CONCRETE MANUFACTURERS ASSOCIATION

Quality cast in concrete

BUILD YOU HOUSE STEP BY STEP

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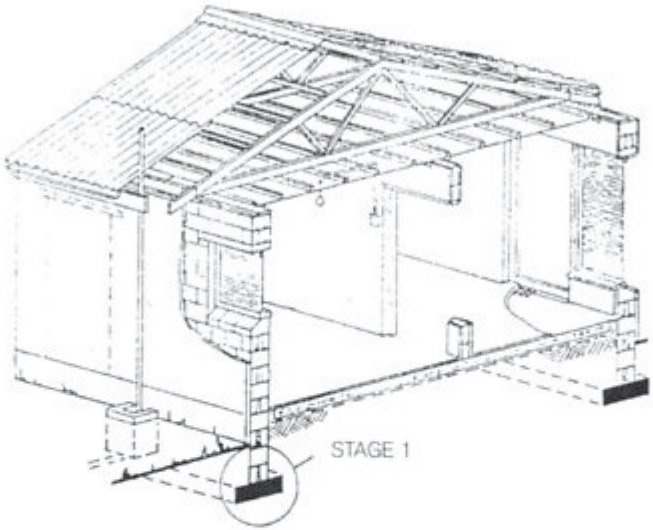
Every effort has been made to ensure the accuracy of the information given and contained herein. It is not possible for the Concrete Manufacturers Assosiation NPC to accept the responsibility for the work prepared on the basis of this publication.

STAGE 1



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WATER CONNECTION
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STEP 4
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STEP 5
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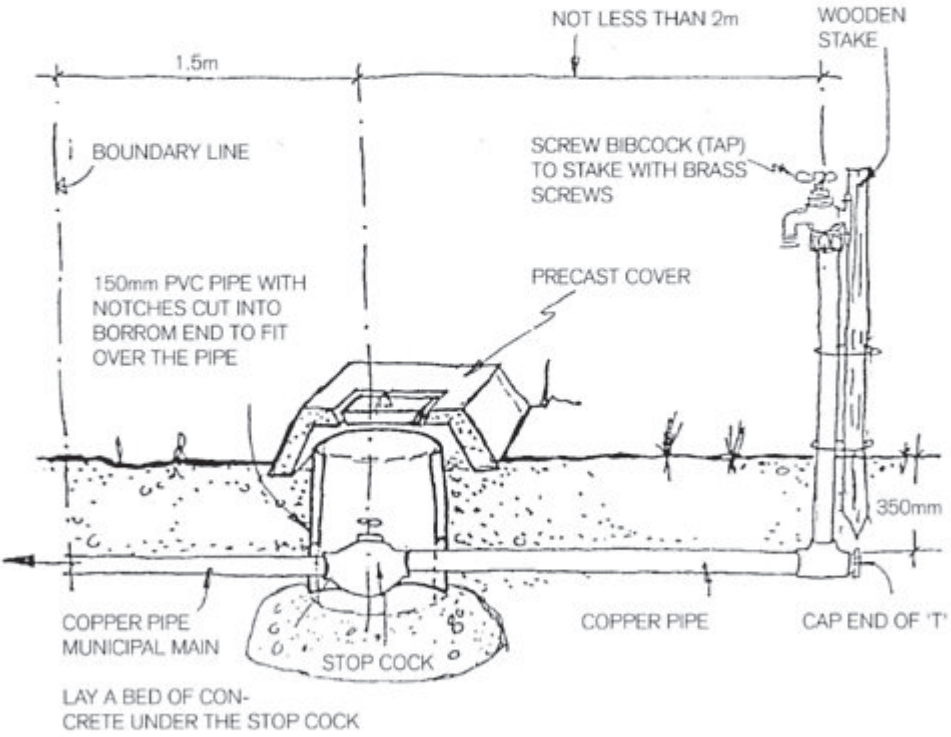
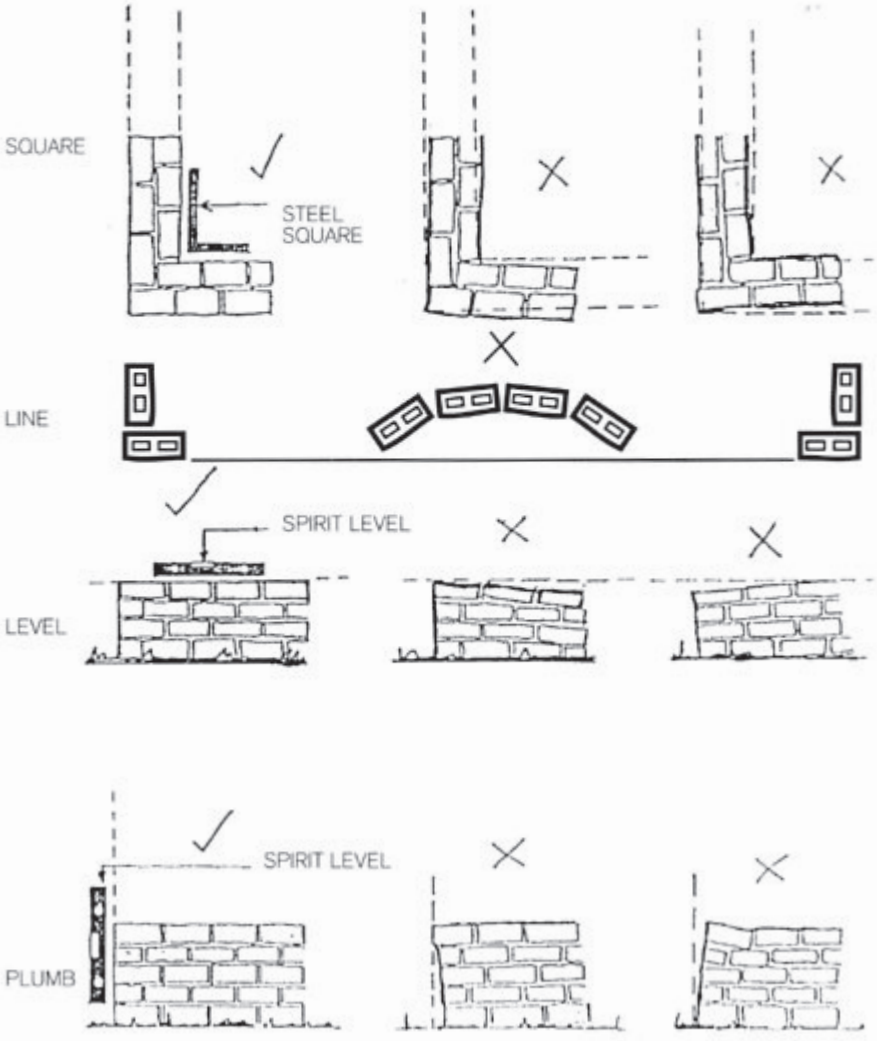
STAGE 1 : STEP 1

Water Connection



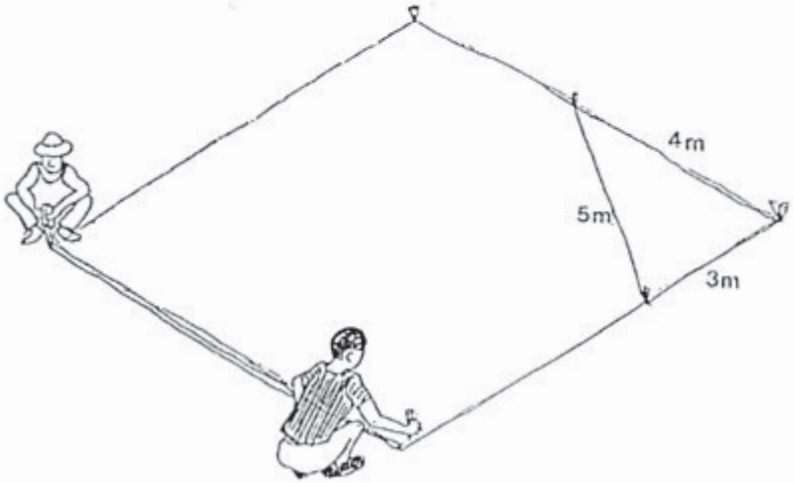
STAGE 1 : STEP 1

Building Terms



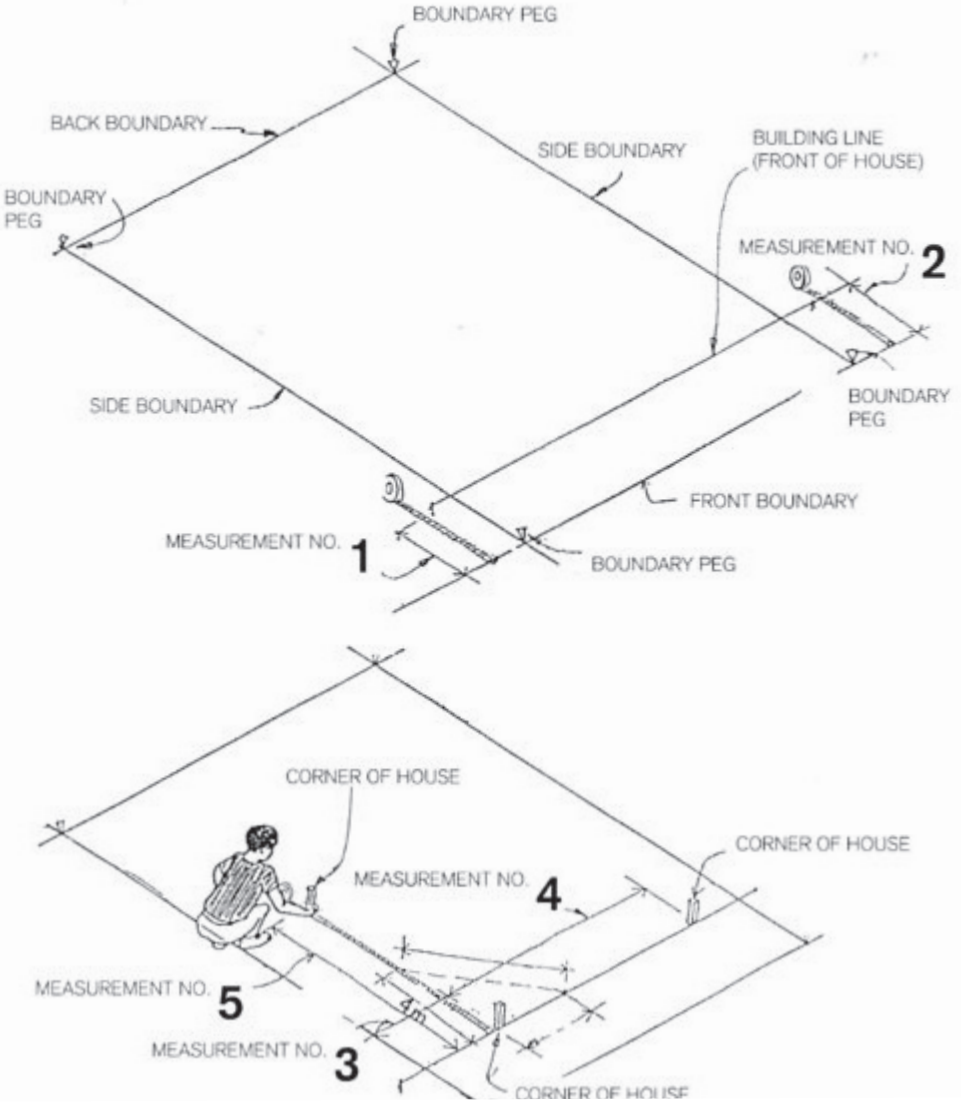
STAGE 1 : STEP 2

Setting Out the House



STAGE 1 : STEP 2

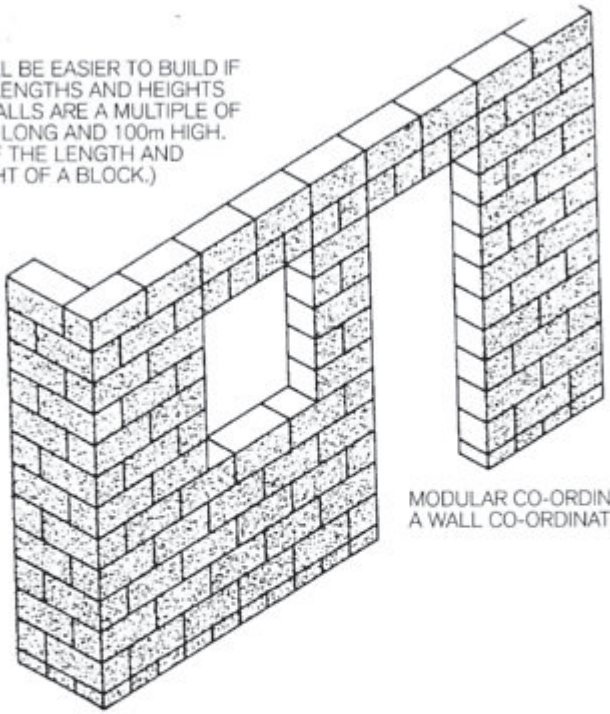
Setting Out the House



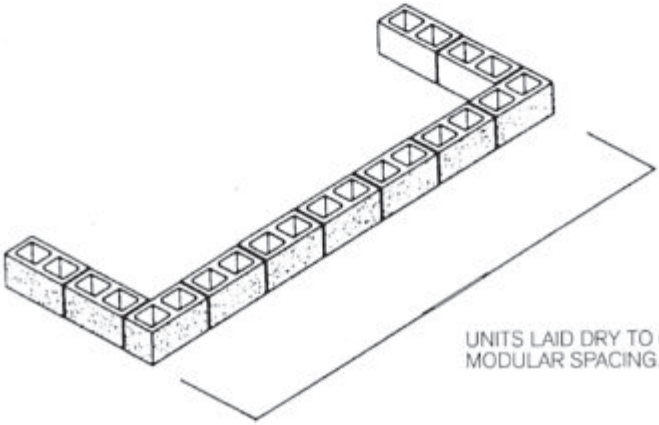
STAGE 1 : STEP 2

Modular Construction

IT WILL BE EASIER TO BUILD IF THE LENGTHS AND HEIGHTS OF WALLS ARE A MULTIPLE OF 200m LONG AND 100m HIGH. (HALF THE LENGTH AND HEIGHT OF A BLOCK.)

