

CPC - Construction, Plumbing and Services Training Package

Construction Units

Unit

CPCCCM2001

Read and interpret plans and specifications

Please Note:

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Trainer/Teacher Manual



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STUDENT/TRAINEE DETAILS

Student/Trainee Name**Student/Trainee Email****Teacher / Trainer Name****School / Institution / Training Organisation / Employer****SAMPLE ONLY**

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INTRODUCTION

This manual is developed to provide training content that addresses the specific 'Unit of Competency' as outlined on the following pages.

It provides the teacher and/or trainer with a document that includes all that the student and/or trainee manual content plus guidance notes as well as answers to the learning activities in the student/trainee manual.

This manual can be packaged with various manuals addressing other 'Units of Competency' in order to meet the 'Packaging Rules' of a particular Australian Training Package Qualification.

This resource has been designed to be delivered in a form that is conducive to the learning environment including:

- ☆ Online delivery
- ☆ Classroom delivery
- ☆ On the job training

The documents are designed in a 'landscape' format in order to make reading on a computer screen easier as well as reduces the need to scroll down pages. Documents can be easily printed if the learning environment requires the student or trainee to have hard copies of the learning materials.

INTRODUCTION—CONT'D

LEARNING ACTIVITIES

The learning activities in the student and/or trainee manuals are 'Form Enabled' so that if the resources delivered online, the activities can be filled in using the computer keyboard.

Each learning activity is identified with the following icon.

Learning activities come in the following forms.

- ☆ Questions
- ☆ Research
- ☆ Tasks
- ☆ Interviews

Questions

Questions would relate to the information presented on previous pages.

Research

This type of learning activity would require the student or trainee to locate information by using research methods. The information they would be required to locate would be in line and/or support the information that the manual had outlined in previous pages.

INTRODUCTION—CONT'D**Tasks**

This learning activity type would require the student/trainee to actually do or undertake something and would be reinforcing the knowledge they have gained from reading the manual's previous pages.

Interviews

This learning activity type would require the student/trainee to interview person(s) in an actual workplace environment or a person(s) who are experienced in the industry sector which the student/trainee is currently undergoing training.

The student/trainee is made aware of the type of learning activity by noting the learning activity type displayed under the learning activity icon.

**Learning
Activity****Research****SELF ASSESSMENT**

At the end of each manual is a series of questions that the student/trainee should review and answer.

This self assessment is to ensure in the student's or trainee's mind that they have reviewed and understood the information that was presented in their manual.

If they are unsure of their understanding in any of the topics reviewed, they are encouraged to go back and review the information again and/or seek the assistance of their teacher or trainer.

UNIT OF COMPETENCY OVERVIEW

The following pages are extracts from Training.gov.au website and outlines this specific 'Unit of Competency' including the 'Elements' and the 'Performance Criteria'. The content within this manual has been developed to address this unit.

CPCCCM2001 - READ AND INTERPRET PLANS AND SPECIFICATIONS

ELEMENT	PERFORMANCE CRITERIA
1. Identify features and functions of plans and drawings	1.1 Identify the key features and functions of each of the main types of plans and drawings used in the construction industry 1.2 Locate and explain the purpose of the legend on plans and drawings used in the construction industry 1.3 Explain the meaning of construction symbols and abbreviations used on plans and drawings in the construction industry
2. Check the amendment status of plans and specifications	2.1 Check amendments to plans and specifications to ensure currency of information, and report to others as required 2.2 Check title panels on plans and specifications to verify latest amendments are included, and report to others as required
3. Locate key features on a site plan	3.1 Orientate the site plan with the site 3.2 Locate key features of the site from the site plan
4. Identify project requirements from plans and specifications	4.1 Identify project dimensions and nominated locations from project plans and specifications 4.2 Identify construction types and dimensions for nominated locations from project plans and specifications 4.3 Identify environmental requirements, controls and locations from environmental plan, project plans and specifications 4.4 Identify standards of work, finishes and tolerances from project plans and specifications 4.5 Identify material attributes from project plans and specifications
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Section One

Identify Features and Functions of Plans and Drawings

READ AND INTERPRET PLANS AND SPECIFICATIONS

SECTION ONE—IDENTIFY FEATURES AND FUNCTIONS OF PLANS AND DRAWINGS

INTRODUCTION

The building of any structure is described by a set of related drawings that give the builder a complete, sequential, graphic description of each phase of the construction process. In most cases, a set of drawings begins by showing the location, boundaries, contours and outstanding physical features of the construction site and its adjoining areas.

Succeeding drawings give instructions for the excavation and nature of existing ground; construction of the foundations and superstructure; installation of utilities, such as plumbing, heating, lighting, air conditioning, interior and exterior finishes; and whatever else is required to complete the structure.

An understanding on how to read and interpret construction drawings is essential.

In this section we will begin with the process involved in preparing construction drawings and then look at the key features and functions of each drawing.

SECTION LEARNING OBJECTIVES

At the completion of this section you will learn information relating to:

- ☆ Identifying the key features and functions of each of the main types of plans and drawings used in the construction industry
- ☆ Locating and explaining the purpose of the legend on plans and drawings used in the construction industry
- ☆ Explaining the meaning of construction symbols and abbreviations used on plans and drawings in the construction industry



IDENTIFY THE KEY FEATURES AND FUNCTIONS OF EACH OF THE MAIN TYPES OF PLANS AND DRAWINGS USED IN THE CONSTRUCTION INDUSTRY

The drawing process generally starts with an engineer working with the architect to decide what materials to use in the structure and the construction methods to follow.

The engineer determines the loads that supporting members will carry and the strength qualities the members must have to bear the loads. The engineer also designs the mechanical systems of the structure, such as the lighting, heating and plumbing systems. The end result is the architectural and engineering design sketches. These sketches guide draftsmen in preparing the construction drawings.

Generally, construction drawings furnish enough information for the builder to complete an entire project and incorporate all three main groups of drawings

- 1) Architectural
- 2) Structural
- 3) Mechanical/electrical

In drawings for simple structures a single drawing may contain both the electrical, plumbing and mechanical layouts.

In complicated structures, however, a combination of layouts is not possible because of overcrowding. In this case, the floor plan may be reproduced over and over for drawings for the electrical, plumbing and mechanical layouts.

All or any one of these types of drawings gives you enough information to complete a project. The specific one to use depends on the nature of construction involved.

The construction drawing furnishes enough information for the particular tradesman to complete a project, whether architectural, structural or mechanical/electrical/plumbing. It is likely that the construction drawings include the detail drawings, assembly drawings, material lists, and the specifications.

SAMPLE ONLY**OTHER TYPES OF BASIC DRAWINGS**

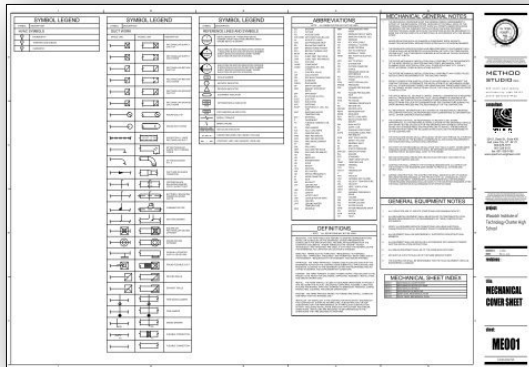
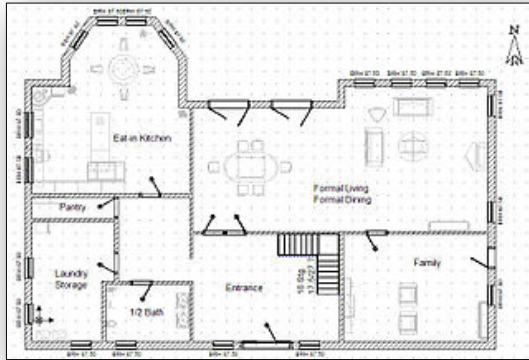
A detail drawing shows a particular item on a larger scale than that of the general drawing in which the item appears. Or, it may show an item too small to appear at all on a general drawing.

An assembly drawing is either an exterior or sectional view of an object showing the details in the proper relationship to one another. Assembly drawings are usually drawn to a smaller scale from the dimensions of the detail drawings. This provides a check on the accuracy of the design drawings and often discloses errors.

Construction drawings consist mostly of right angle and perpendicular views prepared by draftsmen using standard technical drawing techniques, symbols and other designations.

The first section of the construction drawings consists of the site plan and plot plan (sometimes one in the same), foundation plans, floor plans, and framing plans.

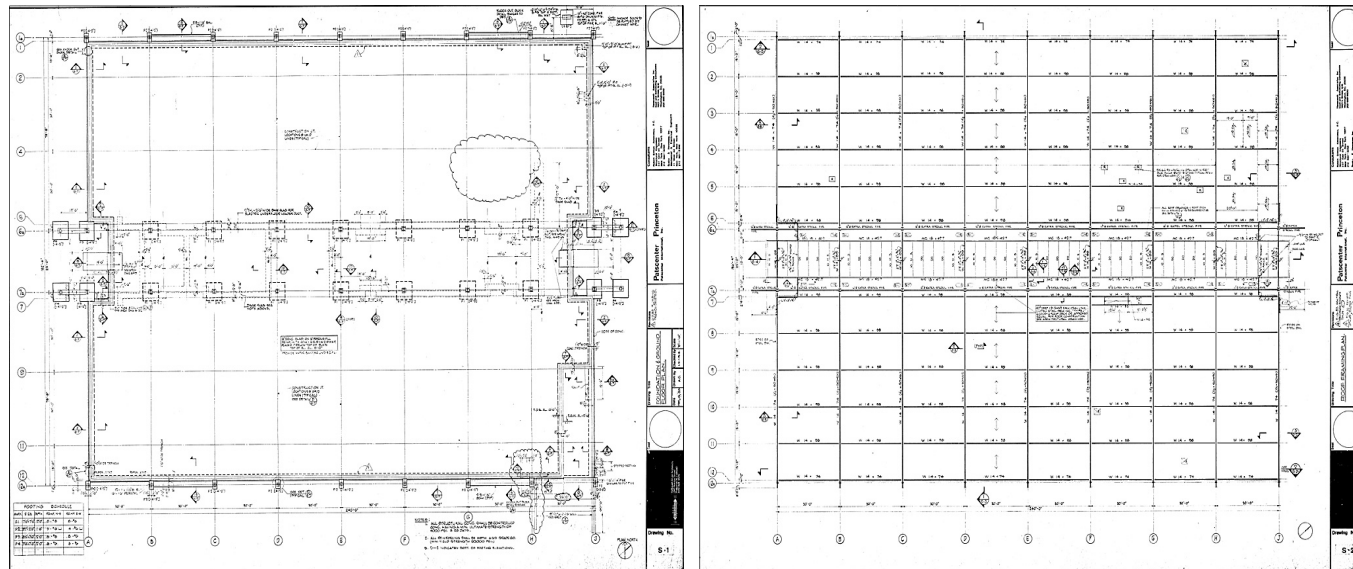
General drawings consist of plans (views from above) and elevations (side or front views) drawn on relatively small scale.

