Carpentry

Level-II

Learning Guide-20

Unit of Competence: Read and Interprets plans and specifications

Module Title: Reading and Interpreting plans and specifications

LG Code: EIS CRP2 M05 LO5-LG-20

TTLM Code: EIS CRP2 M05 TTLM 0919v1

LO 5: Identify project requirements

Instruction Sheet	Learning Guide 19

This learning guide is developed to provide you the necessary information regarding the following **content coverage** and topics:

- Identifying dimensions for project and nominated locations.
- Identifying construction types and dimensions for nominated locations
- Identifying environmental controls and locations
- Identifying location, dimensions and tolerances for ancillary works

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, **upon completion of this** Learning **Guide, you will be able to**:

5.1 Dimensions for project and nominated locations are identified.

5.2 Construction types and dimensions for nominated locations are identified.

5.3 Environmental controls and locations are identified.

5.4 Location, dimensions and tolerances for ancillary works are identified

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below 3 to 6.
3. Read the information written in the information “Sheet 1 to Sheet 4”.
4. Accomplish the “Self-checks respectively.
5. If you earned a satisfactory evaluation from the “Self-check” proceed to “Operation Sheets**.**
6. Do the “LAP test (if you are ready).

Information Sheet-1	Dimensions for project and nominated locations are identified.

5.1 Dimensions for project and nominated locations are identified.

5.1.1 Introduction to Dimensions for project

Dimensions are a very important part of construction drawings. Without them, no-one would know what size anything should be. In this section, we'll look at some of the different types of dimensions and how they are shown in drawings. A good designer or draftsperson will make sure that a drawing has all the information needed about the length, width and height of everything that is to be built.

Length and width are usually indicated with rows of 'dimension lines' that align with the various features of the drawing. Alternatively, there might be a note near the feature – for example, '830 wide ×full height opening'.

- **Units and terms**

In Australia, the metric system is used for all construction dimensions. Dimensions on drawings are shown either as millimeters or as meters, although the suffixes for these (mm or m) are rarely shown. This doesn't cause confusion, as it should be obvious which is meant – a bedroom shown as 3200 wide is not going to be 3200 meters! Centimeters aren't used in plans, with the exception that a tree may be shown on the site plan as '40 cm girth'. (It may be a requirement of the contract that some existing trees on the block are to be left untouched.) Dimensions in millimeters can be shown with or without a thousand separator, such as a comma or space. For example 3200, 3 200 or 3,200 can be used. Meters are shown with a decimal point. They may show one, two or three decimal places. For example, the width of the building block may be shown on the site plan as 35.0, 35.00 or 35.000 (which all mean the same thing).

Occasionally other ways of showing sizes may be used. For example, windows in a brick building can be shown as brick courses high × bricks wide, such as 12 c × 4.5. This will make perfect sense to a bricklayer (and to you when you're more familiar with the jargon used in the industry). 'Length', 'width' and 'height' are terms used as usual, but the term 'depth' can have a different meaning when used with building sizes. It can mean the distance from the front to the back of something. For example, a block of land that measures 35.0 m by 55.0 m would be described as 35.0 wide by 55.0 deep, although we would also say that the side boundary is 55.0 long. When we are writing the dimension of length, width and thickness of wooden materials we have to write it in order of (thickness, width and length). For example (2X20X200) cm, i.e. 2cm thickness, 20cm width and 200 cm length.
Depth is also used to describe fitments such as cupboards and wardrobes – a 600 deep cupboard indicates that it is 600 mm from front to back.

Self-Check -1	Written Test

Directions: choose the correct Answer for the questions listed below. Use the Answer sheet provided in the next page:

1. Without Dimensions no-one would know what size and anything should be.
2. Writing note is not necessary on the plan of drawing.
3. When we are writing the dimension of length, width and thickness of wooden materials we have to write it in order of (thickness, width and length) respectively.