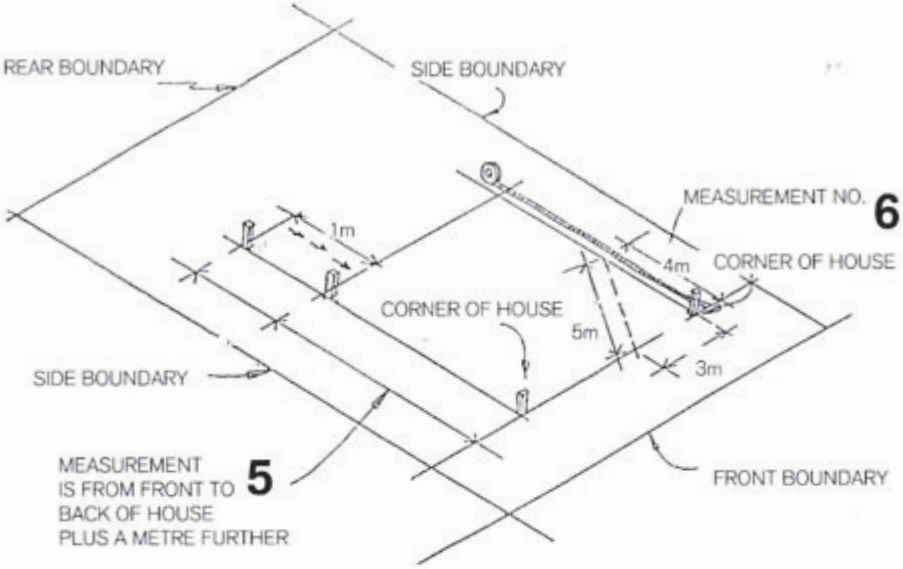


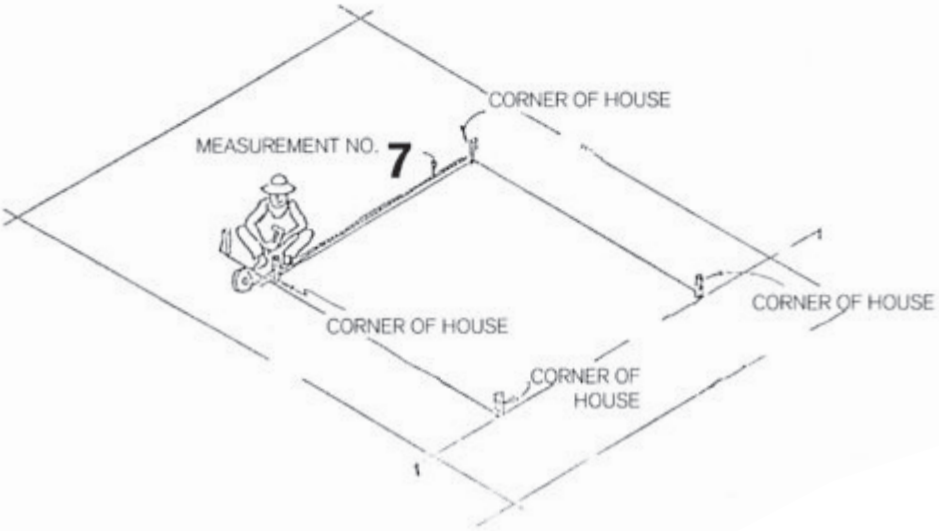
MODULAR CO-ORDINATION IN A WALL CO-ORDINATION.



UNITS LAID DRY TO CHECK MODULAR SPACING.

STAGE 1 : STEP 2

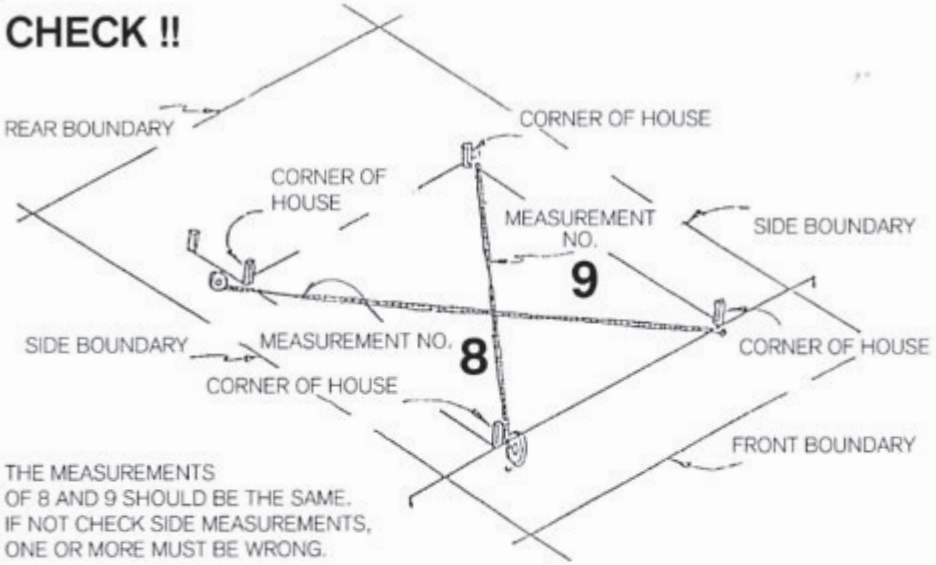




STAGE 1 : STEP 2

Checking that the House is Square

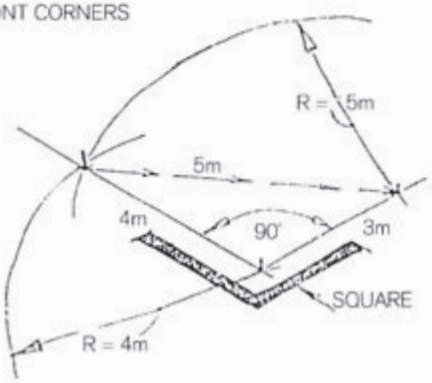
CHECK !!



THE MEASUREMENTS OF 8 AND 9 SHOULD BE THE SAME. IF NOT CHECK SIDE MEASUREMENTS, ONE OR MORE MUST BE WRONG.

DOUBLE CHECK !!

ALSO CHECK THAT FRONT CORNERS ARE 'RIGHT ANGLES.'



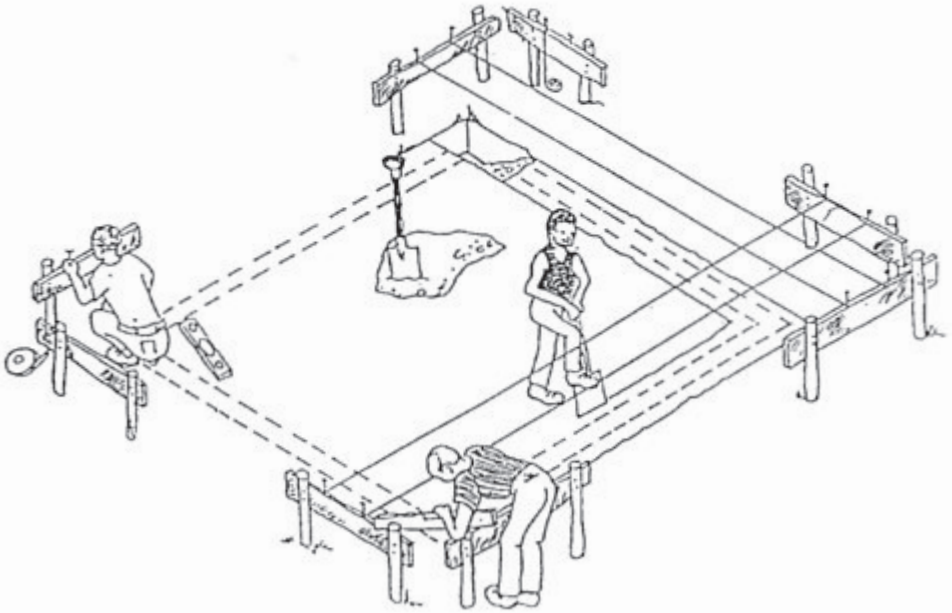
HOW TO CHECK THE RIGHT ANGLE (90°)

WHEN THESE MEASUREMENTS ARE EXACT YOU HAVE A 'RIGHT ANGLE.'

ADJUST THE SIDE ANGLE IF NECESSARY.

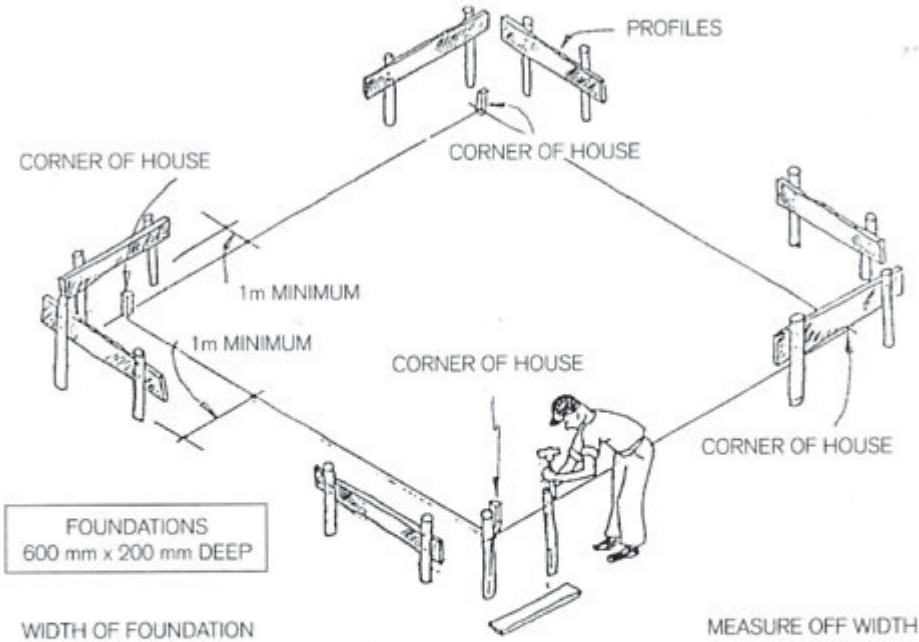
STAGE 1 : STEP 3

Making the Profiles
Setting out the Foundations



STAGE 1 : STEP 3

Making the Profiles

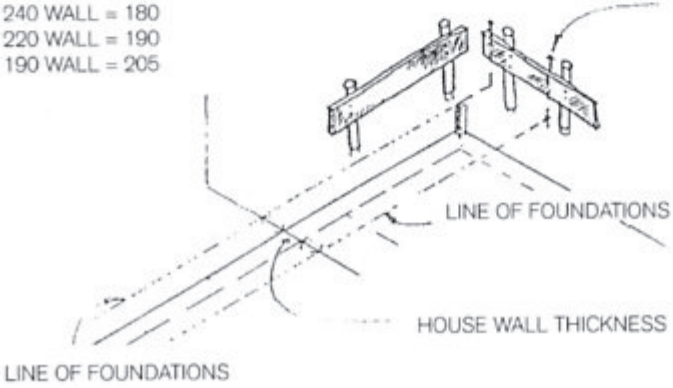


WIDTH OF FOUNDATION
EITHER SIDE OF WALL:

280 WALL = 160
240 WALL = 180
220 WALL = 190
190 WALL = 205

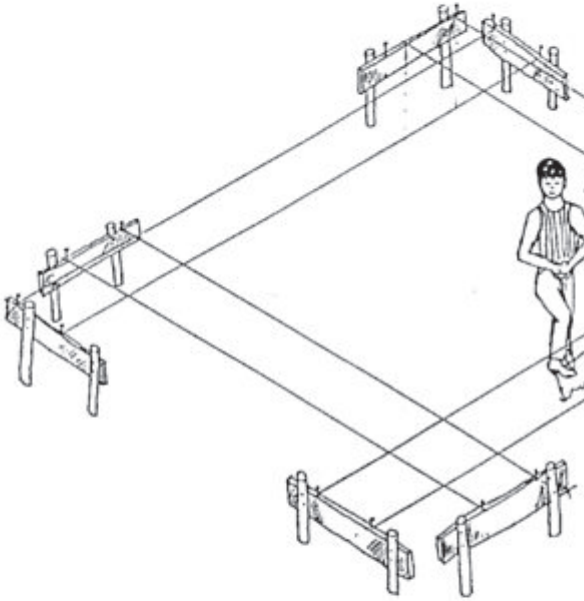
MEASURE OFF WIDTH OF FOUNDATIONS AT EACH CORNER.