**SAMPLE ONLY**

Structural drawings - Structural drawings consist of all the drawings that describe the structural members of the building and their relationship to each other.

A set of structural drawings includes foundation plans and details, framing plans and details, wall sections, column and beam details and other plans, sections, details, and schedules necessary to describe the structural components of the building or structure.

The general notes in the structural drawings should also include, when applicable, roof, floor, wind and other loads, allowable soil pressure or pile/stump bearing capacity, and allowable stresses of all material used in the design.



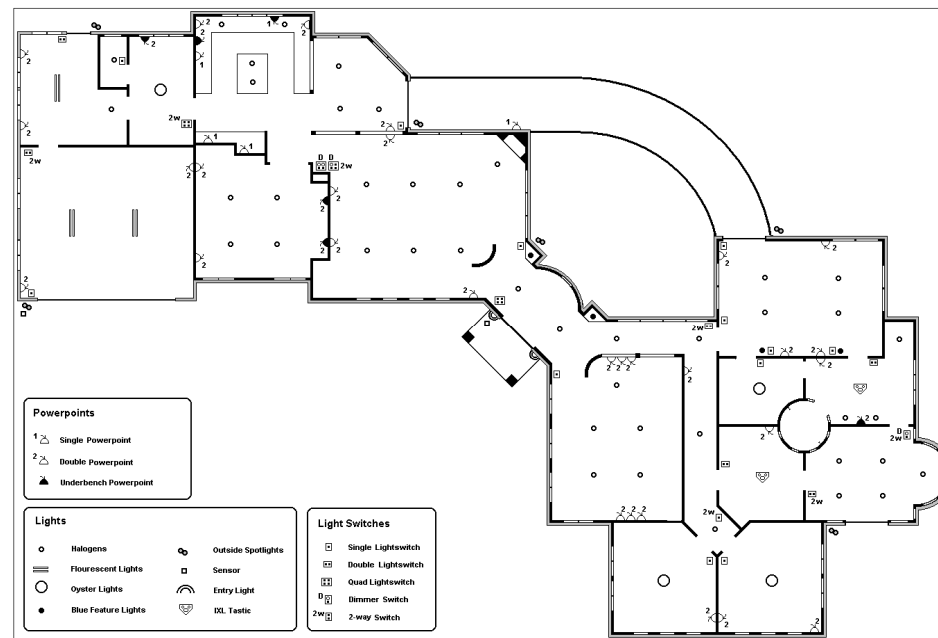
Plumbing, mechanical and electrical drawings - The mechanical set of construction drawings will include plumbing plans and details, drawings for any heating, ventilation, and air-conditioning systems that a building might contain.

In some residential and commercial structures, a separate mechanical plan is drawn to show fixtures, water supply and waste disposal lines, equipment, and other supply and disposal sources. In drawing a plumbing plan, the plan would show all exterior and interior walls, major appliances, and plumbing fixtures.

The drawing would include fixture schedules, legends, details, or other related information.

The electrical plans consist of details relating to the components associated with electrical distribution and interior wiring. The electrical plans, compared to other plans, use the most variety of symbols and it is important for the reader to understand the symbols.

The electrical plan follows the original floor plan. It shows the location of the meter and service panel. It also shows the location all of the convenience outlets, ceiling and wall fixtures, and other electrical devices required using the appropriate symbols.



Site plans - A site plan shows the contours, boundaries, roads, utilities, storm water drainage, trees, structures, and any other significant physical features on or near the construction site.

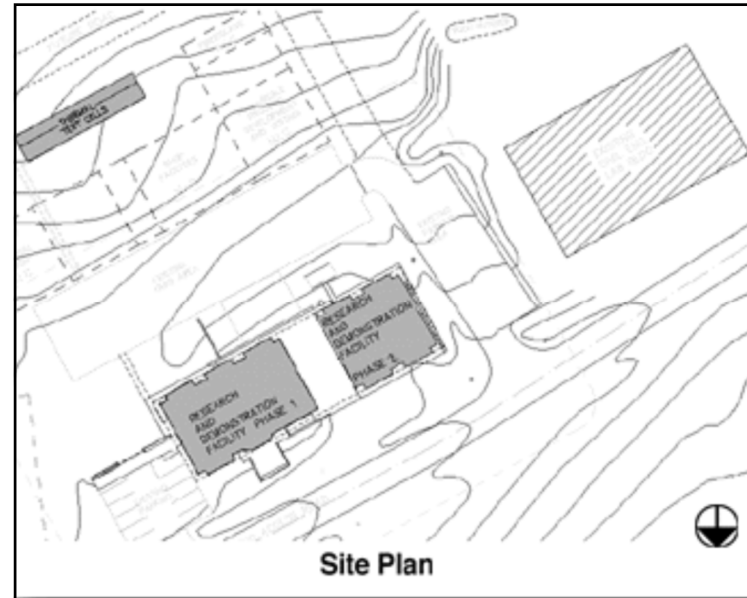
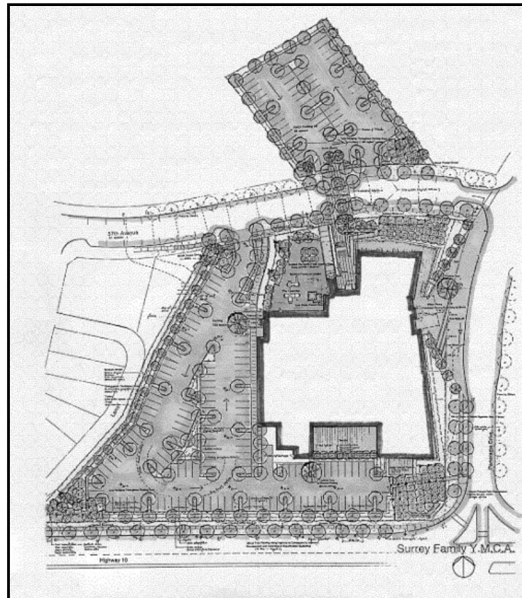
The locations of proposed structures are shown in outline. This plan shows present locations with reference to reference lines shown on the plot that can be located at the site. By showing both existing and finished contours, the site plan furnishes the essential data for the graders.

By showing both existing and finished contours, the field crew (excavation equipment operators) is able to estimate and prepare the site for construction and to finish the site (including landscaping) upon completion of construction.

On a set of project drawings the physical information given on the site plan is generally taken from surveyor-prepared field notes or sketches. The planners may also use other information contained on the site plan, as well as estimators when estimating quantities of materials required, labour needed, and areas available for staging of equipment and materials.

Site plans are usually drawn to a scale of 1:200 with dimensions given in metres to two decimal places – such as 123.25 or 75.35, etc.

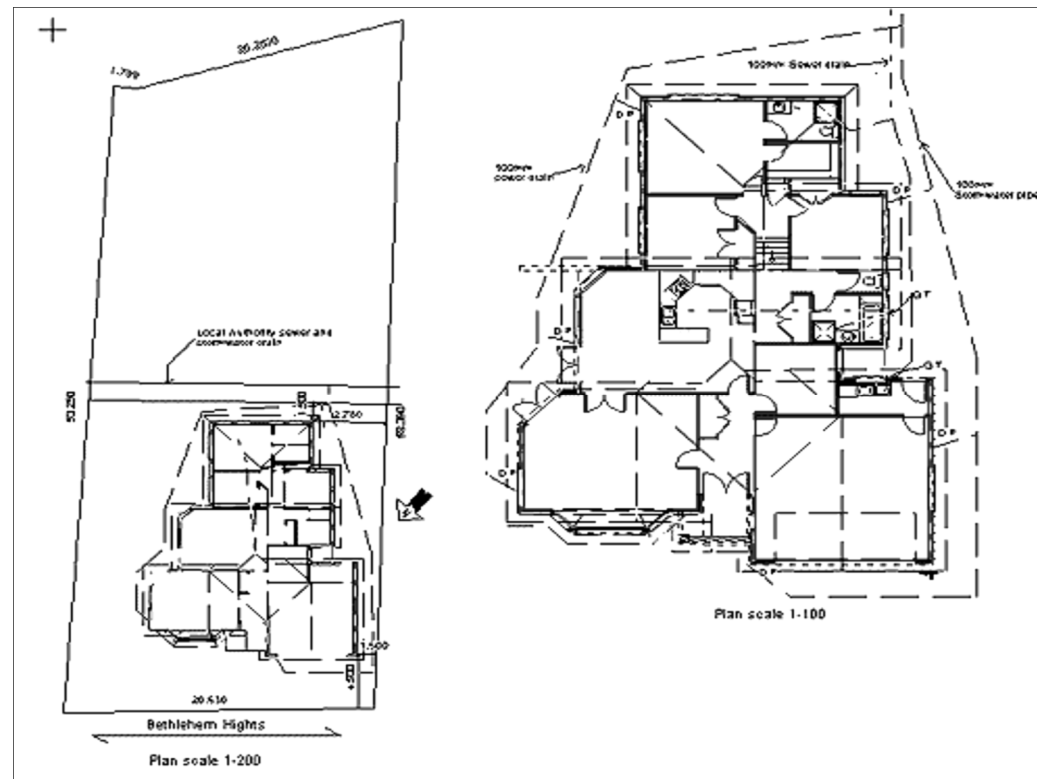
On the site plan there is a North symbol point to show the orientation of the site and any buildings.



Plot plan - A plot plan again is an overhead view of the construction site.

The plot plan (which is sometimes the site plan as well) is drawn to determine the placement of the structure on the building lot. It details the survey marks with the elevations and the grading requirements. The plot plan is used to set up the reference corners and perimeter of the building using batter boards and line stakes.