Note: **Satisfactory rating - 3 points** **Unsatisfactory - below 3 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

True or False question

1. ----------
2. ----------
3. ----------

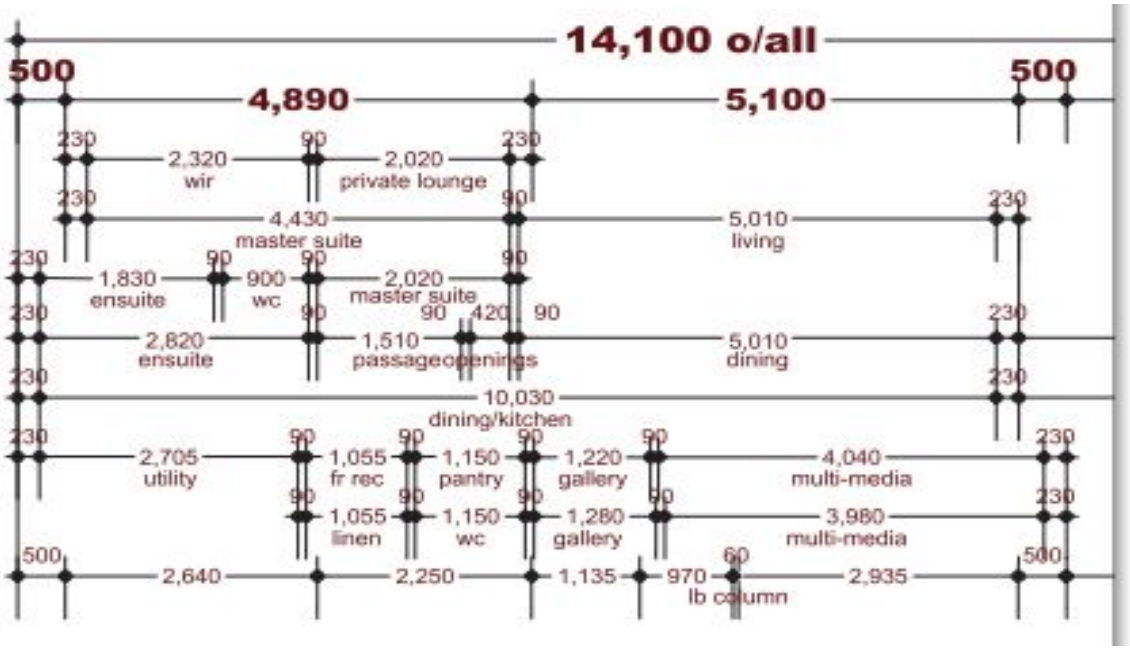
Information Sheet- 2	Identifying construction types and dimensions for nominated locations

5.2. Identifying construction types and dimensions for nominated locations

5.2.1 Representing dimensions

At first glance, the rows of dimensions on the floor plan of a house may look confusing. To make the dimensions easier to find and read, the draftsperson has labeled some of them. Buildings with a simpler layout may show just the dimensions without the labels. If you're not sure which dimension a wall lines up with, use a ruler or other straight edge to make it easier to check

Note that the dimension style used in the figure below uses large dots as the terminators of a dimension (to show where it starts and stops). Other drawings might use arrows or slashes as terminators, as shown here.