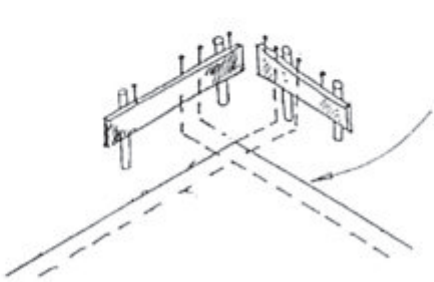
KNOCK A NAIL INTO THE TOP OF THE PROFILE FOR EACH SIDE OF THE FOUNDATION.



STAGE 1 : STEP 3

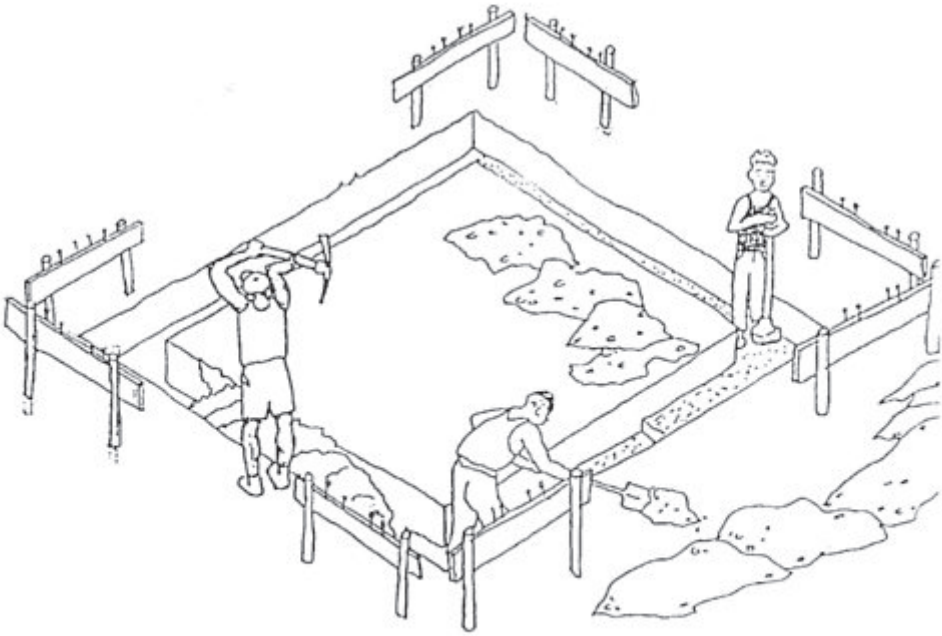
Setting out the Foundations



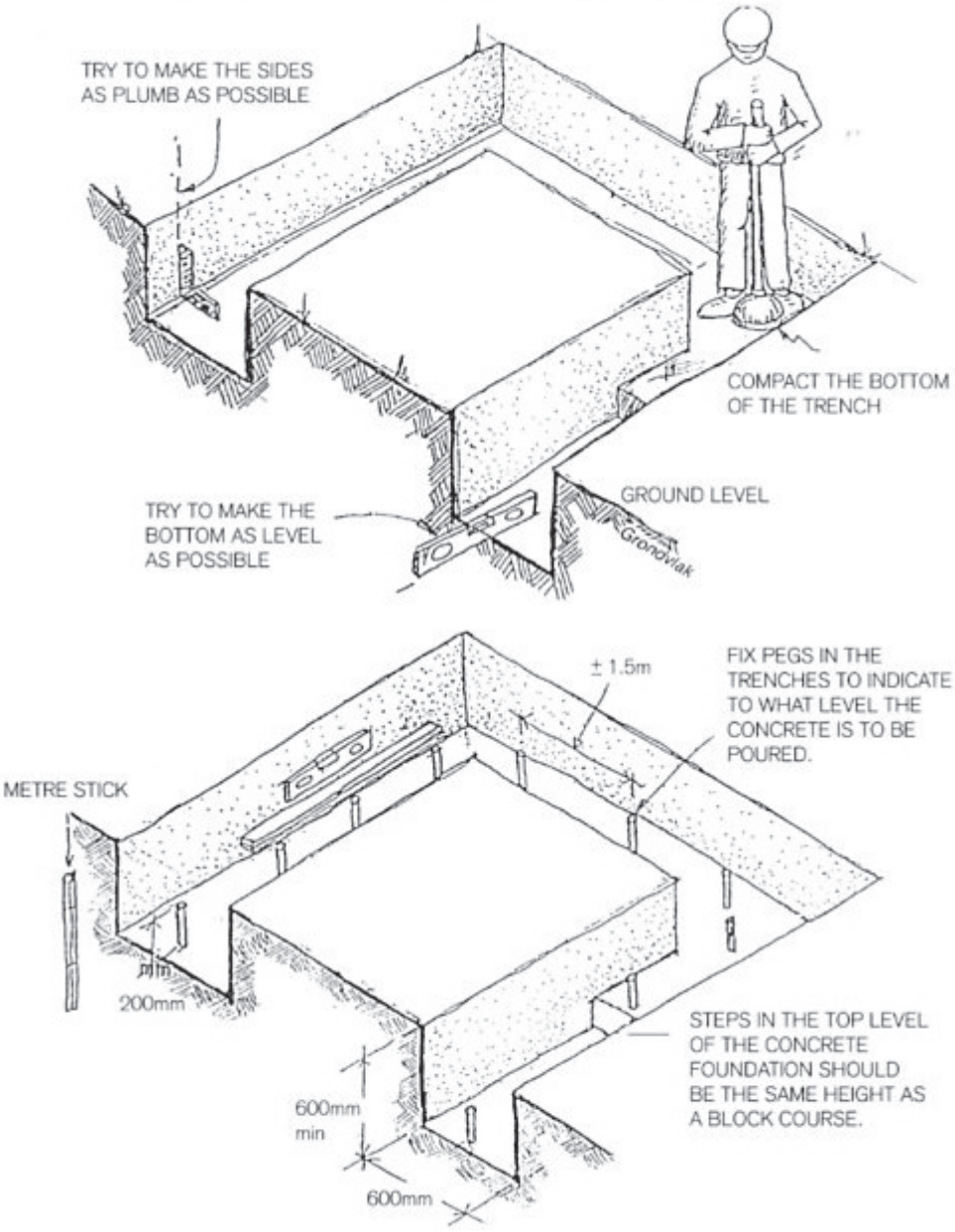


STAGE 1 : STEP 4

Digging Foundation Trenches

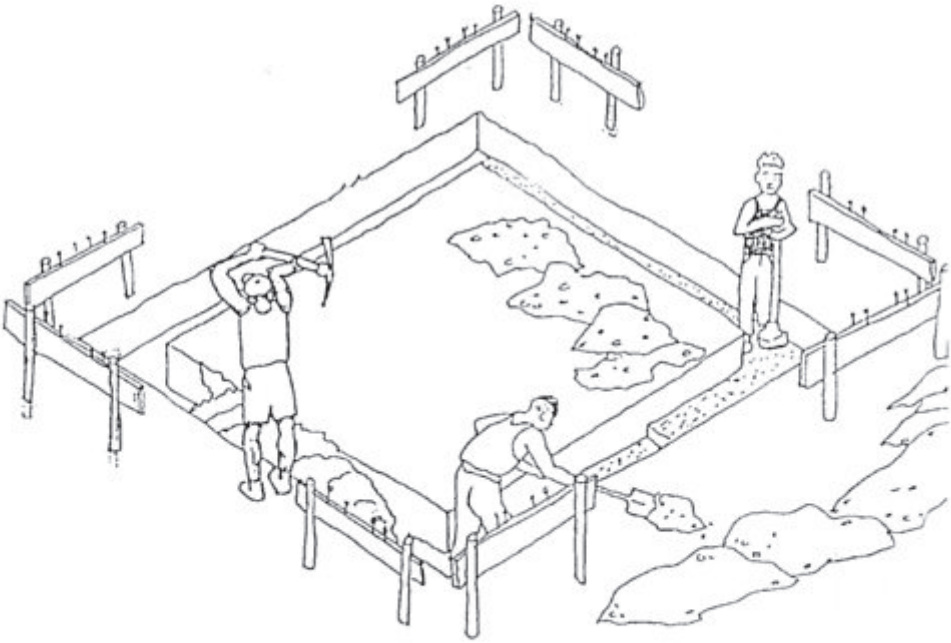


STAGE 1 : STEP 4



STAGE 1 : STEP 5

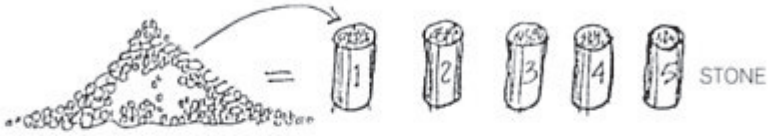
Mixing of Concrete for Foundations
Pouring of Foundations

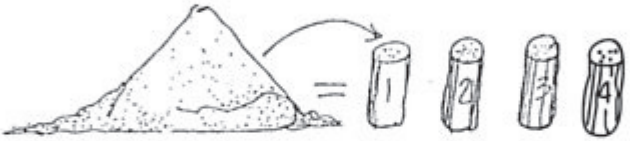


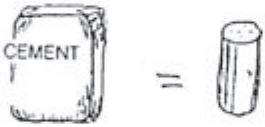
STAGE 1 : STEP 5

Mixing of Concrete for Foundations

USE A 25L (5 GALLON) DRUM
FOR MEASURING QUANTITIES







MIX ON A LARGE SQUARE BOARD
ON A LEVEL AREA.

POUR SAND FIRST, MAKE AN
OPENING IN THE MIDDLE INTO
WHICH THE CEMENT IS POURED.

MIX UNTIL THE SAND AND
CEMENT IS EVENLY
DISTRIBUTED.

MIX UNTIL EVENLY DISTRIBUTED.
ADD A LITTLE WATER AT A TIME.

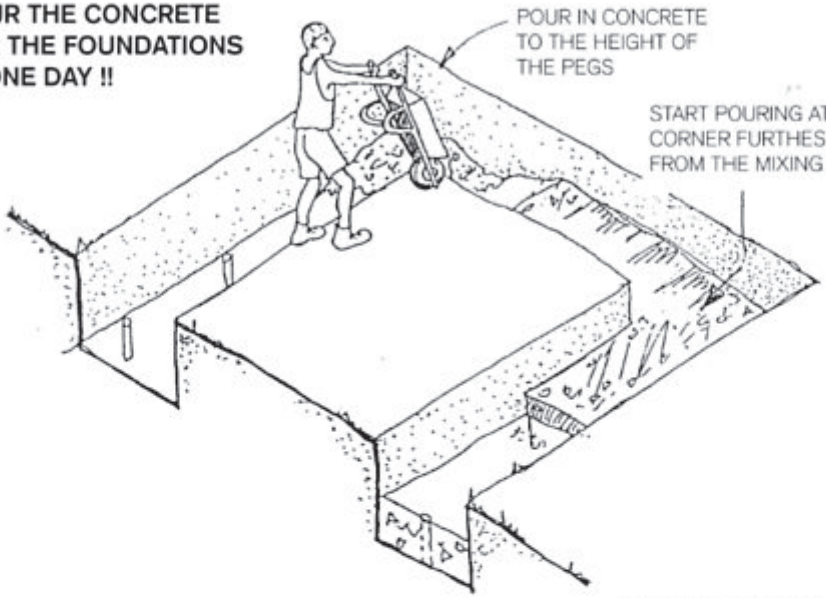
MAKE AN OPENING IN THE MIDDLE
AND ADD STONE.

MIX THOROUGHLY UNTIL IT LOOKS LIKE
LUMPY PORRIDGE.

STAGE 1 : STEP 5

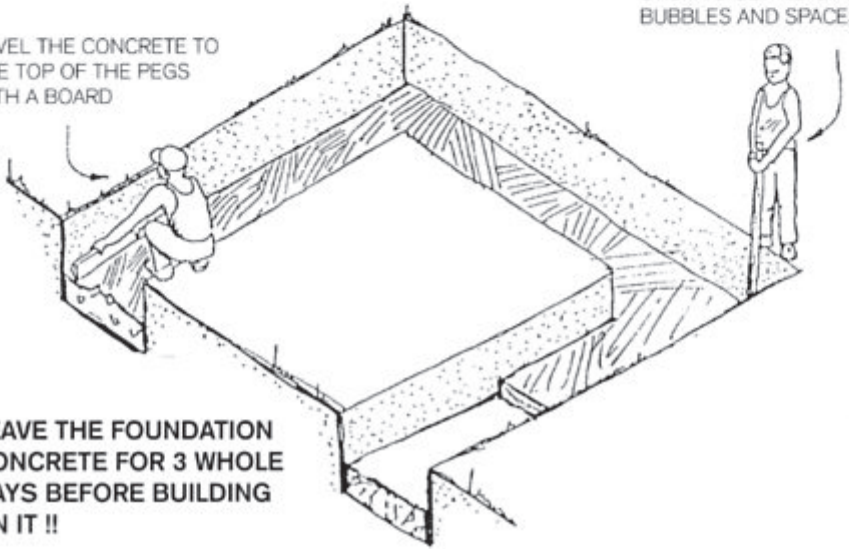
Pouring the Foundations

POUR THE CONCRETE FOR THE FOUNDATIONS IN ONE DAY !!