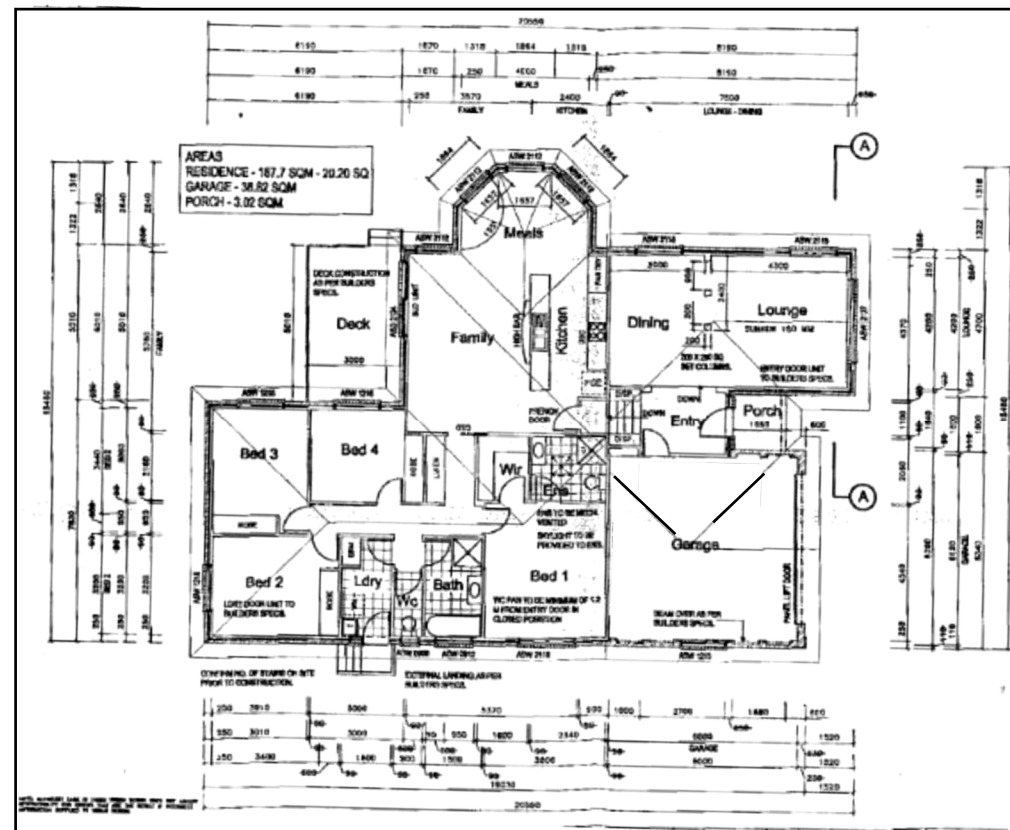
Thus, the plot plan furnishes the essential data for laying out the building. It shows placement of easements, location of drives and walks and sometimes even topographical data that specifies the final slope of the terrain.

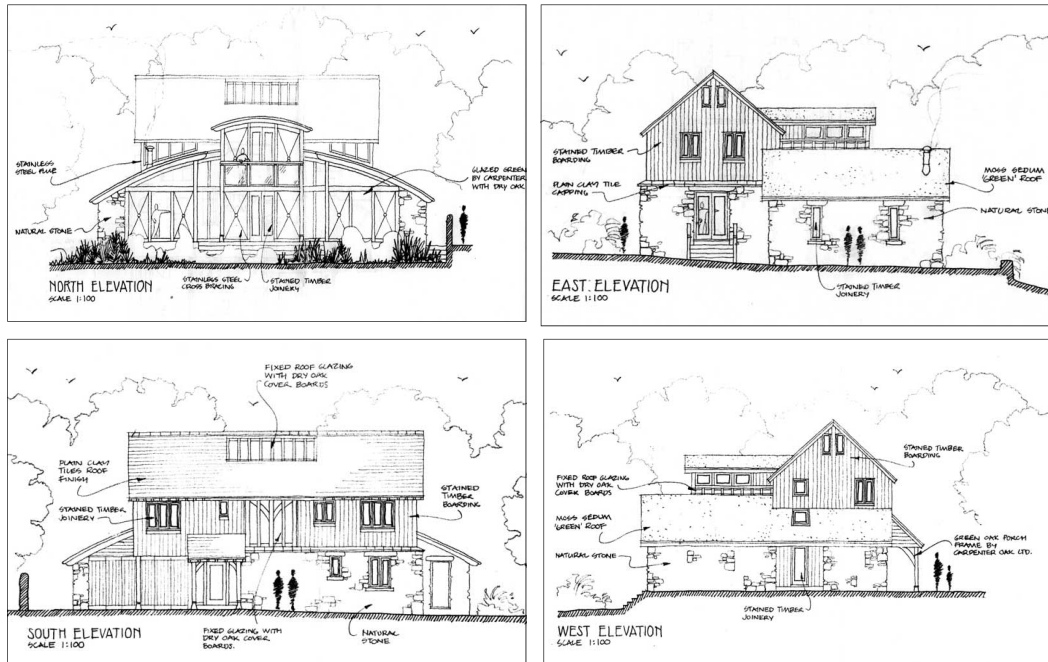


Floor plan - A floor plan is a horizontal section through a building, showing the outline or arrangement of the floor. It also includes references to doors, windows, fireplaces, stair openings and other features located in the building.

The floor plan is usually the first drawing worked on. It is considered the key drawing in a set of project drawings—the drawing that all of the construction personnel will look at.

Hence, the purpose of the floor plan is to show information about the location and type of construction, location and size of doors, windows, built-in fireplaces, stairs, rooms and exterior and interior features.



SAMPLE ONLY**The four elevations**

Elevations - Elevations are orthographic projections (we review orthographic projections later in this training manual) showing the finished interior and exterior appearance of the structure.

Interior elevations are required for important features, such as built-in cabinets and shelves, but it is not uncommon for elevations to be drawn for all interior walls in each room of a building.

Interior wall elevations show wall lengths, finished floor-to-ceiling heights, doors, windows, other openings, and types of finish materials used. Exterior elevations show the types of materials used on the exterior, where the materials are used, the finished grade around the structure, the roof slope, the basement or foundation walls, footings, and all of the vertical dimensions.

Basically, four elevations are needed in a set of drawings to complete the exterior description: the front, the rear, and two sides of a structure, as they would appear projected on vertical planes.

A typical elevation is drawn at the same scale as the floor plan, but occasionally a smaller scale may be used because of space limitations, or a larger scale, to show more detail. There are several methods used to identify each elevation as it relates to the floor plan.

The two methods most commonly used is to label the elevations with the same terminology used in multi-view and orthographic projection; that is 'front view', 'rear view', right side view and left side view elevations.

The other is to call each view – North view, South view, East view and West view based on the orientation of the structure on the site.

In case of plans where there are irregular views, the view may be cross-referenced with a letter.

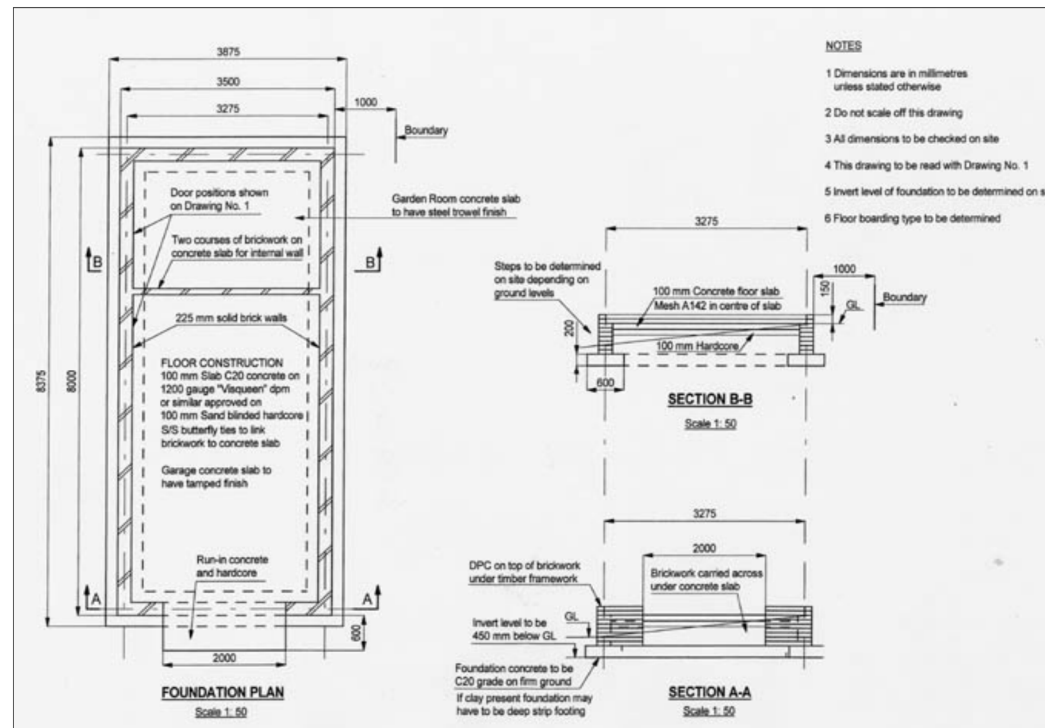
Foundation plan - A foundation plan is a top view of the slab, footings or foundation walls, showing their area and their location by distances between centrelines and by distances from reference lines or boundary lines.

Actually, it is a horizontal section view cut through the walls of the foundation showing slab details, any beams, girders, piers/stumps or columns, and openings, along with dimensions and internal composition. Primarily the building crew who will construct the foundation of the proposed structure uses the foundation plan.

Designers/engineers need relative information about the total concept of the structure before they can draw the foundation plan.

They make a careful study of the materials and construction methods used, observe the type of foundation used, and analyse the relative position of the framing and the foundation wall or footing.

In most drafting practices, it is customary to use the ground floor plan to develop the foundation plan because the floor plan readily offers the information you need for the foundation plan, such as the general shape of the building, openings, dimensions, and so forth.



