use a wide range of scales including 1:500, 1:100, 1:15, 1:20 and 1:5.

See Figures 24 and 25 for examples.

Figure 24   Examples of the same building in plans (from left) at 1:200, 1:100 and 1:50 (not to scale). The level of detail increases consistently as does the scale.
Plan for landscape design

Figure 25  Landscape plan detailing site, contour levels, trees and vegetation types at the appropriate scale of 1:200.

Placement and use of ‘north point’ symbol

A building must be considered in relation to its ‘aspect’, as sunlight and shade are a large factor in enjoyment and sustainability. A ‘north point’ symbol needs to be clearly shown on plans. A plan should be orientated so the north elevation (written as NORTH ELEVATION) is at the top of the drawing.

The views

Where orthogonal drawing refers to views, architectural drawings use plan and elevation. In addition, there may be a site plan, ground floor plan, first floor and subsequent floor plans. Elevations are named by the direction they face, shown in relation to the north point on the plan. Thus, the four elevations of a rectangular building are written as NORTH ELEVATION, EAST ELEVATION, SOUTH ELEVATION and WEST ELEVATION.

Setting out architectural drawings

Plans and elevations are set out differently from a third-angle orthogonal drawing. It is common for architectural drawings to show one (or more) plan per sheet and one (or more) elevation per sheet (Figure 26). Although groups of drawings will be drawn to the same scale, they do not need to correspond with each other in terms of visual alignment.
Figure 26 Two floor plans are set out at left. Four elevations are set out at right.

Use the following table when producing architectural drawings that require more than one sheet. (See also Figure 27).

Table 3

<table>
<thead>
<tr>
<th>Drawing type</th>
<th>Drawings per sheet</th>
<th>Typical scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cover sheet (optional)</td>
<td>Pictorial views and ‘Drawing list’ contents</td>
<td></td>
</tr>
<tr>
<td>Site plan</td>
<td>Usually one per sheet, centred.</td>
<td>1:200</td>
</tr>
<tr>
<td>Floor Plans: (in order) ground floor plan, first and other floor plans, roof plan, etc.</td>
<td>One or two plans to a sheet, centred.</td>
<td>1:100</td>
</tr>
<tr>
<td>Elevations: (in order) front elevation of building seen from street and opposite elevation, or north and south, and east and west.</td>
<td>Usually two elevations to a sheet, centred.</td>
<td>1:100</td>
</tr>
</tbody>
</table>
Figure 27  A collection of drawings for a project. From left clockwise: the cover sheet, site plan, plans, elevations and plan at a larger scale.
Line styles and conventions

In keeping with other design fields, architectural drawings also employ accepted conventions regarding the kinds of line style and width. Table 4 describes lines used in architectural drawings.

Table 4

<table>
<thead>
<tr>
<th>Line styles and conventions for manual drawing</th>
<th>Outlines of building, Ground lines.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thick continuous</td>
<td>- - - - - - - - - - - - - - - -</td>
</tr>
<tr>
<td>Thick chain</td>
<td>Title boundary</td>
</tr>
<tr>
<td>Thick dashed</td>
<td>Roof over in plan/ eaves</td>
</tr>
<tr>
<td>Thin continuous</td>
<td>General building forms and details</td>
</tr>
<tr>
<td></td>
<td>Roof ridge lines</td>
</tr>
<tr>
<td></td>
<td>Fall indicator in showers, bath, etc.</td>
</tr>
<tr>
<td></td>
<td>Direction of swing indicator for doors and panels</td>
</tr>
<tr>
<td></td>
<td>Doors, windows</td>
</tr>
<tr>
<td></td>
<td>Dimension lines, projection lines</td>
</tr>
<tr>
<td>Thin chain</td>
<td>Centres for plumbing fixtures</td>
</tr>
</tbody>
</table>

Symbols in plans and elevations

In addition to lines, other symbols are used to denote features of buildings.