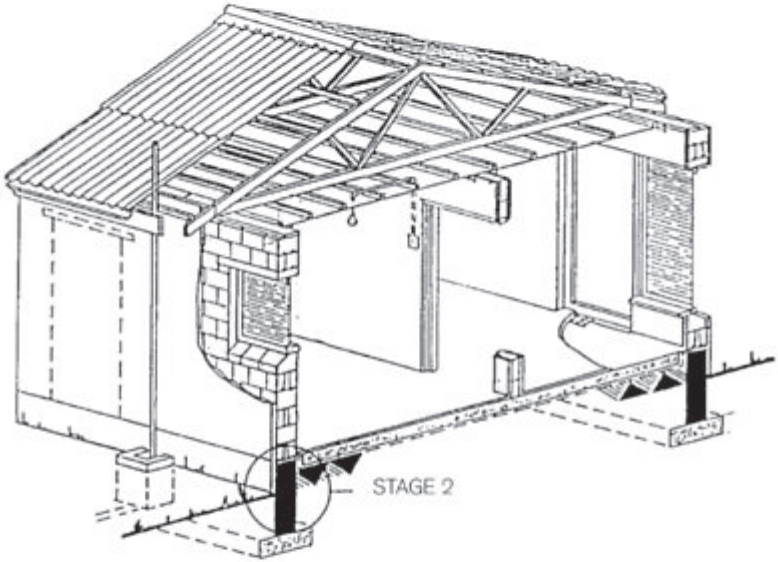
RAM DOWN THE CONCRETE INTO THE CORNERS WITH A STICK TO GET RID OF AIR BUBBLES AND SPACES

LEVEL THE CONCRETE TO THE TOP OF THE PEGS WITH A BOARD



LEAVE THE FOUNDATION CONCRETE FOR 3 WHOLE DAYS BEFORE BUILDING ON IT !!

STAGE 2



STEP 6

SETTING OUT THE FOUNDATION WALLS

STEP 7

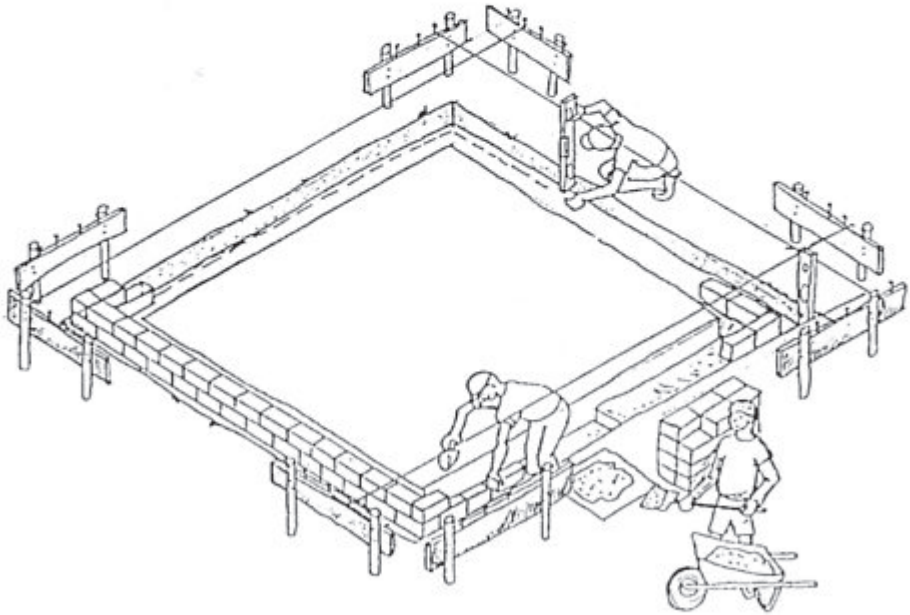
MIXING MORTAR FOR WALLS
BUILDING UP THE CORNERS
BUILDING UP FOUNDATION WALLS

STEP 8

FILLING OF THE TRENCHES

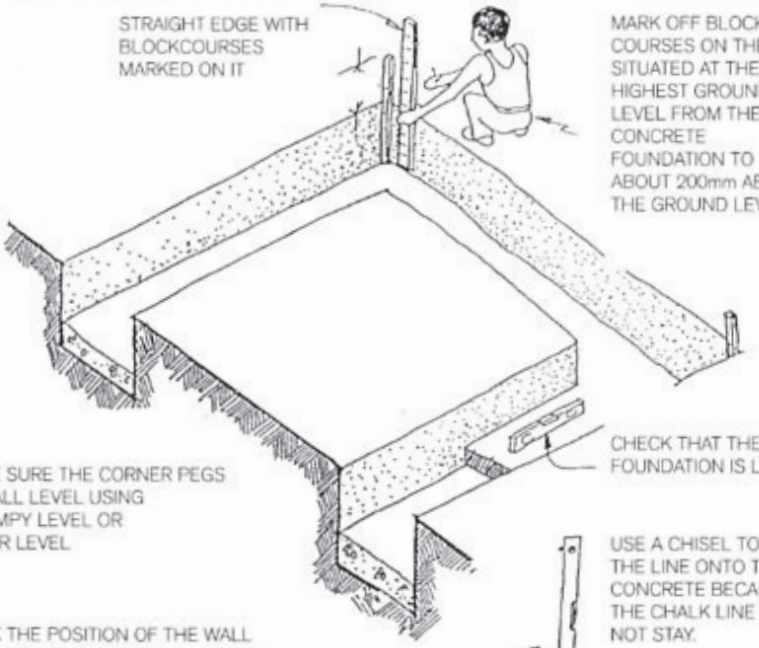
STAGE 2 : STEP 6

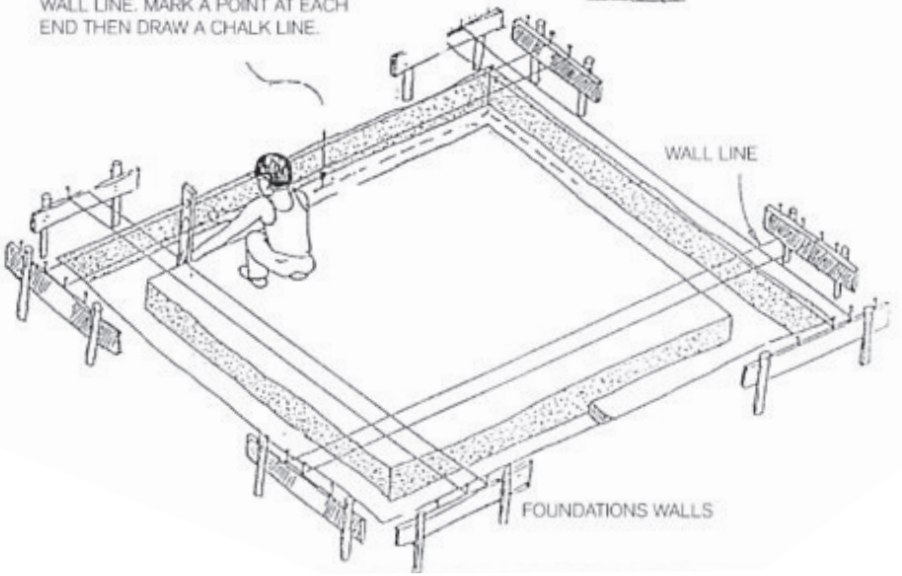
Setting out the Foundation Walls



STAGE 2 : STEP 6

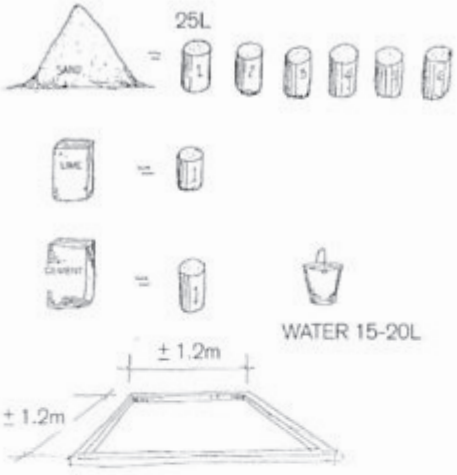
Set out the Foundation Walls





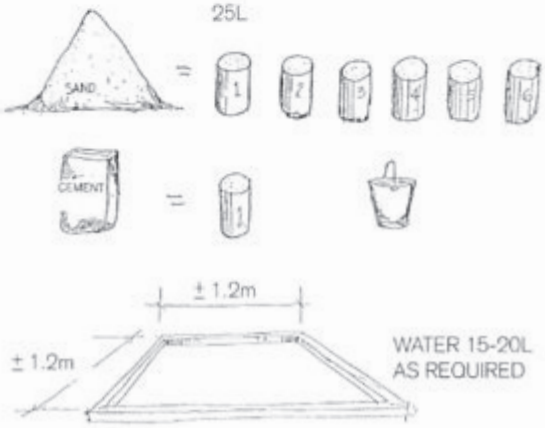
STAGE 2 : STEP 7

Mixing Mortar for Walls



MIX MATERIALS BEFORE ADDING WATER

Alternative mix without Lime

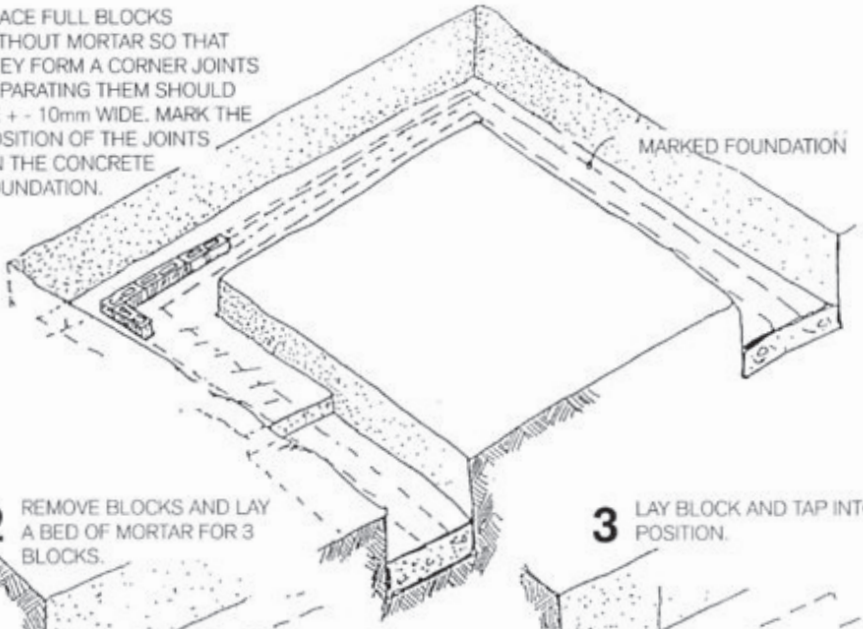


MAKE YOURSELF A MIXING BOARD FOR YOUR MORTAR. NAIL A SHEET OF 12mm PLYWOOD ONTO SOME PIECES OF 50 X 38mm TIMBER (PIECES OF BATTEN). THIS WILL MAKE MIXING EASIER AND PREVENT THE WATER WASHING AWAY THE CEMENT AND LIME.

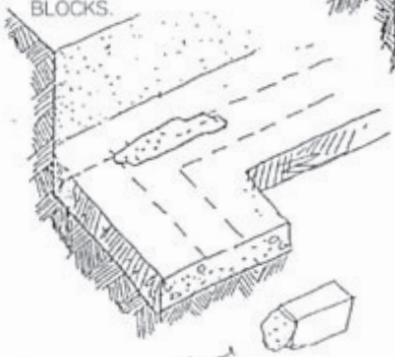
STAGE 2 : STEP 7

Corners

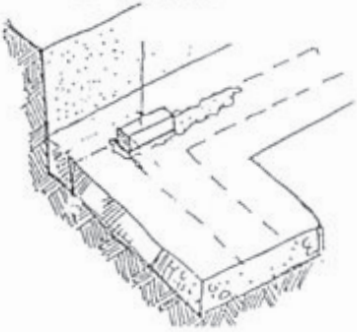
PLACE FULL BLOCKS WITHOUT MORTAR SO THAT THEY FORM A CORNER JOINTS SEPARATING THEM SHOULD BE + - 10mm WIDE. MARK THE POSITION OF THE JOINTS ON THE CONCRETE FOUNDATION.