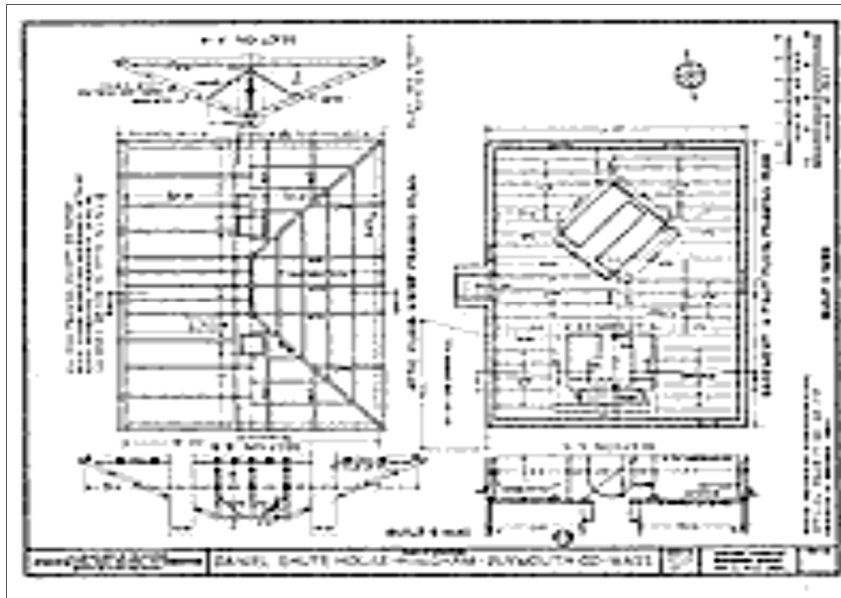
Framing plan - Framing plans show the size, number and location of the structural members (steel or wood) in the building framework. Separate framing plans may be drawn for the floors, the walls and the roof.

☆ **Floor framing**

The floor framing plan must specify the sizes and spacing of joists, girders and columns used to support the floor.

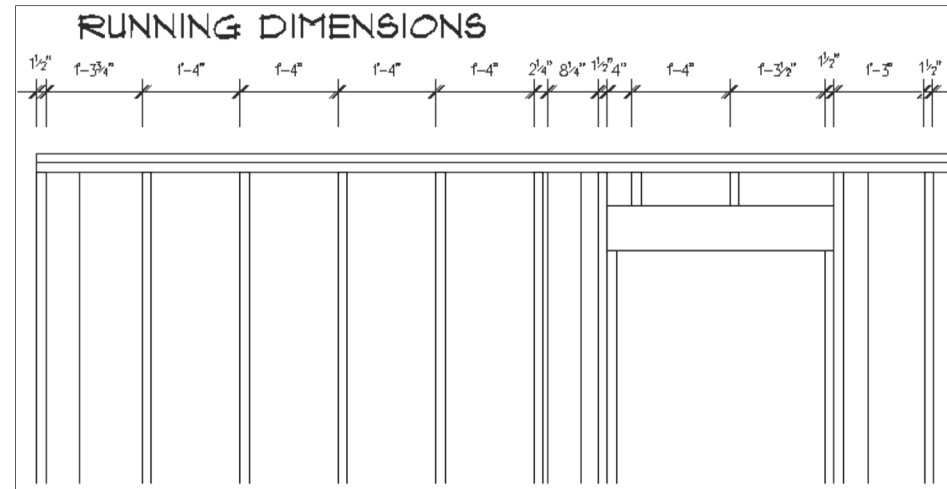
Detail drawings must be added, if necessary, to show the methods of anchoring joists (tie downs) and girders to the columns and foundation walls or footings. The floor framing plan is basically a plan view showing the layout of the girders and joists. Joist symbols are drawn in the position they will occupy in the completed building. Double framing around openings and beneath bathroom fixtures is shown where used.

Lengths may not be indicated in framing plans; the overall building dimensions and the dimensions for each bay or distances between columns or posts provide such data.



SAMPLE ONLY☆ **Wall framing**

The wall framing plans show the location and method of framing openings and ceiling heights so that studs and posts can be cut.

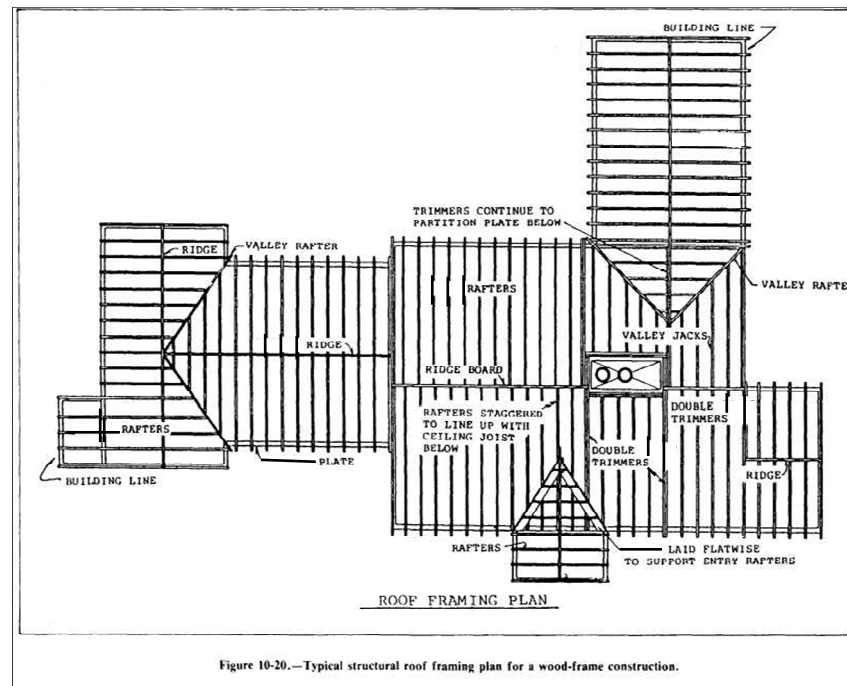
**SAMPLE ONLY**

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☆ **Roof framing**

The roof framing plans show the construction of the rafters used to span the building and support the roof. The size, spacing, roof slope and all of the details are also shown in the plan.

The roof framing plan is drawn in the same manner as the floor framing plan; rafters are shown in the same manner as joists.

**SAMPLE ONLY**

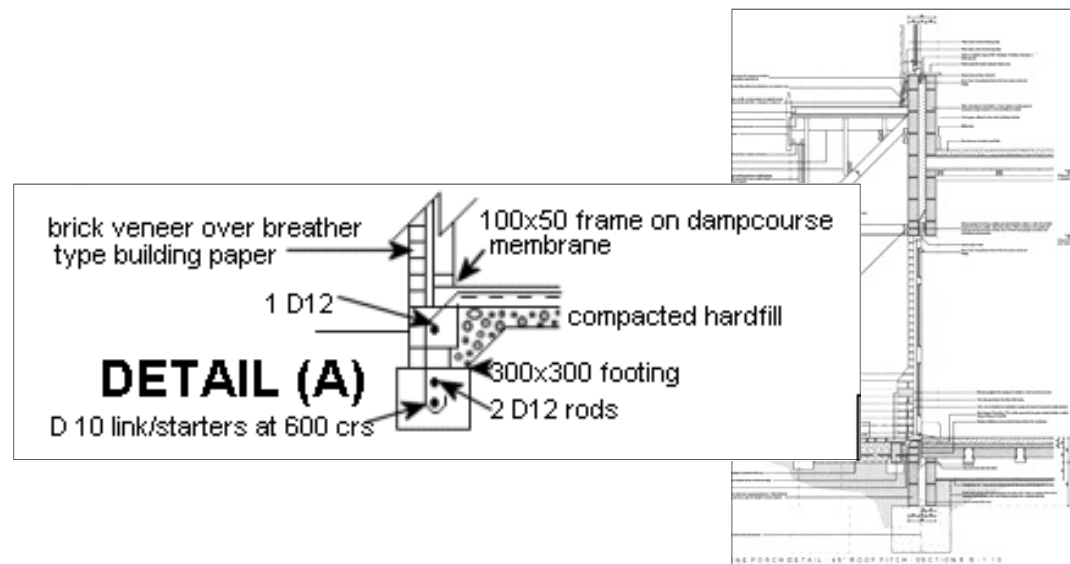
Detail drawings - Details are large-scale drawings of the construction assemblies and installation that were not clearly shown in the sections.

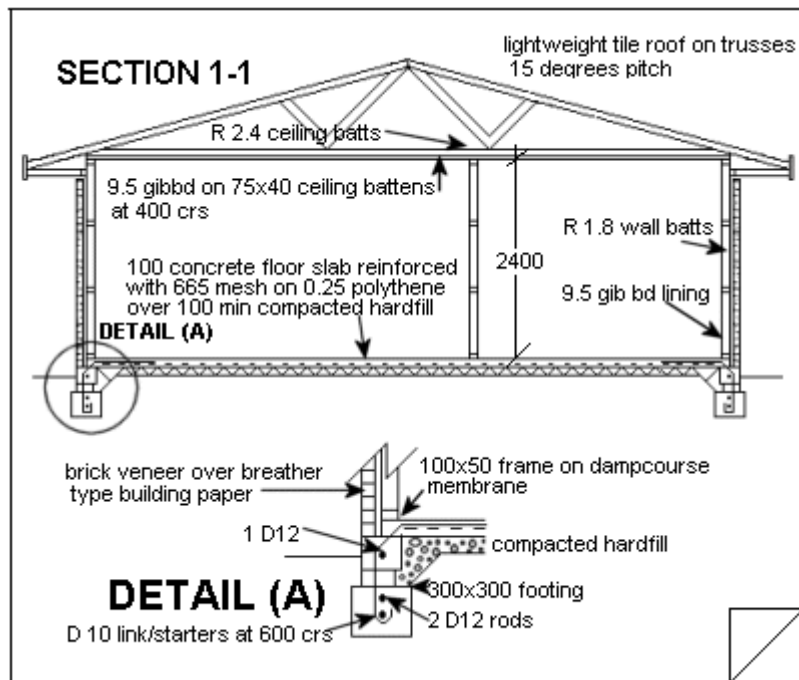
These enlarged drawings show the reader how the various parts of the structure are to be connected and placed. The construction of specific types of foundations, doors, windows, cornices and so forth, are customarily shown in detail drawings located within their applicable construction drawings.

Details are usually grouped so that references may be made more easily from the general drawing.

The scale selected for details depends on how large it needs to be drawn to clearly explain the required information. Details are usually drawn at a larger scale than the sections.

Details are commonly used for installation of items such as doorframes and window frames, fireproofing, and material connections. Details that relate to the specific drawings are usually placed on that drawing or if space were limited, details would be placed with the section drawings or schedules, or on separate drawings set aside especially for details.





Sections - As necessary, 'section' drawings are used in each of the main types of construction drawings to show the types of construction required, the types of materials used, their locations and the method of assembling the building parts.

The most common section drawings are generally located in the architectural and structural drawings. All properly prepared sections are important to those responsible for constructing a building.

The most important of all are 'wall sections'. These sections, are normally located in the structural type drawings, provide a wealth of information that is necessary to understand the structural arrangement, construction methods and material composition of the walls of the building. When a cutting plane is passed through the narrow width of a building a 'cross-section' is developed.

Similarly, passing the cutting plane through the length of building results in a 'longitudinal section'.

