

Design and plan blocks — tutor notes

In this section, students:

- work out how many blocks they need for a job
- identify the foundations and any reinforcement they need
- learn when they must ask for help with a plan.

Work with students through each part of the workbook notes.

In addition:

Talk about — The need for advice and assistance

It is **very** important that students understand the limits of what they learn on this course. Here they learn only about simple, small — scale jobs such as low walls, or the bases for sheds or water tanks.

Larger scale or commercial jobs **need expert knowledge and skill** to calculate the loads and stresses involved and to decide on the correct design and construction.

Make sure students understand that they need expert assistance for any larger or safety related work.

This course suggests the following restrictions:

Students **must** have **expert** help in the design and planning for any block wall over 1 metre high or 5 metres long

They **must** have **qualified engineering** plans:

- for walls over 1.5 metres high or 10 metres long
- walls for any house or work building.

Talk about the need for government permits or local authority approvals for plans. This varies from country to country — check what is required in your place.

Talk about — Reinforcing

The section on reinforcing is very simple. Talk to the students about reinforcing steel rods and what they do.

The design and placement of steel reinforcing in a structure needs expert and/or engineering advice that is outside the scope of this course.

Make sure the students understand the need for reinforcing in structural work:

- Tying to reinforcing in the slab or foundations
- About every 300mm along a wall
- Along the wall about every 1metre in height.

Make sure the students understand that they **must** have expert assistance and plans.

Talk about — Foundations

The section on foundations is also very brief.

The size and depth of foundations very much depends on local soil and rock types, local regulations, and the size and purpose of the block work. This course cannot give a generalised and **safe** guide to all foundations.

Explain this very simply to students and give them typical examples of specifications (size/depth/reinforcing) for a 1.5 metre wall in your local soil and according to regulations.

Also provide the specifications for the foundations of the students' project.

Working out the type and number of blocks

Students may find it difficult to work out the number of blocks they need.

Show them how to calculate the number of blocks —

For example

length of wall	divided by	length of block(& mortar)	= number of blocks
3000mm	divided by	200mm	= 15 blocks

or

Show them how to mark the length of the wall on the ground and then place blocks along the line — leaving spaces for mortar. Then count the blocks.

Explain that they will need to cut a block to size if the wall is not an exact fit for standard blocks.

They will need the same number of blocks in each layer to get the right height.

They will need a half block in every second layer for each “end” of a wall.

Help with — estimating materials and making plans

Work with students on the activity.

For the block project they will

- Work out the number and type of blocks
- Decide on the shape and size of foundations
- Decide on reinforcing (if any)
- Draw a plan of the wall.