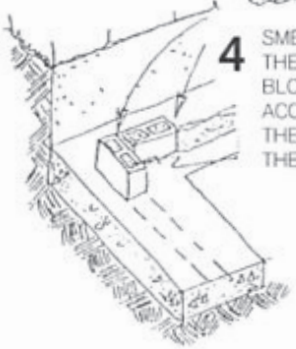


2 REMOVE BLOCKS AND LAY A BED OF MORTAR FOR 3 BLOCKS.

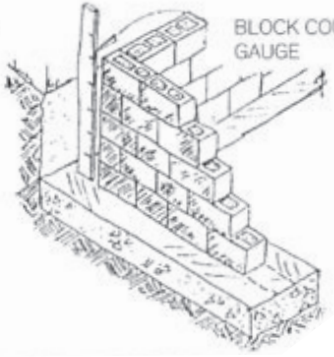


3 LAY BLOCK AND TAP INTO POSITION.





4 SMEAR THE ENDS OF THE ADJOINING BLOCKS AND LAY ACCORDING TO THE MARKINGS OF THE JOINTS.



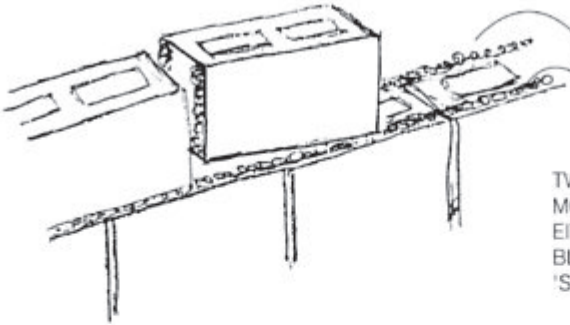
STAGE 2 : STEP 7

Laying Blocks

IF IN DOUBT PLEASE CONTACT THE CONCRETE MANUFACTURERS ASSOCIATION FOR ADVICE. BLOCK LAYING COURSES ARE AVAILABLE.

TURN BLOCK ON END. BUTTER ONE END WITH TWO 'EARS' OF MORTAR AT EDGES OF THE BLOCK.

PLACE BLOCK AGAINST PREVIOUS UNIT.



TWO STRIPS OF MORTAR ON EITHER SIDE OF BLOCKS. MAKE 'SHELL' BEDDING.

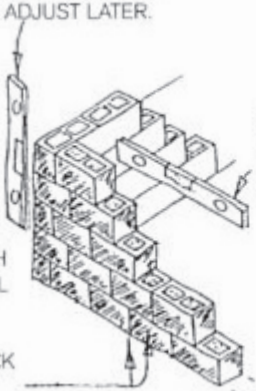
BLOCKS SHOULD BE LAID SO THAT THE WIDE SECTIONS ARE UPPERMOST.

STAGE 2 : STEP 7

Corners

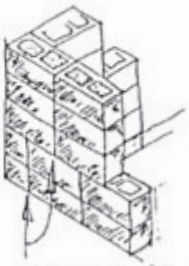
CHECK REGULARLY THAT THE WALL IS PLUMB AS IT IS VERY DIFFICULT TO ADJUST LATER.

CHECK OFTEN !!



ENSURE THAT THE BLOCKS ARE LEVEL AS YOU LAY THEM.

LAY THE BLOCKS WITH THE VERTICAL JOINTS STAGGERED, HALF A BLOCK ACROSS.

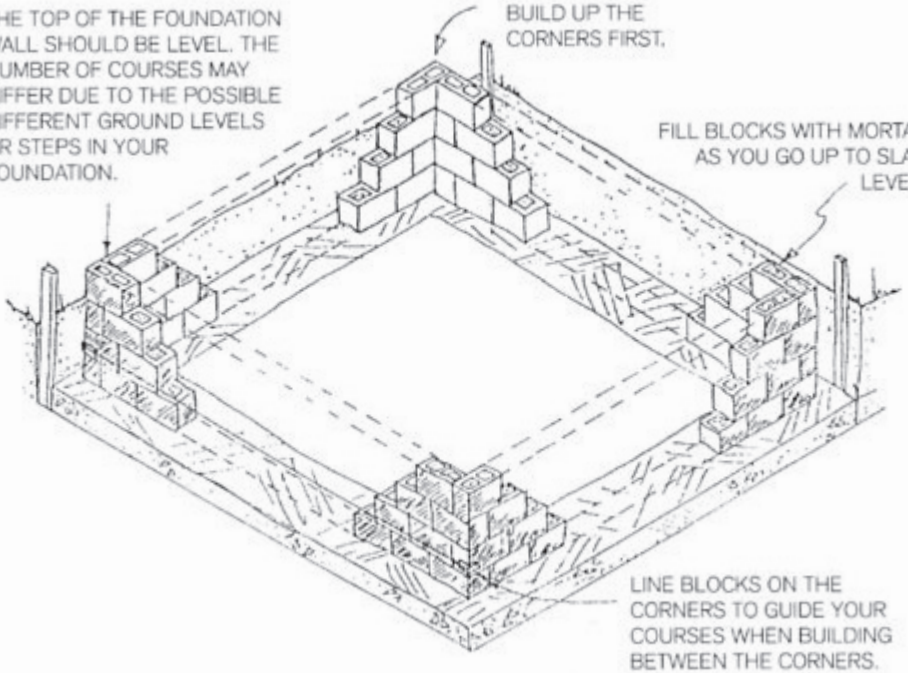


INCORRECT

THE TOP OF THE FOUNDATION WALL SHOULD BE LEVEL. THE NUMBER OF COURSES MAY DIFFER DUE TO THE POSSIBLE DIFFERENT GROUND LEVELS OR STEPS IN YOUR FOUNDATION.

BUILD UP THE CORNERS FIRST.

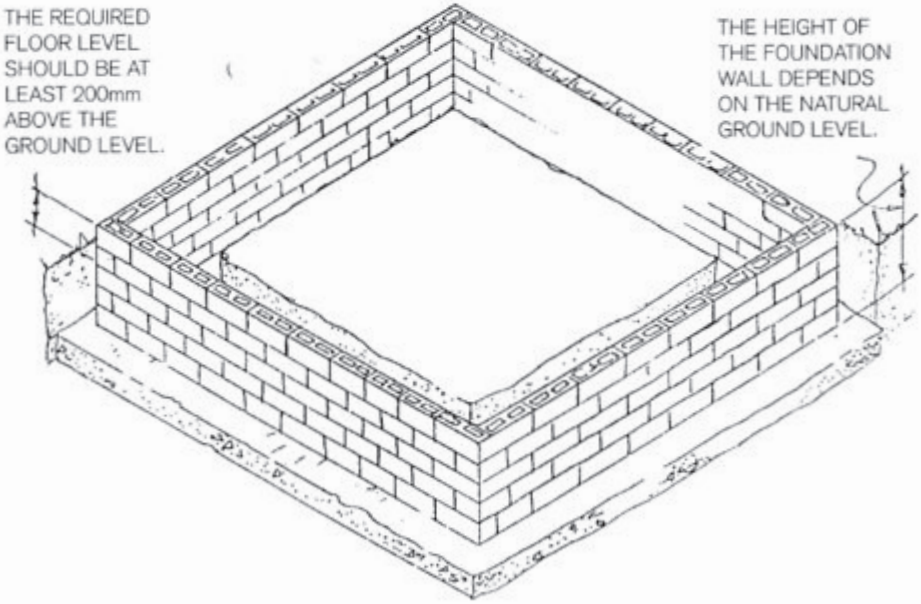
FILL BLOCKS WITH MORTAR AS YOU GO UP TO SLAB LEVEL.



LINE BLOCKS ON THE CORNERS TO GUIDE YOUR COURSES WHEN BUILDING BETWEEN THE CORNERS.