Note:

A 'cutting plane' allows you to cut away part of a scene. For example, if you have a scene representing a house, you can cut away everything above the ceiling line (to remove the roof), so that you can see the layout of the rooms.

Longitudinal sections, usually located in the architectural drawings, are used to clarify the building design and total construction process. Often cross sectional and longitudinal sections are drawn at the same scale as the floor plan.

When more than one section is placed on the plan, the sections are normally arranged so that the first one is through the front of the building, the other sections, excluding the last, move progressively through the interior and the last one is through the back.

This way, the sections give the reader an orderly construction 'tour' through the building.

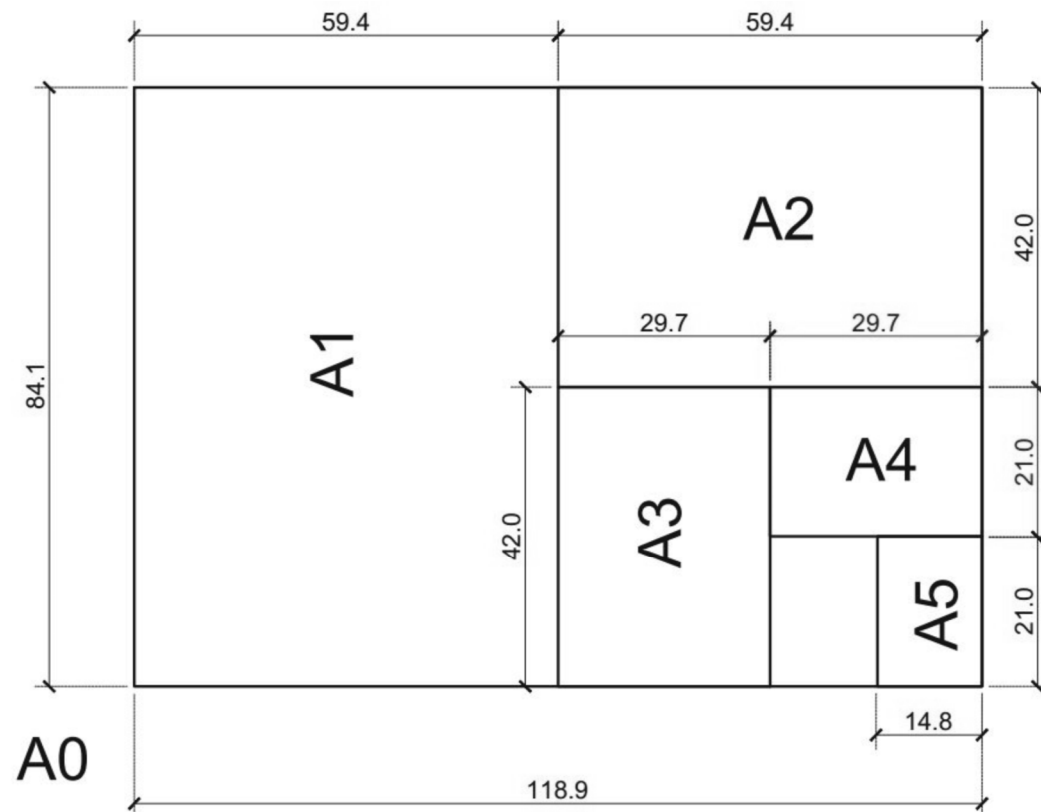
DRAWING SHEET SIZES

Drafting paper sizes is based on an international standard - ISO 216 series A and B, and is used in most countries in the world today with three series of paper sizes: A, B and C.

The 'A' Series is most common for construction drawings and Series C is primarily used for envelopes.

The ISO A series of sheet sizes is based on a constant width to length ratio of $1:\sqrt{2}$ (rounded to the nearest millimetre). The A0 size is defined as having an area of one square meter (1 m^2).

Each smaller sheet size is exactly half the area of the previous larger size.



**Learning
Activity****SAMPLE ONLY****Question****LEARNING ACTIVITY ONE**

1) What were the three main groups of construction drawing types?

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2) What were the four other types of basic drawings?

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3) What were the eleven categories of drawings that were reviewed in this Section?

SAMPLE ONLY

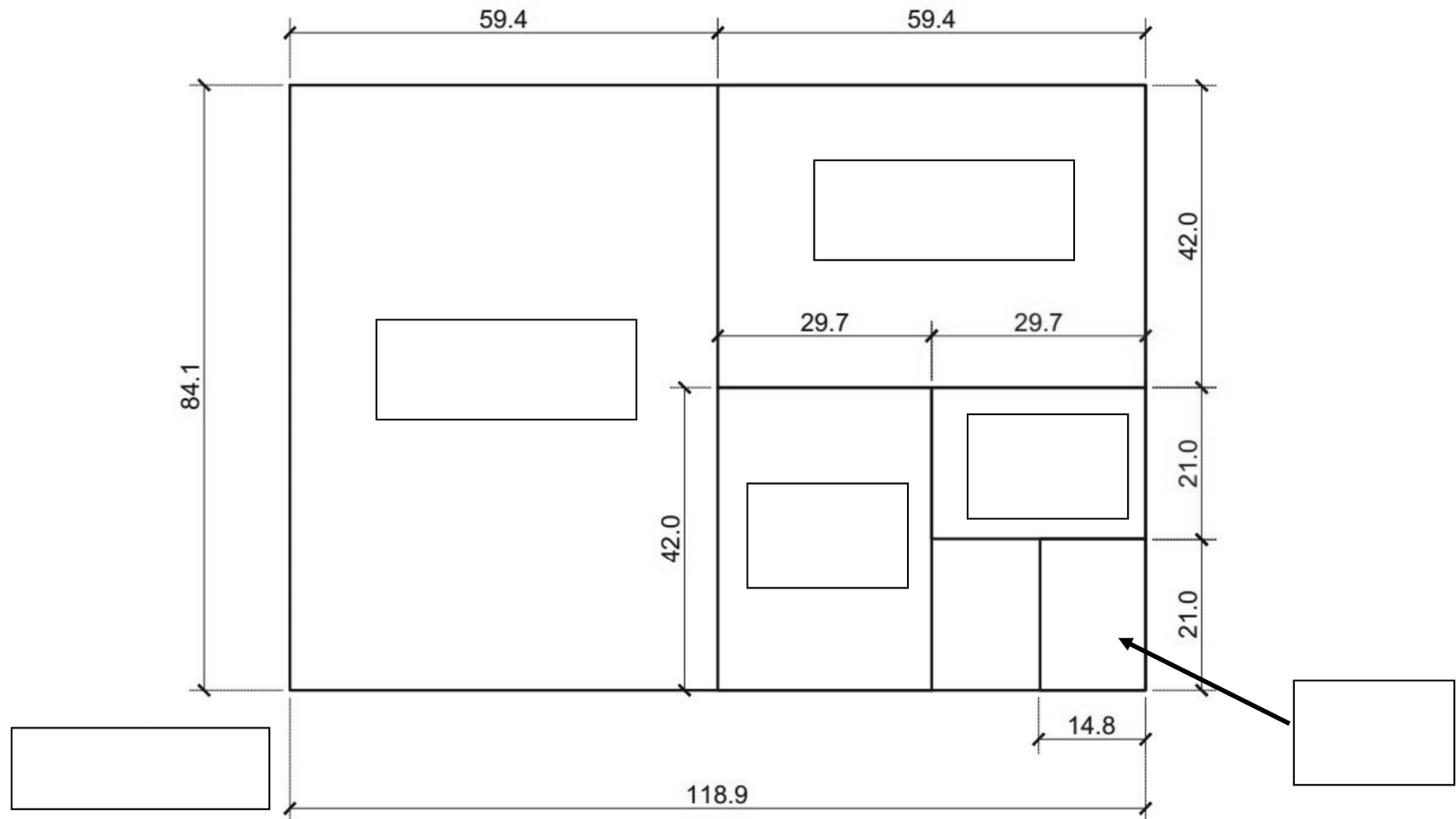
SAMPLE ONLY**TEACHER/TRAINER GUIDANCE NOTES**

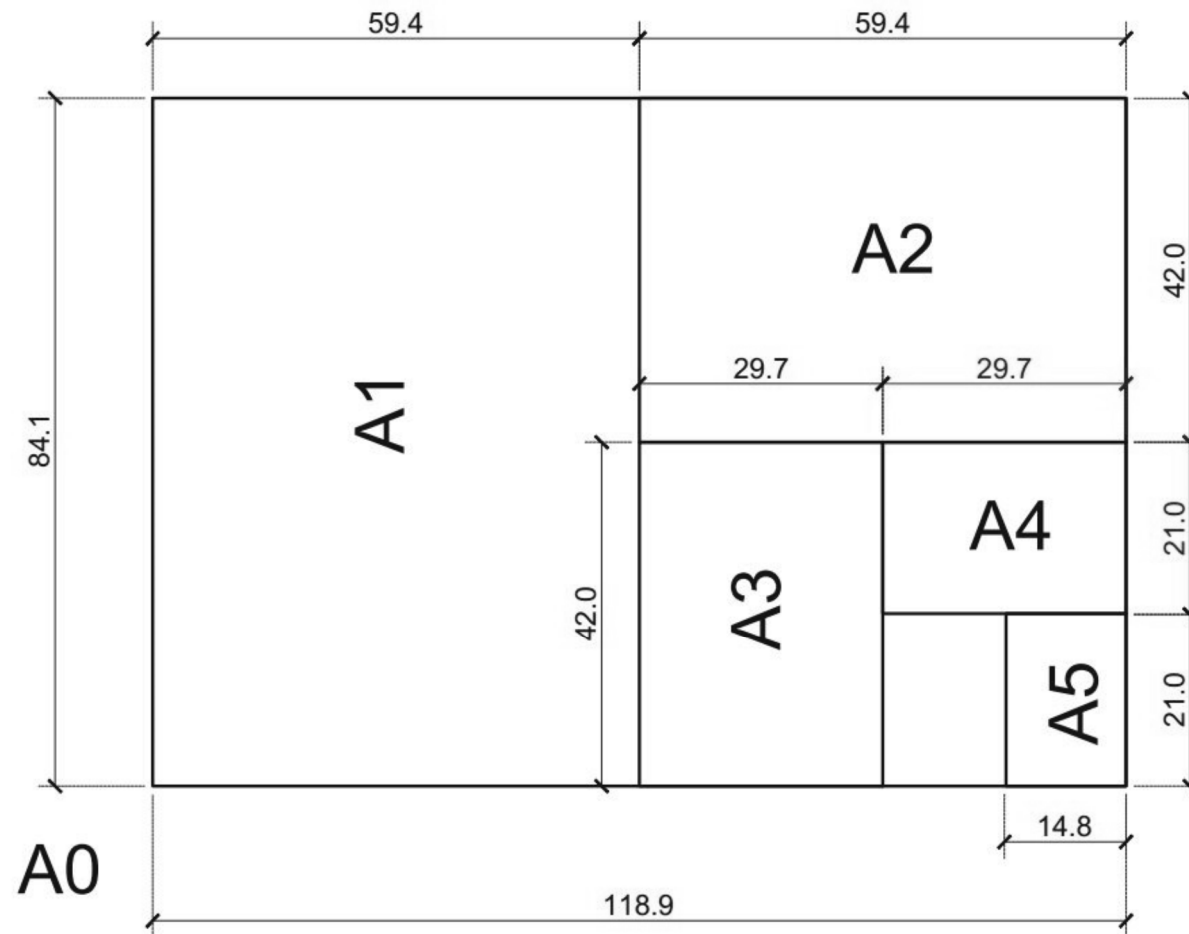
- 1)
 1. Architectural
 2. Structural
 3. Mechanical/electrical
- 2)
 1. Detail drawings
 2. Assembly drawings
 3. Construction drawings
 4. General drawings
- 3)
 1. Architectural
 2. Structural
 3. Mechanical, plumbing, electrical
 4. Site and plot plans
 5. Floor
 6. Elevations
 7. Foundation plans
 8. Framing plans
 9. Bracing plans
 10. Detail drawings
 11. Section drawings