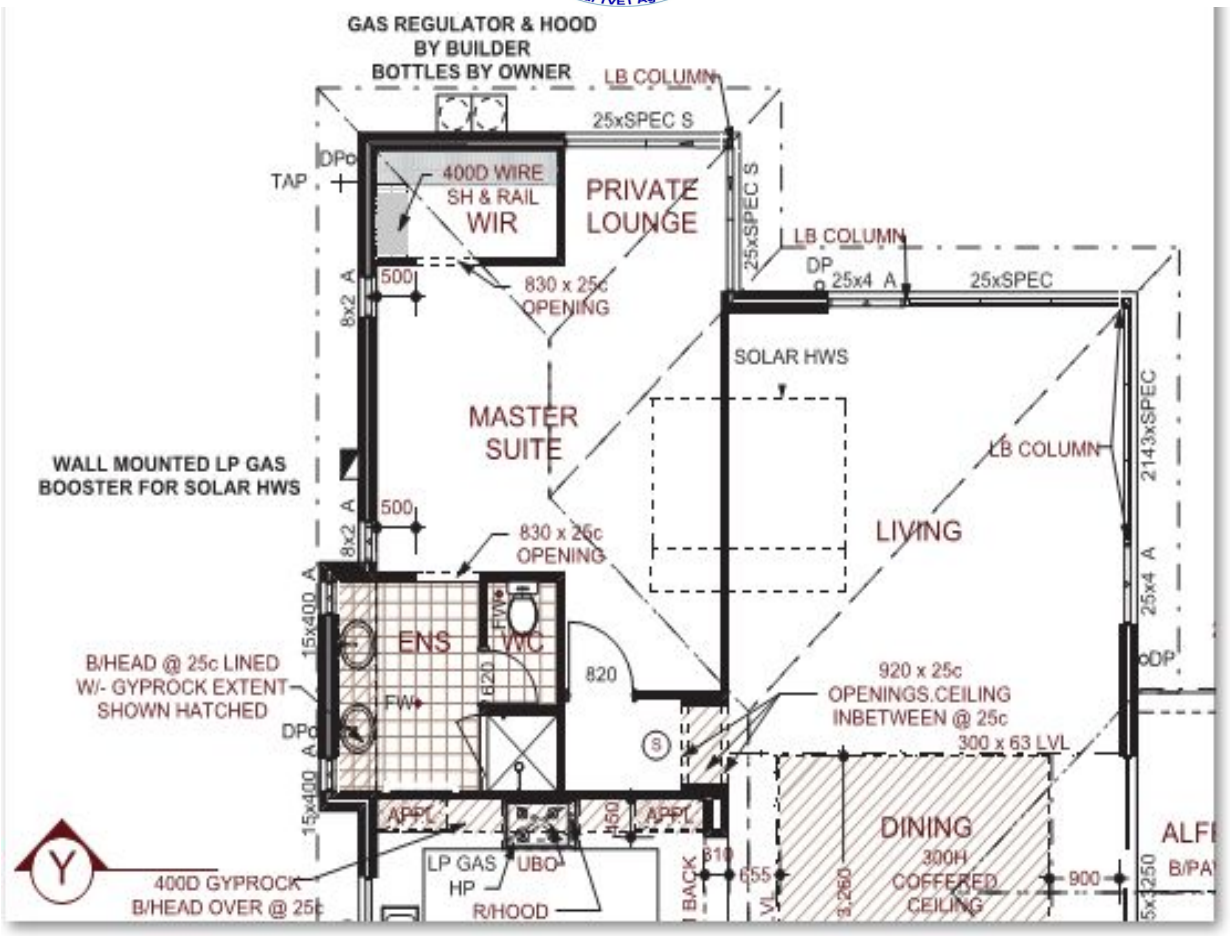


Figure Part of a floor plan and the related dimensions.

5.2.2 Reduced levels

Reduced levels indicate heights on a drawing. They are usually shown to two decimal places only – that is, to the nearest 10 mm.
Reduced levels may have ‘RL’ in front of them to show that the figure represents a reduced level, for example RL 12.65. Another draftsperson might put them in a little box instead, like this:

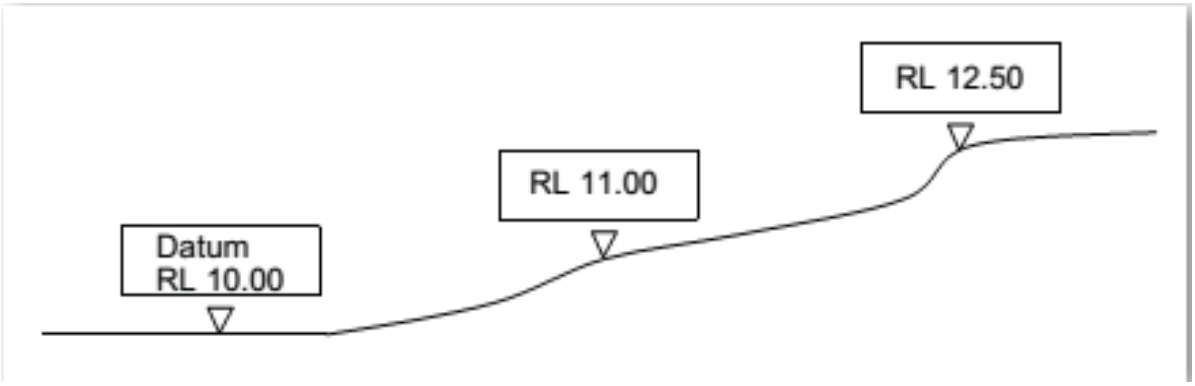
12.65

A reduced level on a drawing indicates the height of that point relative to a given reference point. This reference point is called the job datum (or sometimes the temporary benchmark or TBM) and is a fixed, un movable point for the project. It may be marked by a nail driven into a metal plate on the kerb at the front of the block, or even a nail in the road. It will be given a height value by the architect and all points on the site can be related in height to this point (ie above or below).