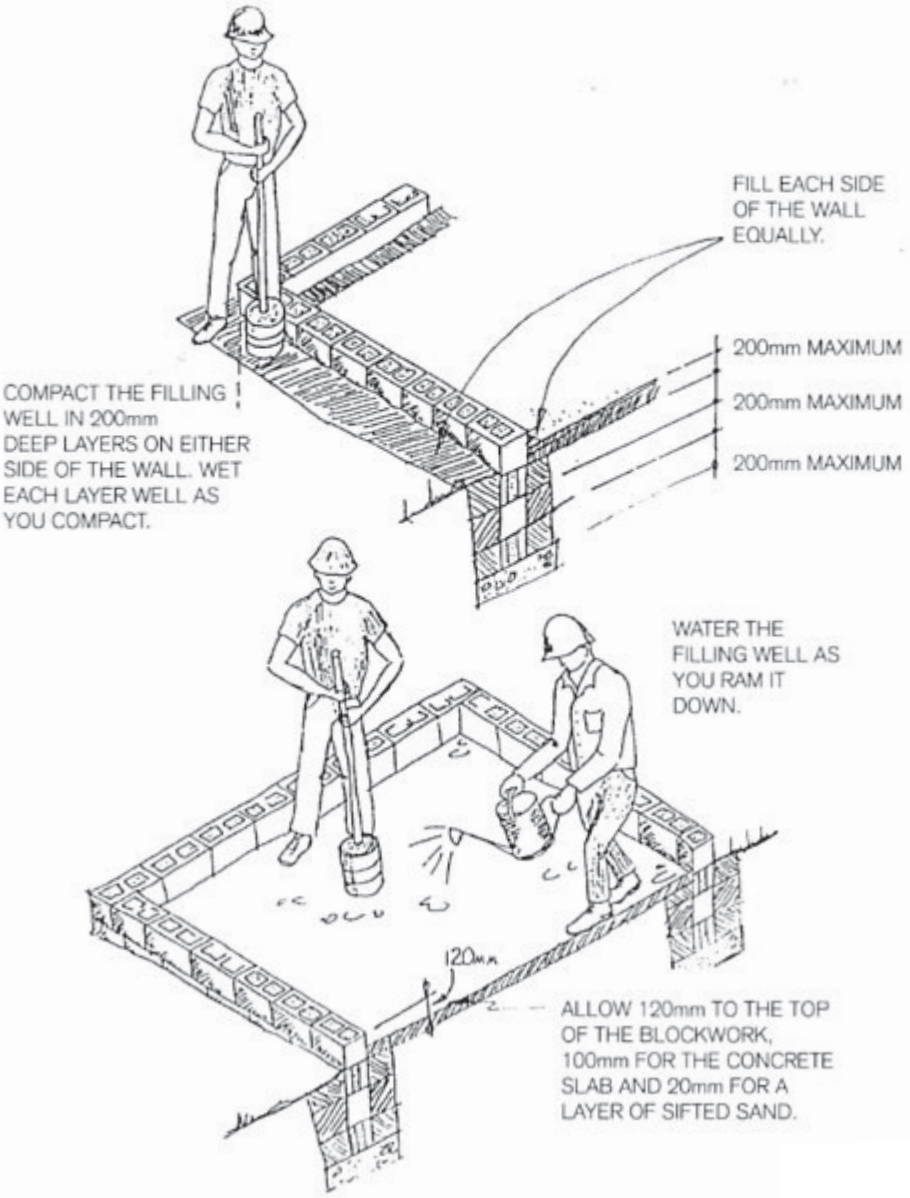
STAGE 2 : STEP 7

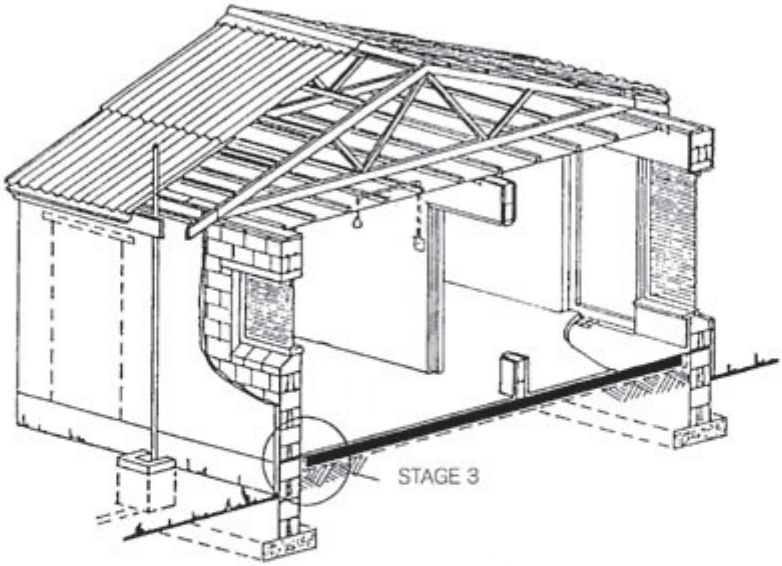
Building up Foundation Walls



STAGE 2 : STEP 8

Filling of the Trenches





STEP 9

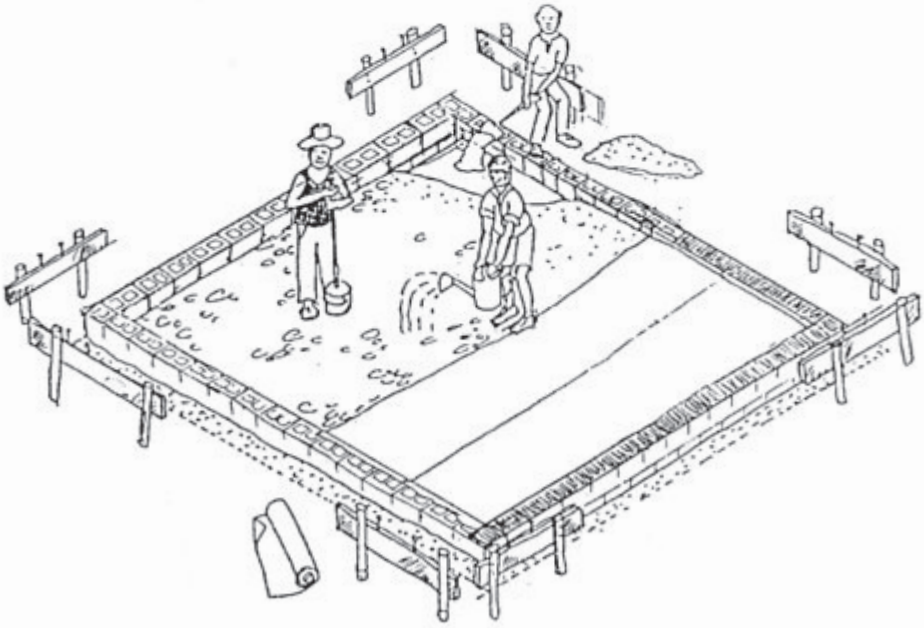
LAYING OF THE DAMP PROOF MEMBRANE BELOW FLOOR SLAB

STEP 10

MIXING OF FLOOR SLAB CONCRETE
POURING AND LEVELLING OF THE FLOOR SLAB

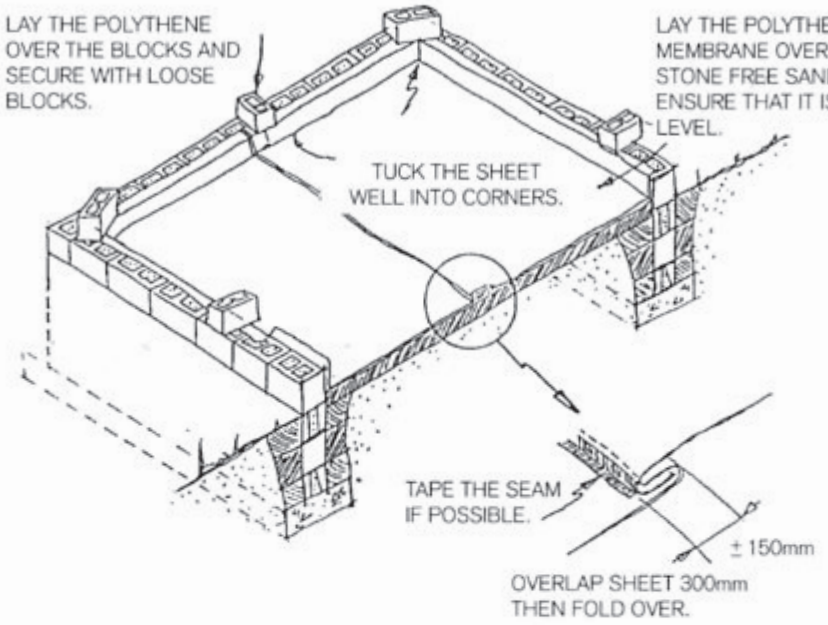
STAGE 3 : STEP 9

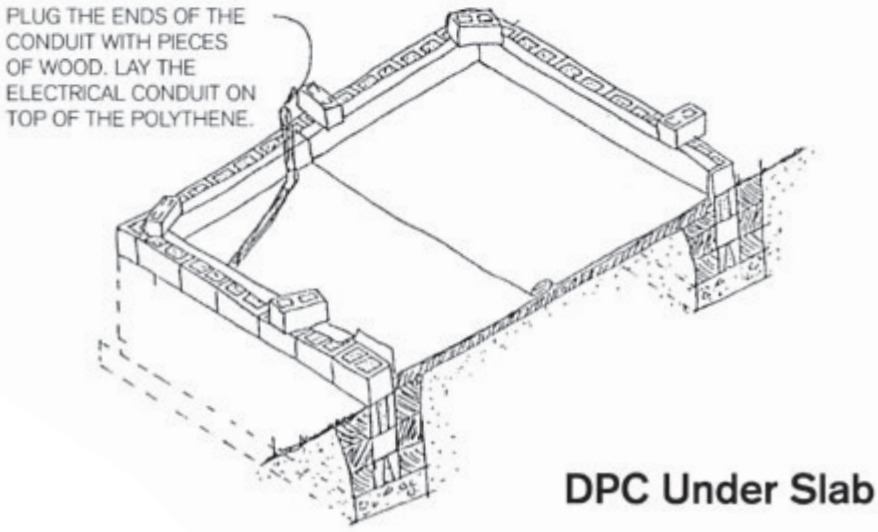
Laying of the Damp Proof Membrane Below Floor Slab



STAGE 3 : STEP 9

Lay DPC below Floor Slab



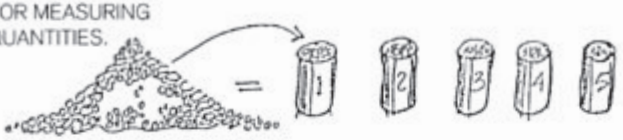


DPC Under Slab

STAGE 3 : STEP 10

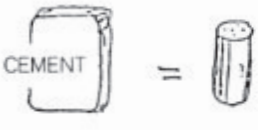
Mixing of Floor Slab Concrete

USE 5 GALLON DRUM
FOR MEASURING
QUANTITIES.



STONE

SAND



15-20L
AS REQUIRED

POUR SAND FIRST, MAKE
AN OPENING IN THE
MIDDLE INTO WHICH THE
CEMENT IS POURED.

MIX UNTIL EVENLY
DISTRIBUTED. ADD A
LITTLE WATER AT A TIME.

MAKE AN OPENING IN
THE MIDDLE AND ADD
STONE.

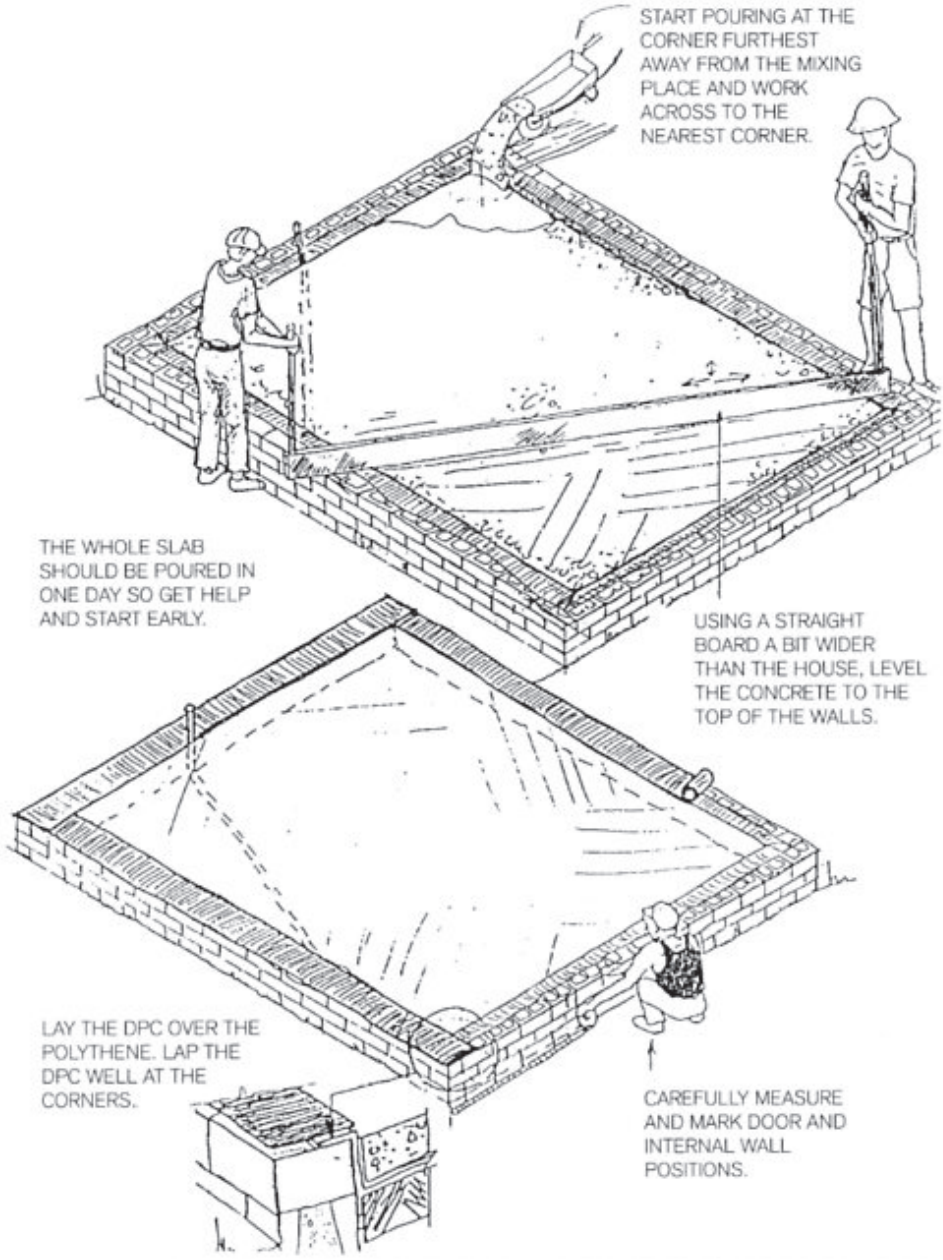
MIX UNTIL THE SAND AND CEMENT IS
EVENLY DISTRIBUTED.
MIX THOROUGHLY UNTIL IT LOOKS LIKE
LUMPY PORRIDGE.

MIX ON A LARGE SQUARE BOARD ON A
LEVEL AREA.

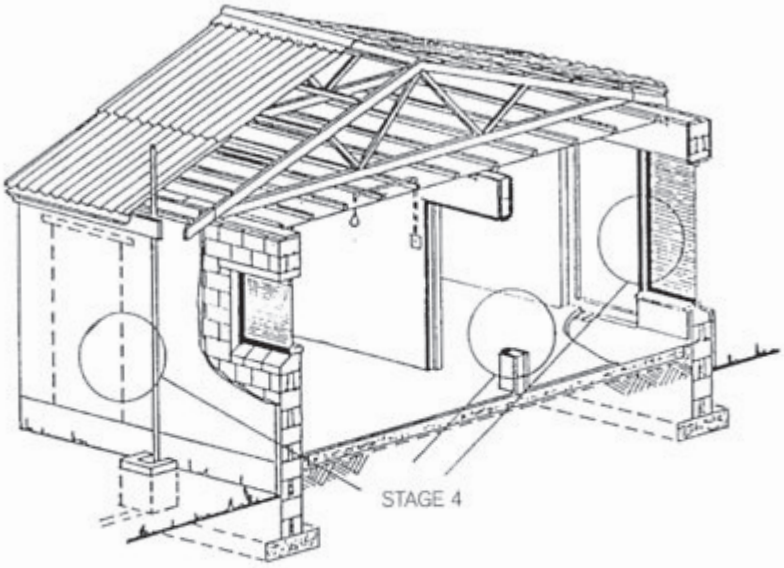
ADD WATER SLOWLY UNTIL CONCRETE
HAS WORKABILITY FOR PLACING.