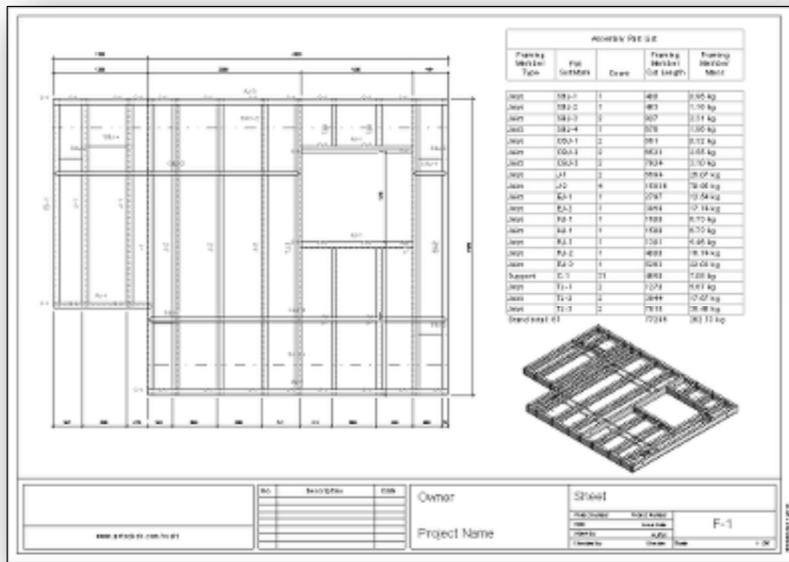
SAMPLE ONLY

**Learning
Activity****SAMPLE ONLY****Task****LEARNING ACTIVITY TWO**

Below is the illustration we used to show the various sizes of drawings sheets common in construction. We have removed the size labels and left the dimensions. In the space provided tell us the size label.

**SAMPLE ONLY**

SAMPLE ONLY**TEACHER/TRAINER GUIDANCE NOTES****SAMPLE ONLY**



LOCATE AND EXPLAIN THE PURPOSE OF THE LEGEND ON PLANS AND DRAWINGS USED IN THE CONSTRUCTION INDUSTRY
AND
EXPLAIN THE MEANING OF CONSTRUCTION SYMBOLS AND ABBREVIATIONS USED ON PLANS AND DRAWINGS IN THE CONSTRUCTION INDUSTRY

(Over the next few pages we cover two 'Performance Criteria' points at the same time to avoid repetition)

To be fully skilled in reading and understanding drawings or plans a person needs to understand the basic elements of a construction drawing.

These elements are required communication items within the drawing itself, otherwise the reader would not have a clear picture of what the actual drawing is about or trying to convey.

These elements include:

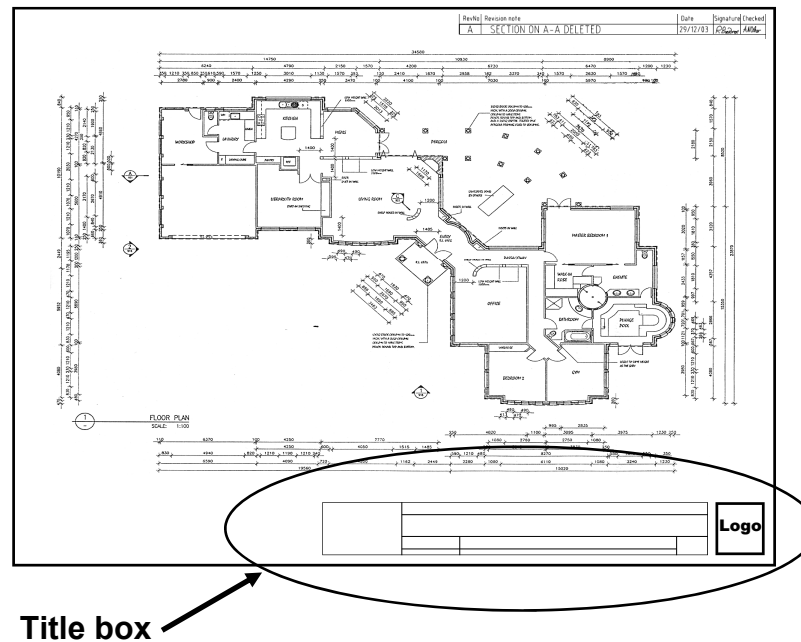
- ☆ Title box
- ☆ Legends
- ☆ Use of a variety of lines
- ☆ Symbols
- ☆ Abbreviations

TITLE BOX

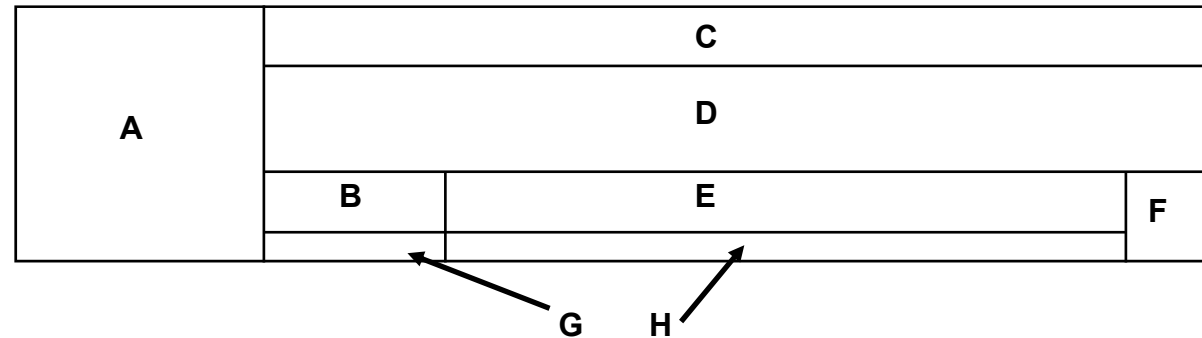
The title block includes the border and the various sections for providing quality, administrative and technical information. The importance of the title block cannot be minimised as it includes all the information, which enables the drawing to be interpreted, identified and archived.

The title should include sufficient information to identify the type of drawing, such as whether it is a general layout or detail drawing. It should also clearly describe in a precise way what the drawing portrays.

The title box is generally found at the lower right hand bottom of the drawing. The size of the title box may vary depending on the size of the drawing and the person producing the drawings. The average is 140-170mm wide by 55-80mm deep.



The title box presents a substantial amount of information to the reader. We have outlined the general and recommended minimum content of a title box.



- A** A record of the information relative to the preparation of the drawing. This information could include the names of the draftsman, who checked the drawing and who approved the drawing
- B** A project number, job number, etc.
- C** The name of the architect or design company goes here
- D** The title or name of the project
- E** The drawing number
- F** The drawing sheet size
- G** The scale of the drawing
- H** The sheet number for multi sheet drawings (also used for the first revision)

Additional blocks for other general information such as dimensions and tolerances notes, material notes, or surface finish requirements, can be added when required. These information boxes are generally added to the left of the title box.

Some companies will insert a corporate logo within the title box. This is usually to the right of the title box, however it all depends on the drawing issuer.

SAMPLE ONLY

<i>Abbreviation</i>	<i>Meaning</i>	<i>Abbreviation</i>	<i>Meaning</i>	<i>Abbreviation</i>	<i>Meaning</i>
AL	Aluminium	CONC	Concrete	R	Roof
AS	Australian Standard	CC	Concrete Ceiling	SD	Service Duct
AUX	Auxiliary	CF	Concrete Floor	SEW	Sewer
B	Basin	CTR	Contour	SD	Sewer Drain
B	Beam	CORR	Corrugated	SHR	shower
BRR	Bearer	DW	Dish Washer	S	Sink
BLK	Block	D	Door	SQ	Square Tube
BDYL	Boundary Line	DP	Down Pipe	SPR	Sprinkler
BT	Boundary Trap	DGE	Drainage	SF	Strip Footing
BRKT	Bracket	FHT	Floor Height	SWD	Storm Water Drain
BK	Brick	FW	Floor Waste	SWBD	Switchboard
BV	Brick Veneer	G	Gas	TC	Terra Cotta
BWK	Brick Work	HW	Hot Water Unit	TR	Trench
BLDG	Building	MH	Man Hole	TM	Trench Mesh
BL	Building Line	OUT	Outlet	TRH	Trough
CBL	Cable	OA	Overall	T	Truss
CAB	Cabinet	OH	Overhead	U/C	Under Construction
CAN	Canopy	PF	Pad Footing	U/G	Underground
CI	Cast Iron	PTN	Partition	UB	Universal Beam
CW	Cavity Wall	P	Pier	UR	Urinal
CEM	Cement	P/F	Plan of Sub-division	V	Vent
CM	Cement Mortar	PBD	Plasterboard	VER	Verandah
CR	Cement Render	PG	Plate Glass	VERT	Vertical
CRS	Centres	PF	Portal Frame	WBD	Wallboard
CL	Centre line	PCC	Precast Concrete	WP	Waste Pipe
CHY	Chimney	RAD	Radius	WC	Water Closet
CCT	Circuit	RF	Raft Footing	WPM	Waterproof M'brane
CD	Clothes Drier	RHT	Rail Height	WM	Water Meter
CW	Cold Water	RWH	Rain Water Head	WR	Weather Resistant
COL	Column	RSC	Rolled Steel Channel	WRC	Western Red Cedar
C	Cooker	RSJ	Rolled Steel Joist	W	Window

ABBREVIATIONS

Historically, abbreviations were used frequently in construction documents as part of standard practice.