The RL of the job datum is often an arbitrary number decided by the architect or surveyor, and is usually a nice round number such as 10.00 or 20.00.

The job datum is never given a value of 0.00. Do you know why?

The job datum may sometimes be related to the national survey scheme and have an RL that reflects this.



5.2.3 Scale

Just about every drawing used in the construction industry is drawn to scale. A small but important detail may be drawn full size – that is, at a scale of 1:1 – but this is quite rare.A standard range of scales is used, ranging from 1:2 (the drawing is half of the real-life size) down to 1:500 (the drawing is one-five-hundredth of the real-life size). The scale the draftsperson will use will depend on what needs to be shown in the drawing and the

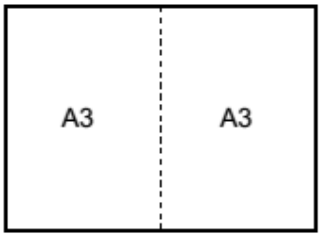
5.2.4 Paper sizes

It's obviously not practical to draw a building at full size, so a suitable scale and paper size must be chosen. We use the metric system of paper sizes. It's a logical system (except that the bigger the number, the smaller the paper!). See if you can work it out by stating the size of the sheets of paper shown below.

This guide you are reading is A4 size. (The size of normal paper)

A sheet twice as big is A3 size.

A sheet twice as big as that is A2 size . . . and so on.



Most drawings in the residential sector of the industry are on A3 or A2 size paper. There are also A1 and A0 sizes (A0 paper is quite large – 841 mm × 1189 mm). These are sometimes used on projects where the whole floor plan of a large building needs to be shown on a single sheet.

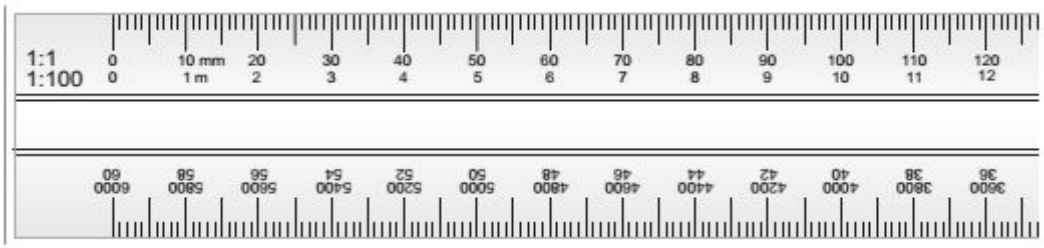
5.2.5 Interpreting scaled drawings

Scale is depicted as a ratio. An example is 1:10, which is spoken as 'one to 10' or 'one in 10'. This means that at that scale, each millimeter on the drawing represents the 10 millimeters on the building. The scale of a drawing is chosen so that it can show the builder sufficient detail for the building to be constructed the way the architect or designer wants.

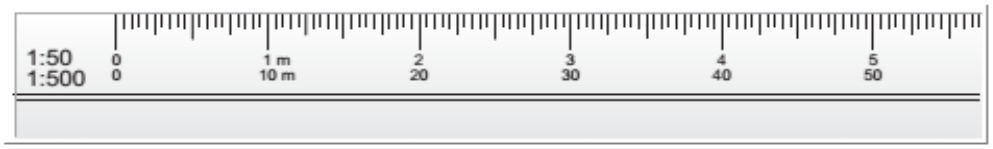
You should always use the written dimensions when getting sizes from drawings, unless there's a very good reason not to. On a well-drawn set of drawings, all the sizes the builder needs will be written somewhere on the drawings. Occasionally, however, if a required dimension is not written, the tradesperson will need to 'scale' from the drawing. This means that a scale rule is used to measure directly from the drawings

- **Using a scale rule**

Scale rules are usually white and made of plastic. They have a different scale printed along each edge. Some have a single scale per edge, and others have two scales combined on one edge. Different brands may vary in the way the scales are grouped. A scale rule can be triangular shaped or flat, like a standard ruler. On the top edge of the rule below, the scales are 1:1 and 1:100, so the dimensions they show differ by a factor of 100.