STAGE 3 : STEP 10

Pouring and Levelling of the Floor Slab



STAGE 4



STEP 11

POSITIONING THE DOORS
THE DOOR / WINDOW JOINT

STEP 12

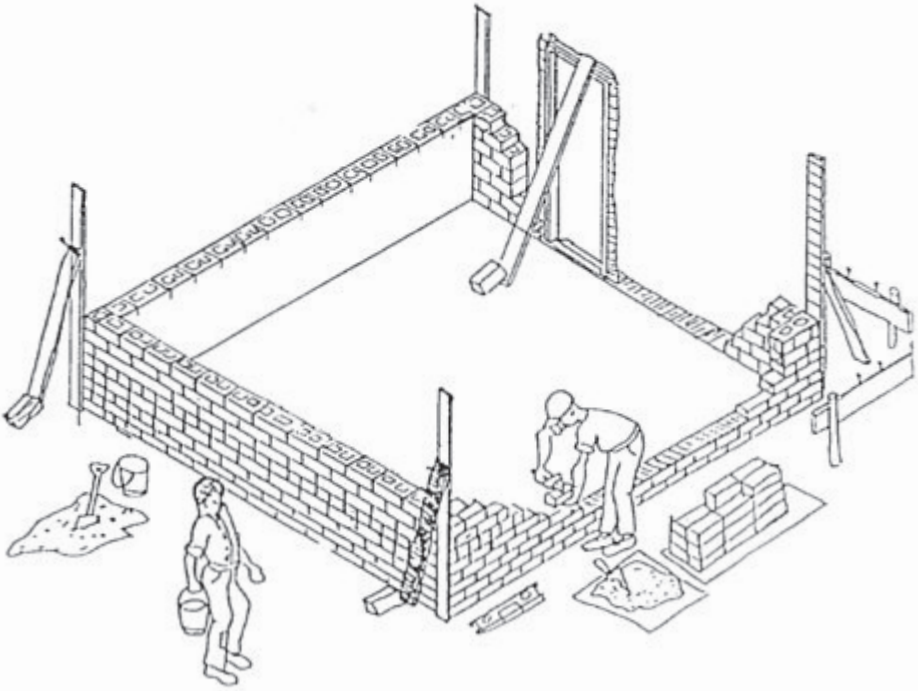
BUILDING UP THE WALLS - STRAIGHT JOINT
BUILDING IN THE DOOR FRAMES

STEP 13

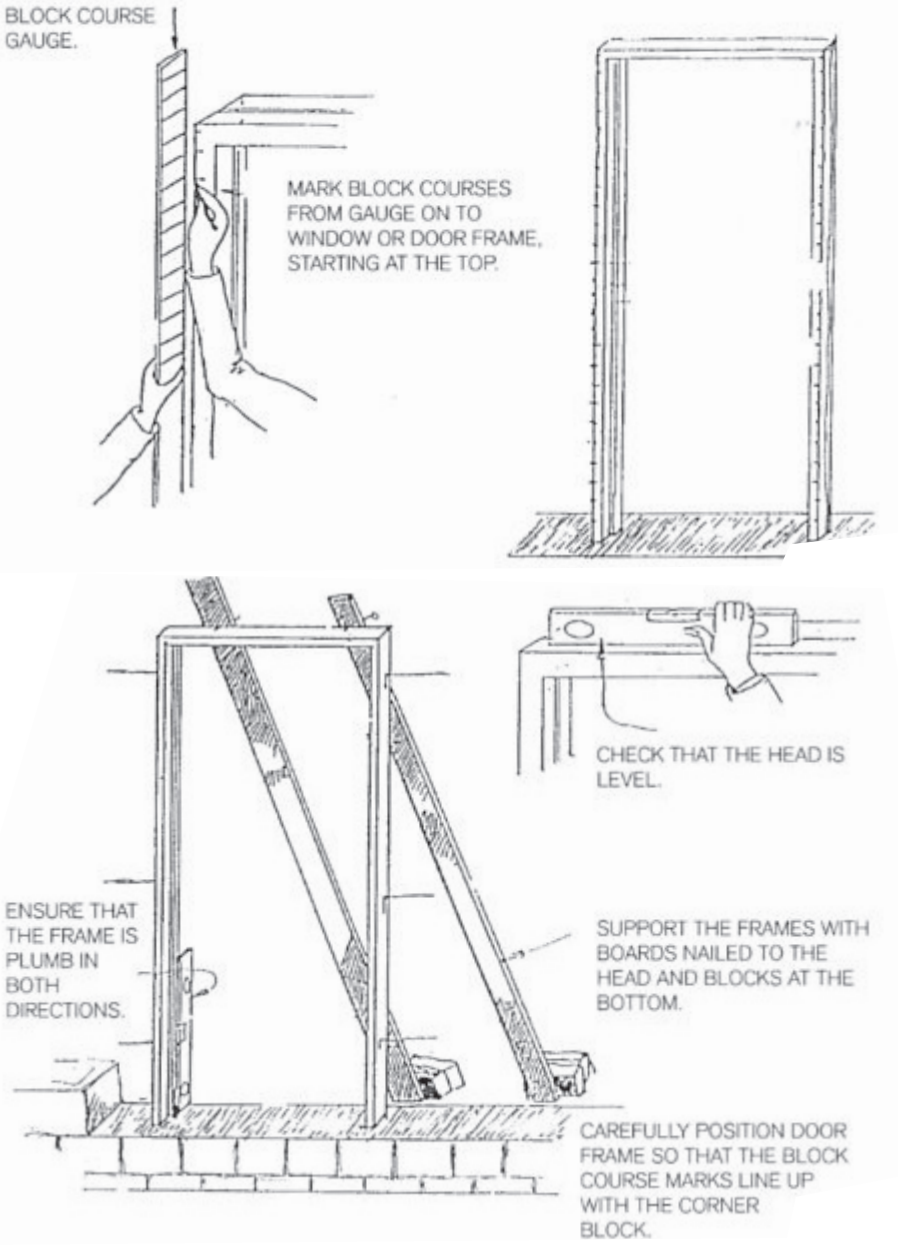
POSITIONING THE WINDOWS
(REMEMBER BRICKFORCE)