They were part of the drawing symbology, but led to errors of interpretation by contractors.

Today computer aided drawing text is fast to input and is legible, abbreviations are avoided unless they are absolutely necessary due to space limitations, or they increase readability, such as in schedules.

If using general abbreviations, follow these rules:

- ☆ Use upper case lettering, without periods
- ☆ Do not use spaces within an abbreviation
- ☆ Use same abbreviations for singular or plural

In most cases if the drawing has a substantial amount of abbreviations, a glossary would need to be attached. Abbreviations can differ depending on who has drawn the plan or the company issuing the drawings.

The table to the left outlines some of the more common abbreviations used on construction drawings.

SAMPLE ONLY

SYMBOLS

As an employee in the construction industry you will be required to read and interpret drawings and specifications, sketches and various diagrams. Before you can work with drawings effectively, you must know how to interpret drawing symbols correctly.

Knowing how to draw and interpret freehand sketches is also important. You will see how the different parts of a drawing relate to the overall plan the drawing represents. You will also learn to recognise the different types of drawings and their uses.

One of the most important symbols to use right at the beginning of a new job is the directional symbol. This symbol, which is usually an arrow labelled 'N' for north, enables the reader of a construction drawing to orient it.

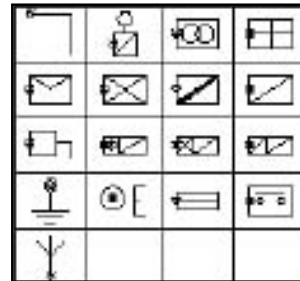
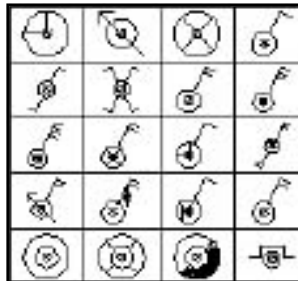
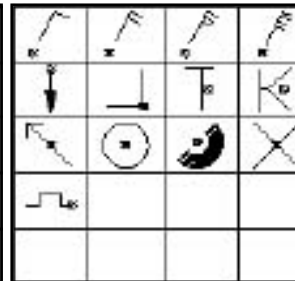
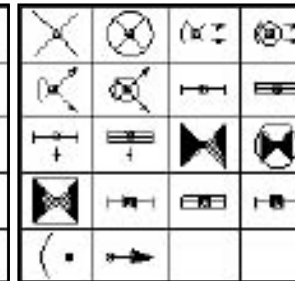
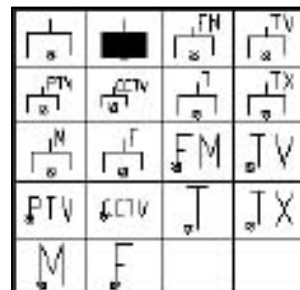
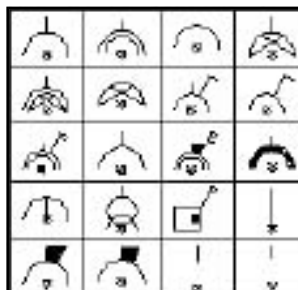
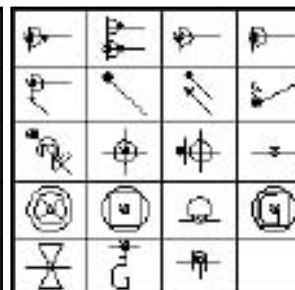
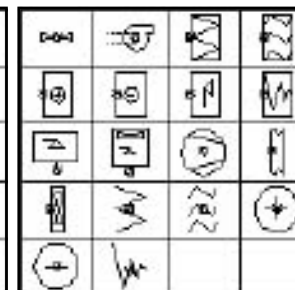
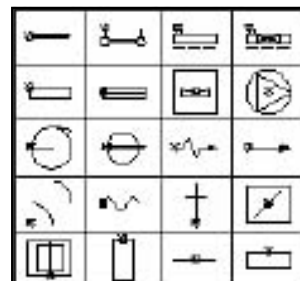
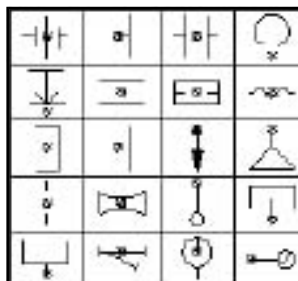
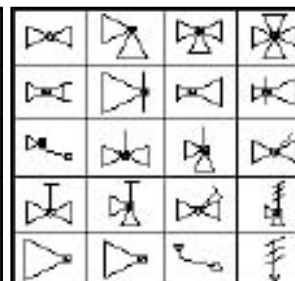
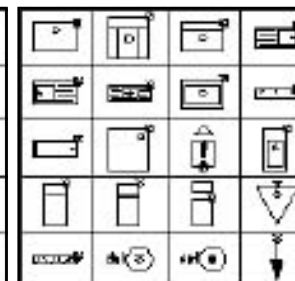
A drawing is properly oriented when it is held so that the north arrow shown on the drawing is pointing toward north. Construction electricians sometimes find themselves standing in open ground with only a drawing and an area staked off which tells them where to start shovelling for an underground conduit run.

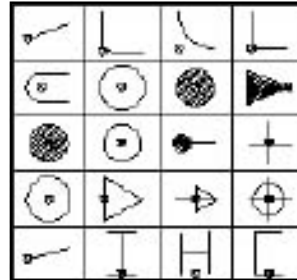
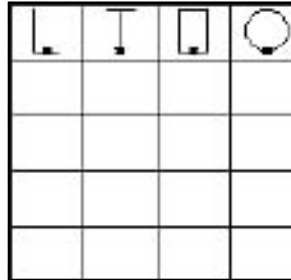
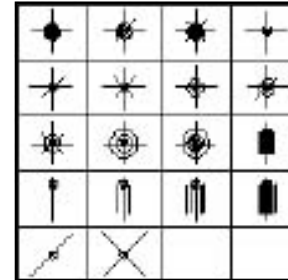
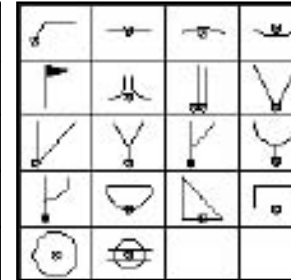
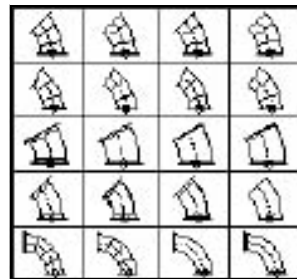
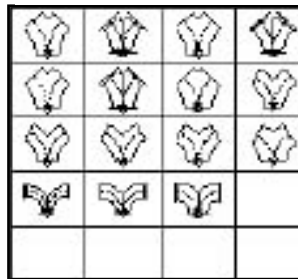
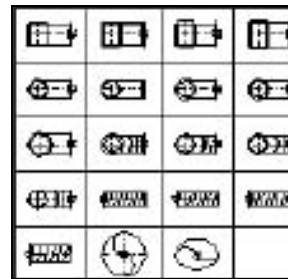
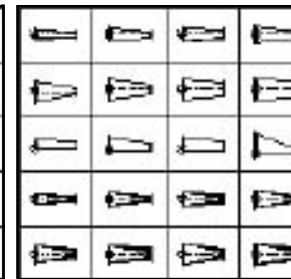
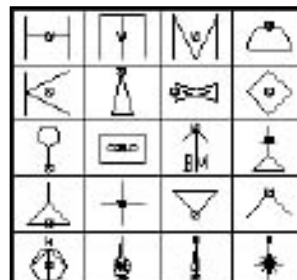
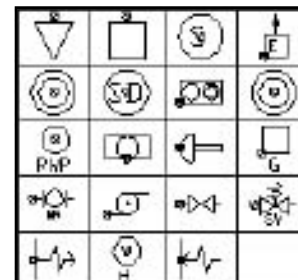
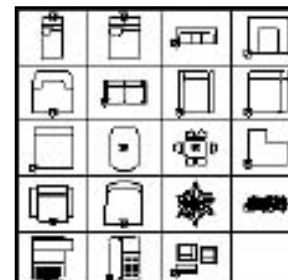
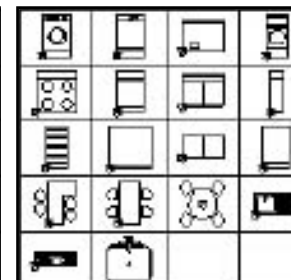


Understanding common standard symbols, such as the north arrow mentioned above, is a must for someone who expects to do well in construction work.

Although the following tables show some of the most common standard symbols, these are by no means the only ones you will see in your work. Sometimes the architect or engineer who developed the drawing may have created a symbol for a particular component or device.

Internal Walls	External Walls Timber Frame	External Walls Timber Frame	External Walls Timber Frame

SAMPLE ONLY**Electrical
Supply****Electrical
Switches****Electrical
Switches****Electrical
Lighting****Electrical
Communications****Electrical
Power****Electrical
Miscellaneous****Piping
Air Equipment****Piping
Ducting****Piping
Fittings****Piping
Valves****Piping
Sanitary****SAMPLE ONLY**

SAMPLE ONLY**Structural
Bars****Structural
Sections****Structural
Bolts****Structural
Welds****Piping
Bends****Piping
'Y' Sections****Piping
Ends****Piping
Reducers****Datums****Fire Symbols****Furniture****Kitchen****SAMPLE ONLY**

SAMPLE ONLY

Piping Sanitary				Piping Sanitary				Piping Sanitary				Piping Branches			

For various reasons, some of the symbols on a drawing may not be standard. Many times you will figure out what a symbol means by analysing it and thinking about what it looks like.

















The legend on a drawing should show any non-standard symbols and their meanings.

SAMPLE ONLY

LEGENDS

Construction and/or building drawings tend to include numerous abbreviations and symbols to describe certain aspects of the drawing. In many cases there will be a 'legend' embedded on the drawing to assist the reader to interpret the symbols and abbreviations. There may be such legends for heating systems, door swings and sizes, or even to specify certain finishes.

Below is an example of an electrical legend.