Relationship to scale

All architectural symbols need to be drawn at the same scale as the drawing on which they are shown. Tables 5 and 6 show a range of architectural features with typical dimensions and suggested finished sizes in a range of scales.

Representing walls

There are two main kinds of walls in buildings: exterior and interior.

Interior walls are represented differently depending on the scale of the drawing. At 1:100 they are shown as a solid, continuous line 1mm thick; at 1:50 or 1:20 they are shown as two parallel thin lines 2mm or 5mm apart respectively.

Exterior walls are shown as two parallel lines representing the thickness of the wall. They are usually filled in black or grey (the grey to reduce visual impact) or hatched to represent a particular material. Refer to Tables 5 and 6.
### Table 5

**Typical widths/thicknesses of architectural features shown in plan**

<table>
<thead>
<tr>
<th>Item</th>
<th>Width in mm</th>
<th>At 1:100 in mm</th>
<th>At 1:50 in mm</th>
<th>At 1:20 in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exterior wall</td>
<td>270</td>
<td>3</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>Interior wall</td>
<td>110</td>
<td>1</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Door</td>
<td>820</td>
<td>8</td>
<td>16</td>
<td>40</td>
</tr>
<tr>
<td>Kitchen bench</td>
<td>600</td>
<td>6</td>
<td>12</td>
<td>30</td>
</tr>
<tr>
<td>Island bench</td>
<td>1000</td>
<td>10</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>Bathroom bench</td>
<td>500</td>
<td>5</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>Toilet space allowance</td>
<td>Min w 900 x 1500</td>
<td>9 x 15</td>
<td>18 x 30</td>
<td>45 x 90</td>
</tr>
<tr>
<td>Wardrobe</td>
<td>600</td>
<td>6</td>
<td>12</td>
<td>30</td>
</tr>
</tbody>
</table>

### Table 6

**Typical widths/thicknesses of architectural features shown in plan**

<table>
<thead>
<tr>
<th>Item</th>
<th>Width in mm</th>
<th>At 1:100 in mm</th>
<th>At 1:50 in mm</th>
<th>At 1:20 in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic floor to ceiling</td>
<td>Typical 2700</td>
<td>27</td>
<td>34</td>
<td>170</td>
</tr>
<tr>
<td>Door</td>
<td>2040</td>
<td>20</td>
<td>40</td>
<td>120</td>
</tr>
<tr>
<td>Kitchen bench</td>
<td>900</td>
<td>9</td>
<td>18</td>
<td>45</td>
</tr>
<tr>
<td>Island bench</td>
<td>900</td>
<td>9</td>
<td>18</td>
<td>45</td>
</tr>
<tr>
<td>Bathroom bench</td>
<td>900</td>
<td>9</td>
<td>18</td>
<td>45</td>
</tr>
<tr>
<td>Dining table, study desk</td>
<td>750</td>
<td>7.5</td>
<td>15</td>
<td>37.5</td>
</tr>
<tr>
<td>Coffee table</td>
<td>400</td>
<td>4</td>
<td>8</td>
<td>20</td>
</tr>
</tbody>
</table>
Representing doors

In the plan view, doors are shown as a thick line running perpendicular to the closed position and full open position of the door. A thin line arc is used to describe the swing. Sliding doors are shown as thick lines, spaced apart, as if positioned in a double or triple track, and arrows are placed parallel to the direction of slide to denote direction of movement. Refer to Table 5 for examples of door widths.

In the elevation views, doors are shown as plain rectangles without handles. Doors to wardrobes, cupboards or other joinery are shown with thin diagonal lines extending from the upper and lower corners on the hinged side to the centre on the opposite side to denote direction of swing. Refer to elevation views in Figure 28.