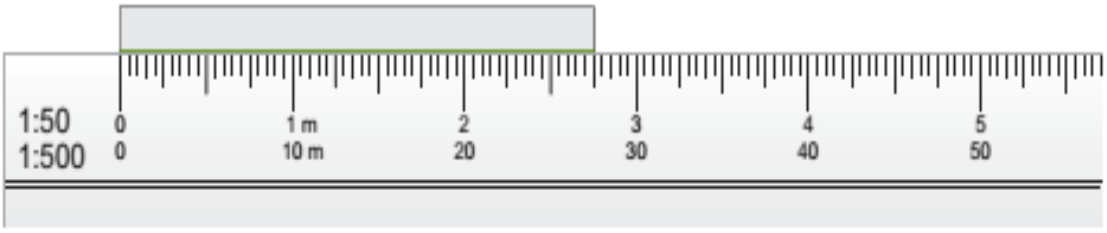


Another scale rule edge is shown below. In this case, the dimensions differ by a factor of 10 (1:50 is 10 times larger than 1:500).



Why do you think the manufacturer has put more than one scale on each edge of the rule?

To measure something to scale, put the zero mark on the left-hand edge of what you are measuring, and read the length at the right-hand edge, as shown below.



Occasionally you may need to draw something yourself in order to explain part of the construction to an employee or subcontractor. Knowing how to use a scale rule will enable you to do it accurately.

Self-Check -2	Written Test

Directions: Saying True or False for the questions listed below. Use the Answer sheet provided in the next page:

1. When we uses large dots on the dimension line it is said to be:
   A. As the terminators
   B. To show where it starts
   C. To show where it stops
   D. All of the above
2. Reduced levels may have ---------- in front of the number to show that the figure represents a reduced level
   A. rl
   B. RL
   C. RedLev.
   D. Rl
3. Which paper size indicate the size of normal size paper
   A. A4 size
   B. A3 size
   C. A2 size
   D. A1 size
4. Scale rules are usually made of
   A. White and metal
   B. White and steel
   C. White and plastic
   D. White and rubber
5. What means that the scale 1:10 ratio
   A. 1mm in the drawing 10 mm on the ground
   B. 1mm on the ground 10 mm in the drawing
   C. Both 1mm and 10mm in the drawing
   D. Both 1mm and 10mm on the ground

Note: **Satisfactory rating - 3 points** **Unsatisfactory - below 3 points**
You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

1. ----------
2. ----------
3. ----------
4. ----------
5. ----------

Information Sheet-3	Identifying environmental controls and locations

5.3 Identifying environmental controls and locations

5.3.1 Environmental Protection Works

The environment has been defined to mean surrounding area including human and natural resources to be affected by execution and after completion of works. The Contractor shall take all precautions for safeguarding the environment during the course of the construction of the works. He shall abide by all prevalent laws, rules and regulations governing pollution and environmental protection. The Contractor shall prohibit employees from unauthorized use of explosives, poaching wildlife and cutting trees. The Contractor shall be responsible for the action of his employees. The Contractor is expected to arrange and execute the Works in such a way that existing environmental conditions are not deteriorated. Borrow pits and dumping sites used by the contractor shall be reinstated at his own cost by grass and/or tree plantation. Written instruction/approval must be given to seek from the Engineer regarding protection and reinstatement of environment throughout the Contract period. Failure in compliance with Engineer's instructions in respect of overall standard will lead to reduction or withhold of payment. Further, any serious deterioration in the environment including pollution attributable to Contractor as determined by the Engineer, may result in deduction of actual expenditures incurred in their reinstatement done through separate agency, from any money due to the Contractor.