ELECTRICAL SYMBOL LEGEND	
	STANDARD LIGHT
	STANDARD SWITCH
	3-WAY SWITCH
	FAN LIGHT
	REC. FAN
	CHANDELIER
	BREAKER PANEL
	CABLE HOOK-UP
	TELEPHONE JACK
	THERMOSTAT
	DOORBELL
	SMOKE DETECTOR
	STANDARD OUTLET
	GFCI OUTLET
	220 OUTLET
	CEILING OUTLET

LINE SIZES AND TYPES

Lines and line styles are the most significant communication element of a drawing. A single style of line would be too confusing, so draftspersons use a variety of lines thicknesses and line styles to show details and features on the drawing.

For most construction drawings you will require two thicknesses, a thick and thin line. The general recommendation is that thick lines are twice as thick as thin lines.

- ☆ A thick continuous line is used for visible edges and outlines. These lines are drawn so that the views stand out clearly on the drawing with a definite contrast between these lines and other secondary lines.

————— **Thick line**

- ☆ A thin line is used for hatching, leader lines, short centre lines, dimensions and projections

————— **Thin line**

Other line styles are used to clarify important features on drawings are:

- ☆ Thin chain lines are a common feature on drawings used to indicate centre lines. Centre lines are used to identify the centre of a circle, cylindrical features, or a line of symmetry.

— . — . — . — . — . — . — **Chain/centre line**

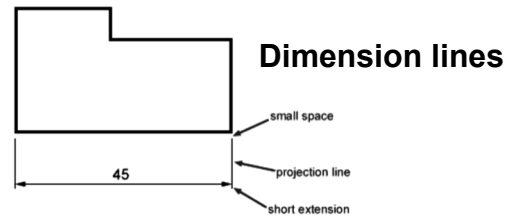
- ☆ Dashed lines are used to show important hidden detail for example cupboards, supporting beams, etc.

- - - - - **Dashed line**

- ☆ Phantom lines consist of long dashes separated by pairs of short dashes. Phantom lines show positions of sections or features such as a roofline.

— . . . — . . . — . . . — . . . — **Phantom line**

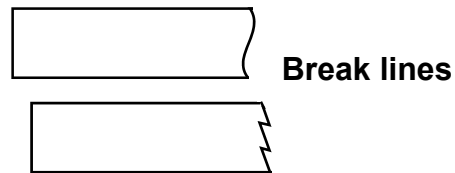
- ☆ Projection and dimension lines show the dimensions of a drawing. These include lines with arrow ends.



- ☆ Leader lines show the part of a drawing to which a note refers.

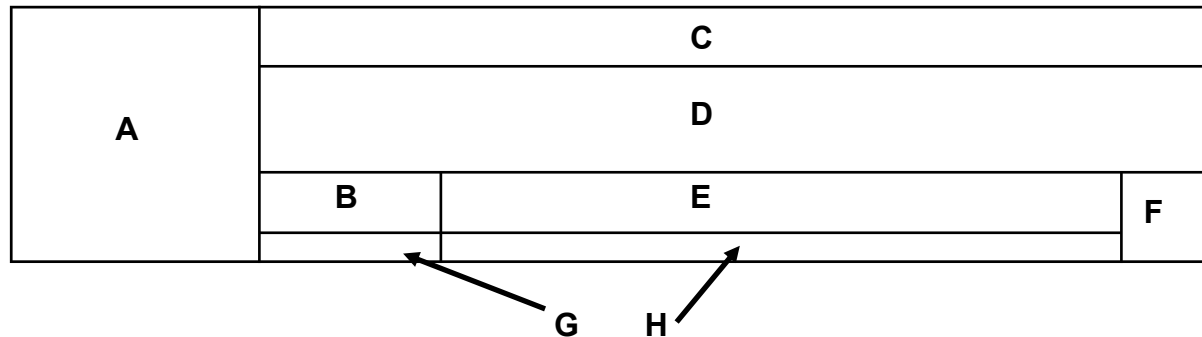


- ☆ Break lines shorten the view of long uniform sections or when you need only a partial view.



**Learning
Activity****SAMPLE ONLY****Task****LEARNING ACTIVITY THREE**

Below is the illustration we used to describe the basic elements of a drawing's 'title box'. For each label tell us what the name of the element is.



A

B

C

D

E

F

G

H

SAMPLE ONLY

SAMPLE ONLY**TEACHER/TRAINER GUIDANCE NOTES**

- A** A record of the information relative to the preparation of the drawing.
- B** A project number, job number, etc.
- C** The name of the architect or design company goes here
- D** The title or name of the project
- E** The drawing number
- F** The drawing sheet size
- G** The scale of the drawing
- H** The sheet number for multi sheet drawings (also used for the first revision)

SAMPLE ONLY

**Learning
Activity****SAMPLE ONLY****Task****LEARNING ACTIVITY FOUR**

Based on the information provided in this section, tell us what each of the following abbreviations represents.

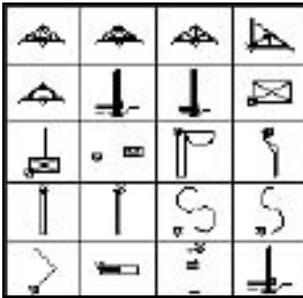
DP _____**SEW** _____**BRR** _____**PBD** _____**SWD** _____**CW** _____**BV** _____**TEACHER/TRAINER GUIDANCE NOTES**

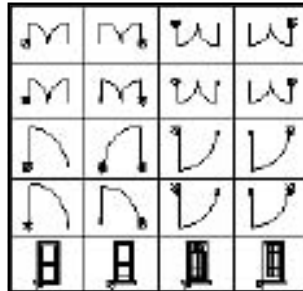
DP—Down pipe
SEW—Sewer
BRR—Bearer
PBD—Plasterboard
SWD—Stormwater drain
CW—Cold water
BV—Brick veener

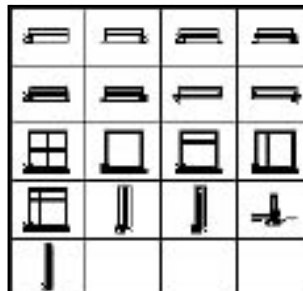
SAMPLE ONLY

**Learning
Activity****SAMPLE ONLY****Task****LEARNING ACTIVITY FIVE**

Tell us what each group of symbols represent.

1

2

3

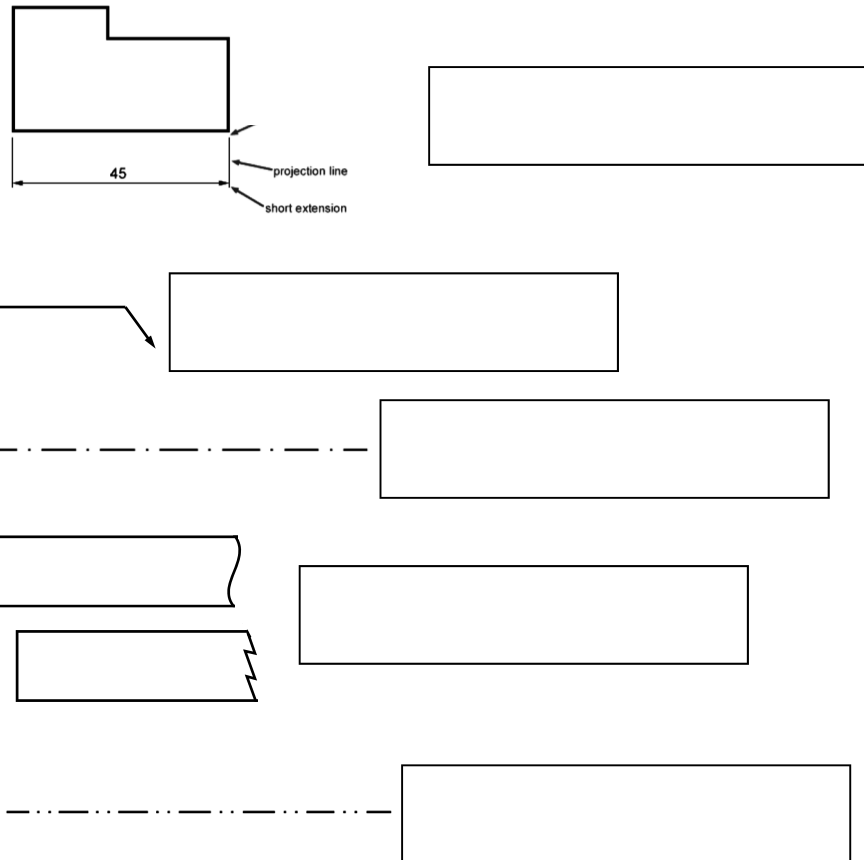
TEACHER/TRAINER GUIDANCE NOTES

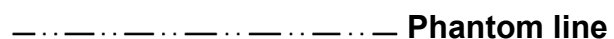
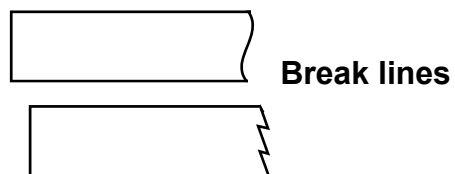
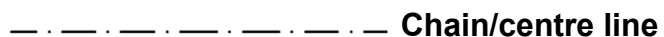
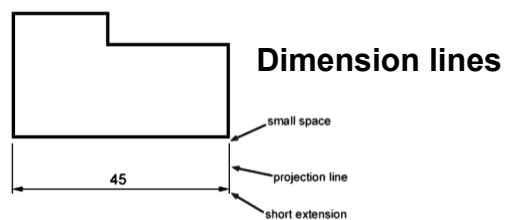
- 1—Roof trusses
- 2—Doors
- 3—Windows

SAMPLE ONLY

**Learning
Activity****SAMPLE ONLY****Task****LEARNING ACTIVITY SEVEN**

Tell us what the name of each line type is.

**SAMPLE ONLY**

TEACHER/TRAINER GUIDANCE NOTES

Section Two

Check the Amendment Status of Plans and Specifications

READ AND INTERPRET PLANS AND SPECIFICATIONS

SECTION TWO—CHECK THE AMENDMENT STATUS OF PLANS AND SPECIFICATIONS

INTRODUCTION

It is inevitable that all construction drawings or plans will have some changes made to them. These are called 'revisions' and in this section we review revisions.

SECTION LEARNING OBJECTIVES

At the completion of this section you will learn information relating to:

- ☆ Checking amendments to plans and specifications to ensure currency of information and reporting to others as required
- ☆ Checking title panels on plans and specifications to verify latest amendments are included and reporting to others as required

This is the end of this sample

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