<table>
<thead>
<tr>
<th>Panel door</th>
<th>Sliding door</th>
<th>Double sliding doors</th>
<th>Joinery doors</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Diagram" /></td>
<td><img src="image2" alt="Diagram" /></td>
<td><img src="image3" alt="Diagram" /></td>
<td><img src="image4" alt="Diagram" /></td>
</tr>
</tbody>
</table>

**Figure 28**  Doors at 1:100 scale

Representing windows

Windows are represented using combinations of thin lined rectangles.

In the plan view, windows are shown as a long, white rectangular gap, the same thickness as the wall in which it is placed. The glass is then shown by one or two thin continuous lines centred and parallel to the wall. Windows in the elevation views are drawn to scale and are shown as thin lined rectangles. Frames are shown simply, and the direction of opening is shown with a diagonal ‘V’. See Figure 29.

<table>
<thead>
<tr>
<th>Glass panel window</th>
<th>Double sliding doors/windows</th>
<th>Bifold doors/windows</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image5" alt="Diagram" /></td>
<td><img src="image6" alt="Diagram" /></td>
<td><img src="image7" alt="Diagram" /></td>
</tr>
</tbody>
</table>

**Figure 29**  Doors at 1:100 scale
Representing interior features

Environmental drawings use a consistent set of symbols to represent interior fittings and fixtures. The emphasis is on clarity so details are minimal and do not detract from the purpose of a drawing. Symbols are constructed from thin continuous lines. See Figure 30.

Symbols at 1:100

![Symbols used to represent fittings and fixtures.](image)

**Figure 30** Symbols used to represent fittings and fixtures.

Stairs and ramps

In the **plan view**, stairs are shown as an outline. A thin continuous line is drawn through the centre of the staircase to indicate the direction of rise. In the **elevation views**, a stair case is drawn as it appears from the front, rear or side, including relevant handrails. A ramp is shown in the **plan view** as a simple rectangle. See Figure 31.

**Stairs at 1:100**

![Stairs and ramps details](image)

**Figure 31** Stairs and ramps details
**Dimensioning plans and elevations**

For the purpose of this study, students do not need to show all possible dimensions. For example, a floor plan may include room dimensions but for the sake of clarity and its purpose, may not include sizes of kitchen cupboards.

**Dimension placement**

Dimensions are constructed by referencing features in the following order:

1. The first line (closest to the building) external features such as windows or other openings and external walls.
2. The second line shows internal features such as internal rooms and wall thicknesses.
3. The third line shows the overall external building dimensions, corner to corner.

Dimensions are made between parallel **projection lines**. Unlike projection lines used in third angle orthogonal drawing, projection lines used in architectural drawings do not extend from a point adjacent an object, but are shown only where they cross dimension lines. They are short, 3mm long and centred on each dimension line.

Architectural drawings do not use arrows to terminate dimensions. Dimensions in plans and elevations are terminated with short, 3mm long 45 degree **cross marks**, again centred on dimension lines.

Dimensions are shown in **small sans serif figures**. Numbers are placed above dimension lines and centred across the space. Dimensions to denote sizes too small to fit the numbers may be placed directly adjacent the space. Dimension figures should print at 2mm high.

All dimensions in architectural drawings are to be recorded in millimetres. Refer to Figure 32.

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**Figure 32**  Dimension placement - three lines of dimensions outside each wall.
Labelling plans and elevations

When a sheet contains only one view, the name of the view is shown in the title area of the drawing. Where the sheet contains more than one view, each view is titled at the lower left corner of the view. View names should be shown at approximately 3mm high, in sans serif uppercase.

Labelling features on drawings

Plans and elevations sometimes require additional information that may not be apparent in the drawing. An example of an annotation could be “ROOF OVER” to denote a roof line above in a plan. These annotations should be in small blocks of left aligned, sans serif uppercase at 2mm high.

Identifying environmental drawings

A final presentation of an environmental drawing should include a title block (See Figure 33). The title block will include:

- drawing title
- project title
- scale
- sheet size
- north
- author’s name
- date drawn
- sheet number.