Self-Check -3	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. The environment has been defined to mean surrounding area including human and natural resources to be affected by execution and after completion of works.
2. The Contractor shall not be responsible for the action of his employees.
3. The Contractor is expected to arrange and execute the Works in such a way that existing environmental conditions are not deteriorated

Note: **Satisfactory rating – 3 and 4 points** **Unsatisfactory - below 3 and 4 points**
You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

True or False question

1. ----------
2. ----------
3. ----------

Information Sheet-4	Identifying location, dimensions and tolerances for ancillary works

5.4. Identifying location, dimensions and tolerances for ancillary works

5.4.1 Ancillary work

means so much of any of the authorized development as is situated on, over, across, or under BPC's land and comprises fencing and lighting measures in relation to permanent buildings, structures and apparatus

(a) And in relation to temporary working areas and construction compounds; piling;
(b) The erection and use of scaffolding;
(c) Temporary works (including erecting temporary buildings) and mitigation works,
(d) Including, without limitation, the provision and maintenance of landscaping and replacement planting pursuant to this Order; and those parts of Work No.4P comprising excavations for the purpose of installing
(e) Underground electric and/or fiber optic cables, the installation of underground ducts and backfilling of excavations;

Ancillary work also means work associated with the main work of repair, removal or disturbance of asbestos. Work carried out in an ancillary capacity requires a license unless the main work (ie the removal, repair, disturbance activity) would result in worker exposure which fulfils the conditions for regulation 3(2) to apply. 'Ancillary work' includes the maintenance of equipment which is, or could be, contaminated with asbestos, eg, Class H vacuum cleaners (BS EN 603359) and air extraction equipment (which includes 'negative pressure' units). Paragraph 188 of this ACOP provides more information. 'Negative pressure' refers to air pressure within an enclosure being lower than that outside it. Ancillary work also includes putting up and taking down scaffolding, including any scaffold frame, to provide access for licensable work where it is foreseeable that the scaffolding

5.4.2 Ancillary area (location)

An ancillary area of a building is an area that supports the function/s of the primary areas, that is, it is not part of the primary purpose of the building, but is required in order that the primary purpose can function.

Examples of ancillary areas include:

- Plant rooms.
- Cleaners' rooms.
- ICT rooms.
- Building services rooms.
- Storage rooms.
- Circulation spaces.

In shared buildings, an ancillary area might support more than one occupant, e.g. a shared kitchen, meeting spaces, utility areas, and so on.

In residential buildings, ancillary areas include spaces which do not form part of the main dwelling directly, but nonetheless add some useful value, e.g. patio area, office, garage, conservatory, porch, utility room, and so on.

Self-Check -4	Written Test

Directions: Say True or False all the questions listed below. Use the Answer sheet provided in the next page:

1. Ancillary work means main works such as structural and slab works
2. In residential buildings, ancillary areas include spaces which do not form part of the main dwelling directly.
3. The erection and use of scaffolding was taken as ancillary works.

Note: **Satisfactory rating – 3 points** **Unsatisfactory - below 3 and 4 points**
You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

True or False Questions

1. ----------
2. ----------
3. ----------

Table of Answer keys for the self checks provided on each information sheets

UNIT OF COMPETENCY: Read And Interpret Plan And Specification							
LO: 5 LG: 20 Identify project requirements.							
Self check: 1		Self check:2		Self check:3		Self check:4	
True or False		Multiple choice		True or False		True or False	
1	True	1	D	1	True	1	False
2	False	2	B	2	False	2	True
3	True	3	A	3	True	3	True
4		4	C	4		4	
5		5	A	5		5	

List of Reference Materials

- Design drawings and technical specifications AUTHORS: Rod Davis and Ross Stafford
- Designing Buildings
- Architectural Working Drawings8Ch
- Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices
- Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring By Devices Henry V. Oppermann, Chief NIST Weights and Measures Division Gaithersburg, MD 20899-2600
- Ethiopian Building Cod Standards ministry of work and urban development
- **Engineering drawing abbreviations and symbols**
- From Wikipedia, the free encyclopedia
- READ AND INTERPRET PLANS AND SPECIFICATIONS CERTIFICATE II IN BUILDING AND CONSTRUCTION (PATHWAY – PARAPROFESSIONAL) CPCCCM2001A LEARNER'S GUIDE on BUILDING AND CONSTRUCTION

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