STAGE 4 : STEP 11

Positioning the Doors

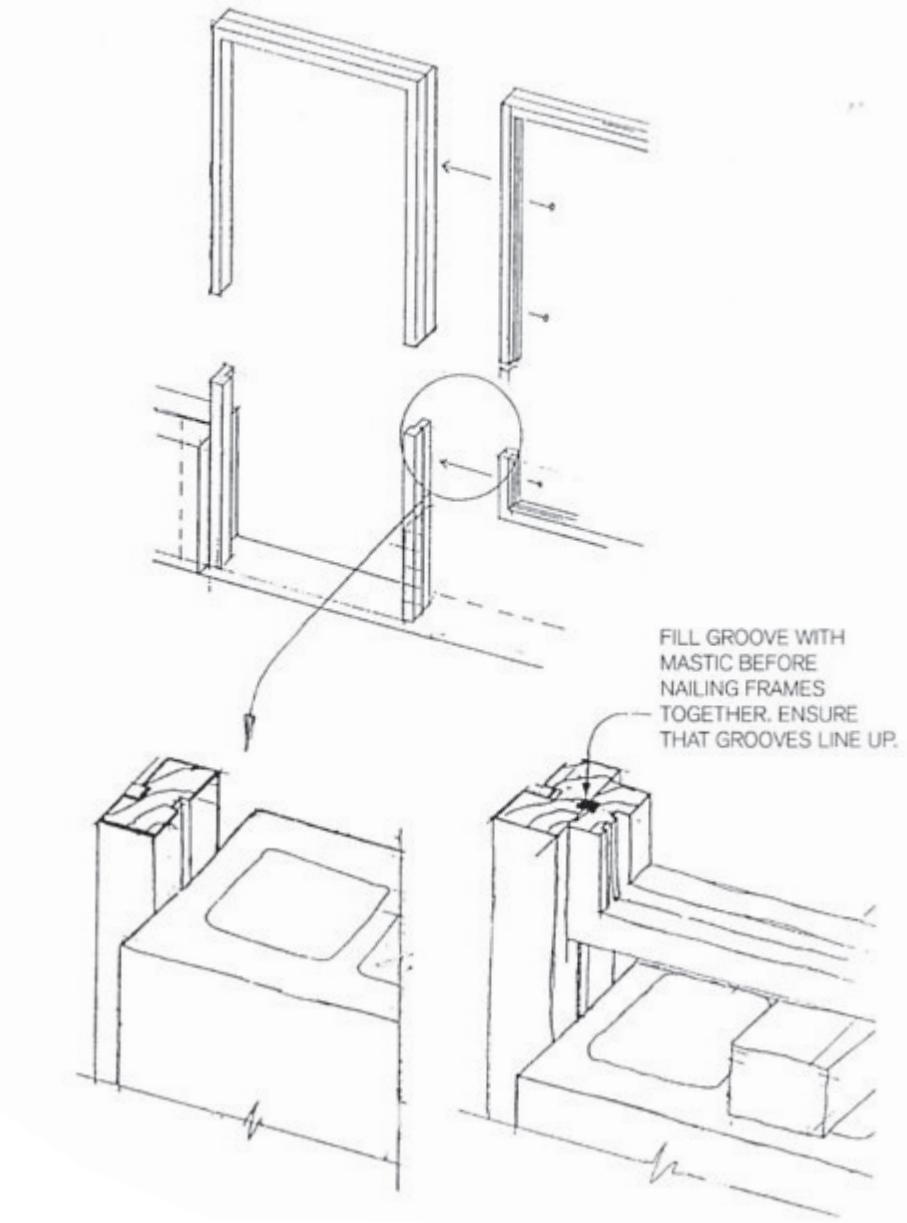


STAGE 4 : STEP 11



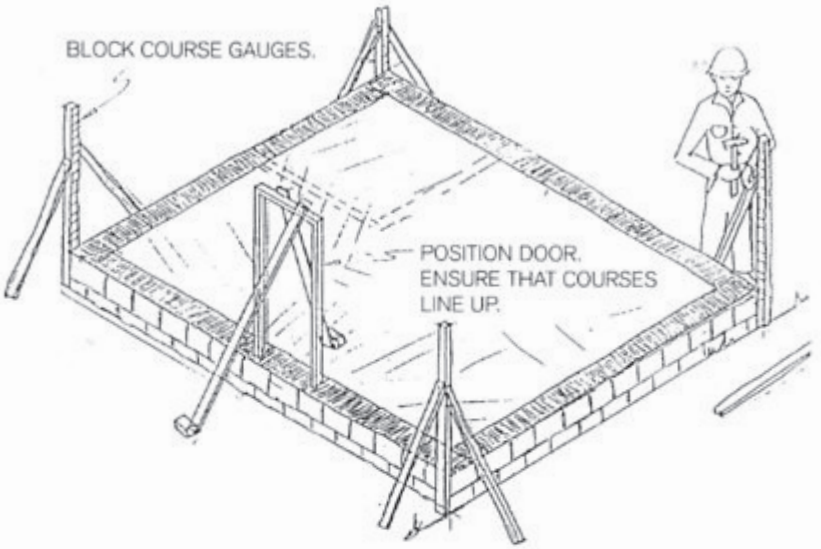
STAGE 4 : STEP 11

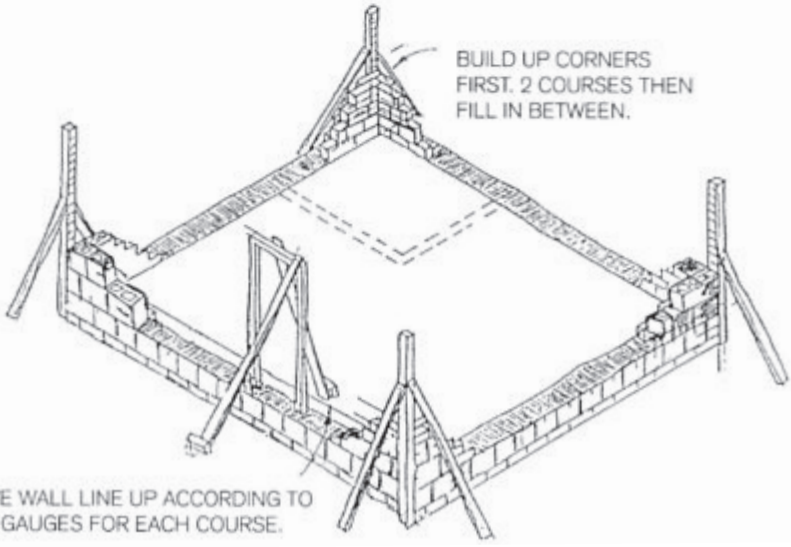
The Door / Window Joint



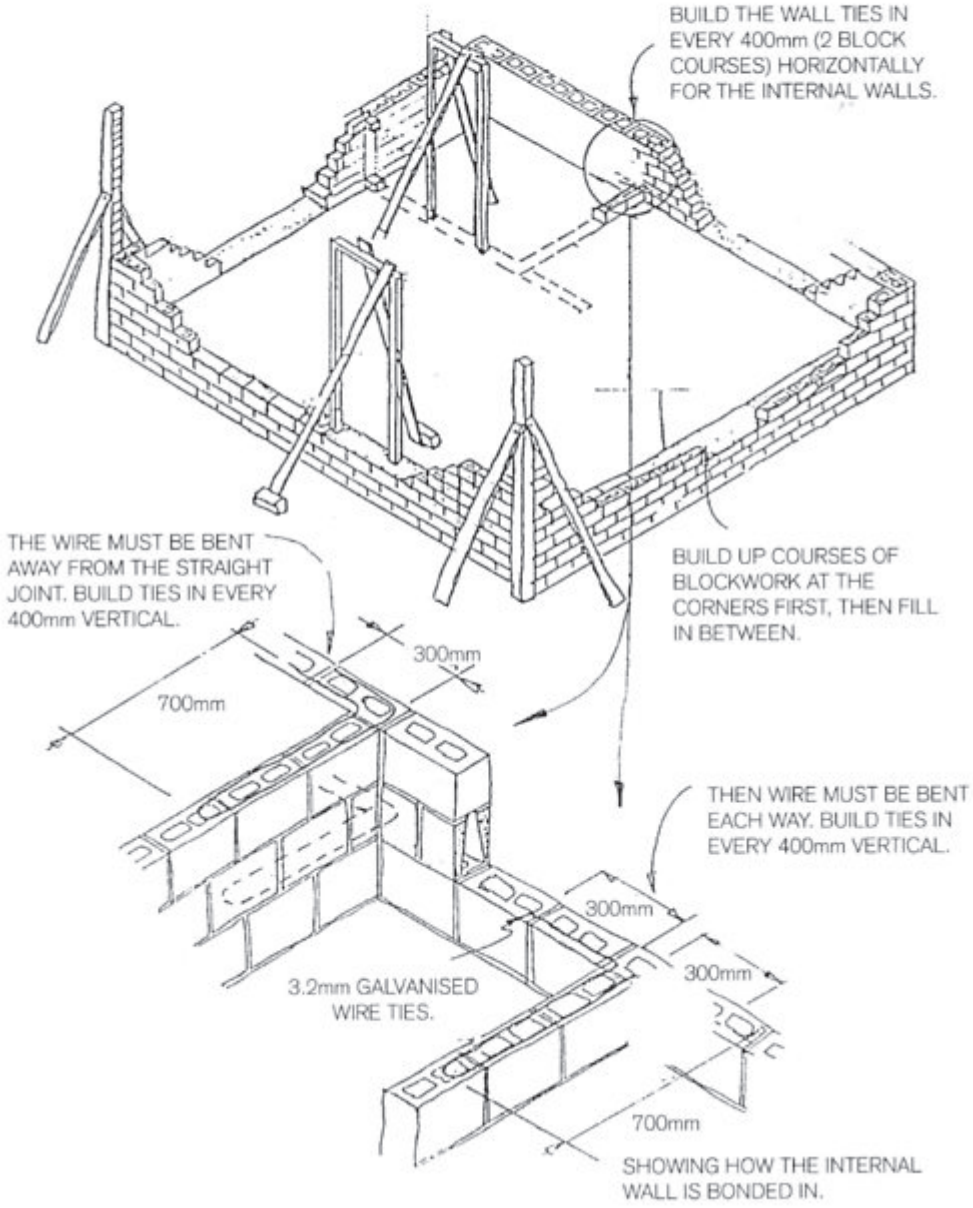
STAGE 4 : STEP 12

Building up the Walls



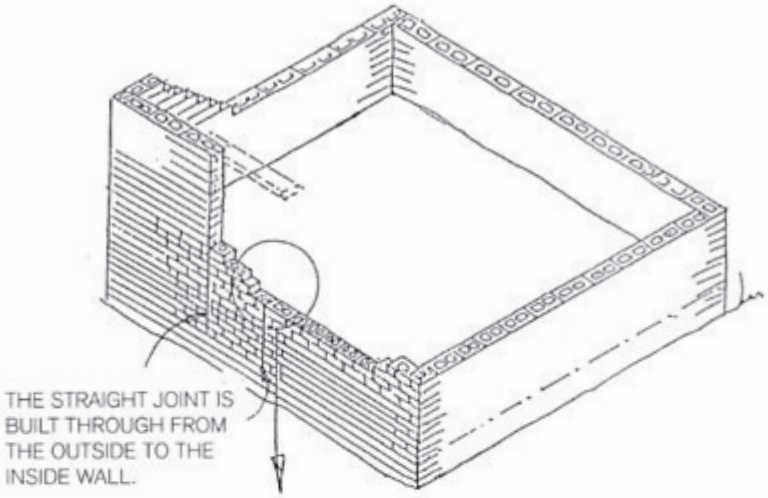


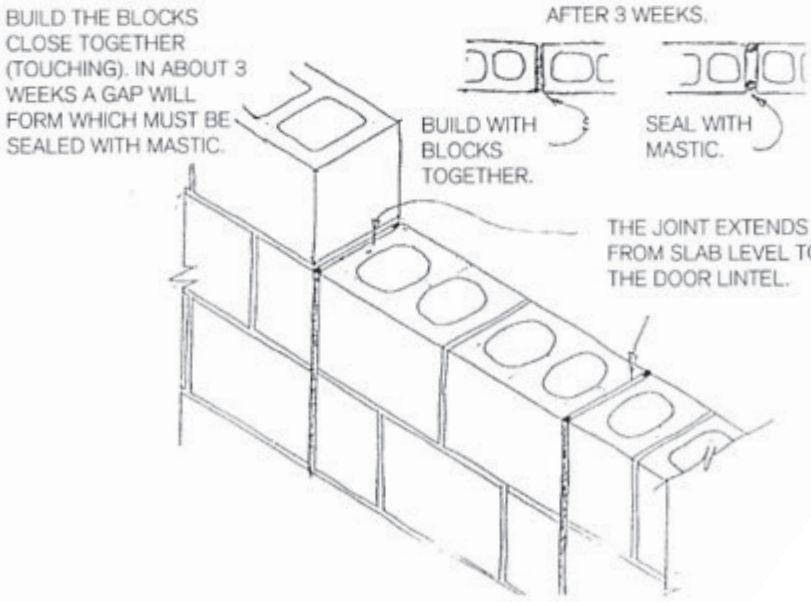
STAGE 4 : STEP 12



STAGE 4 : STEP 12

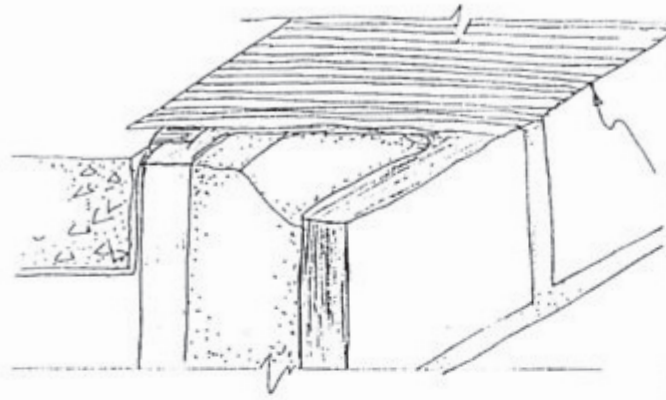
Straight Joint for Future Openings





STAGE 4 : STEP 12

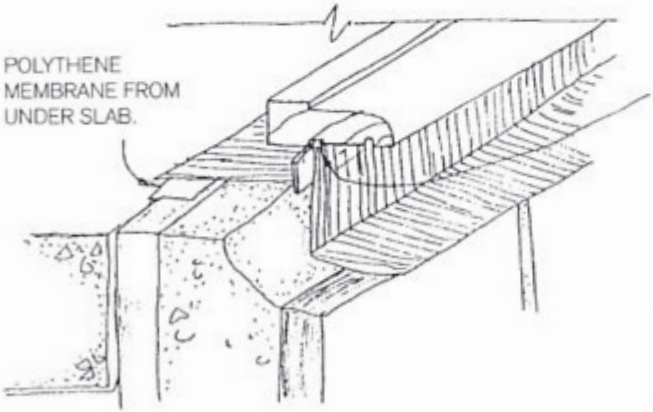
Building in the Door Frames



DAMP PROOF COURSE.

BRUSH OUT ALL MORTAR AND SHARP BITS FROM BENEATH DPC.

DOOR THRESHOLD WITH WEATHER BAR AND DPC.

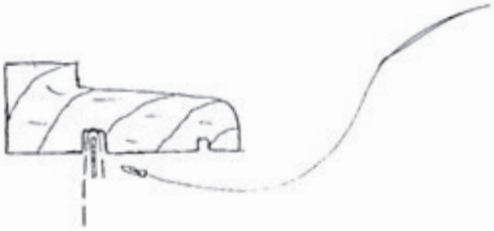


POLYTHENE MEMBRANE FROM UNDER SLAB.

TUCK DPC INTO CORNERS.

BE CAREFUL NOT TO PUNCTURE THE DPC.

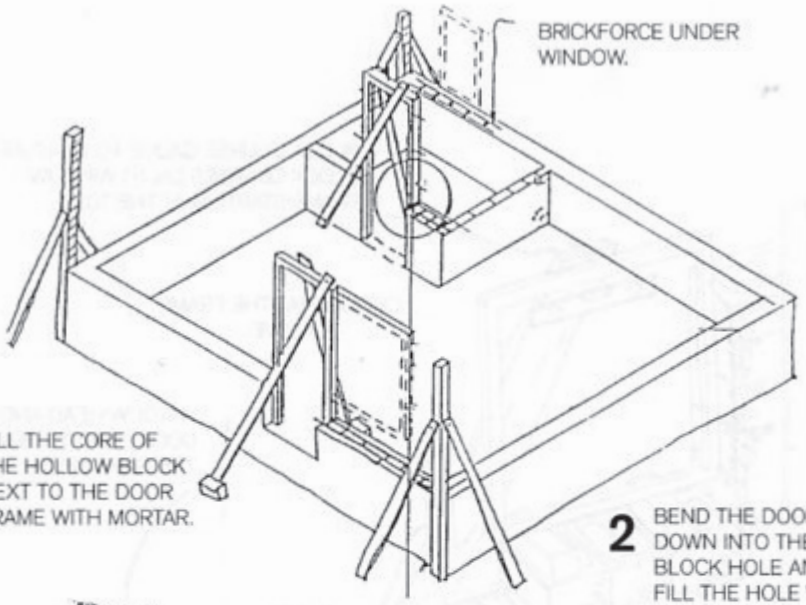
USE A PIECE OF GALVANISED HOOP IRON AS A WEATHER BAR.



WRAP THE DPC OVER THE METAL FROM THE BACK AND WEDGE IT INTO THE BACK GROOVE UNDER THE THRESHOLD.

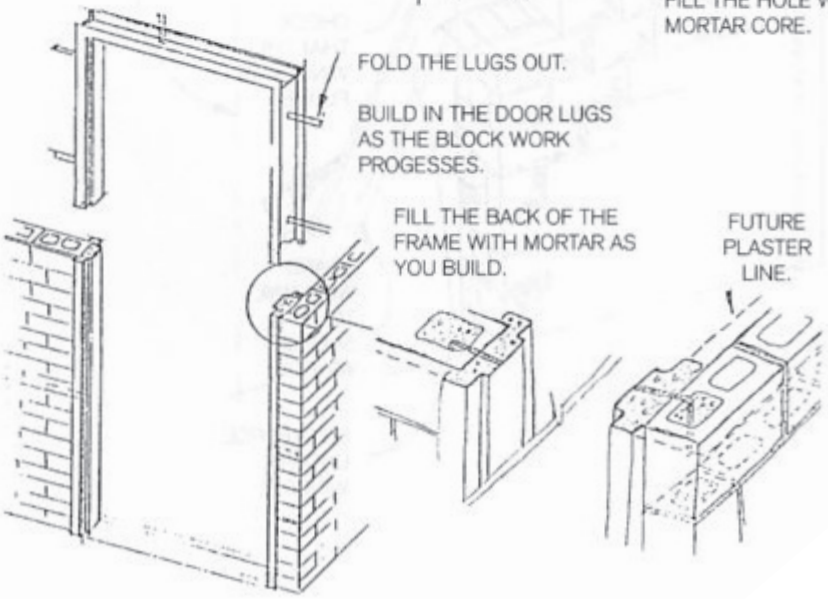
STAGE 4 : STEP 12

Internal Metal Door Frames



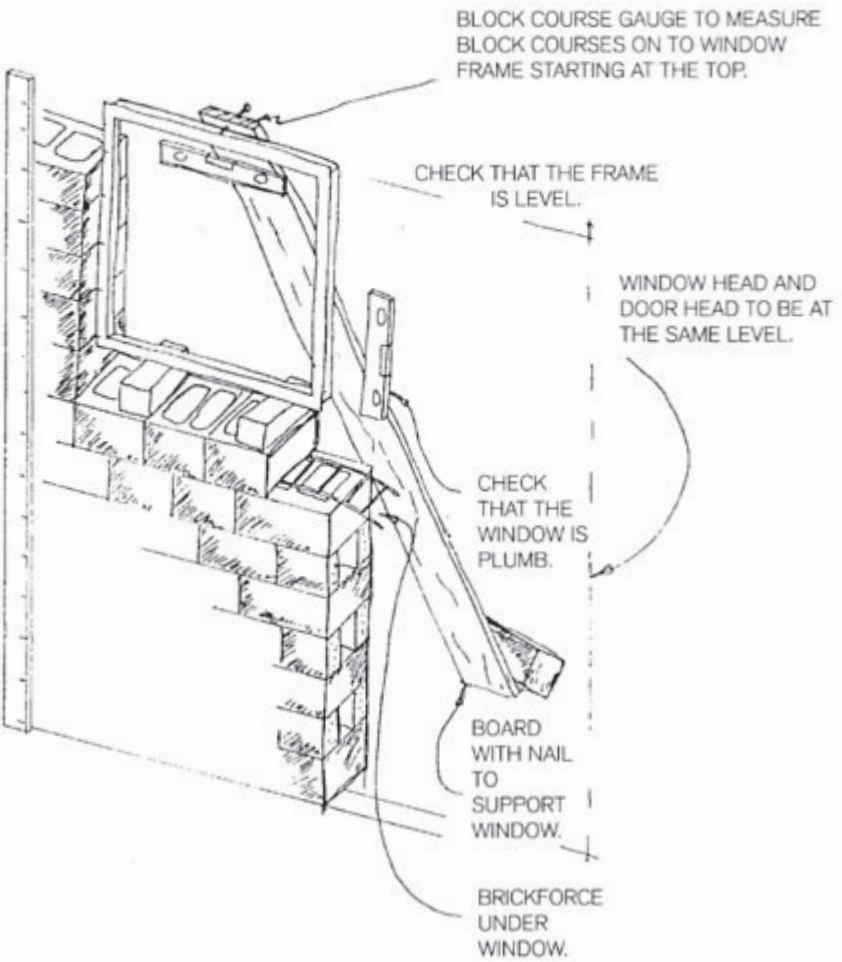
1 FILL THE CORE OF THE HOLLOW BLOCK NEXT TO THE DOOR FRAME WITH MORTAR.

2 BEND THE DOOR LUG DOWN INTO THE BLOCK HOLE AND FILL THE HOLE WITH MORTAR CORE.

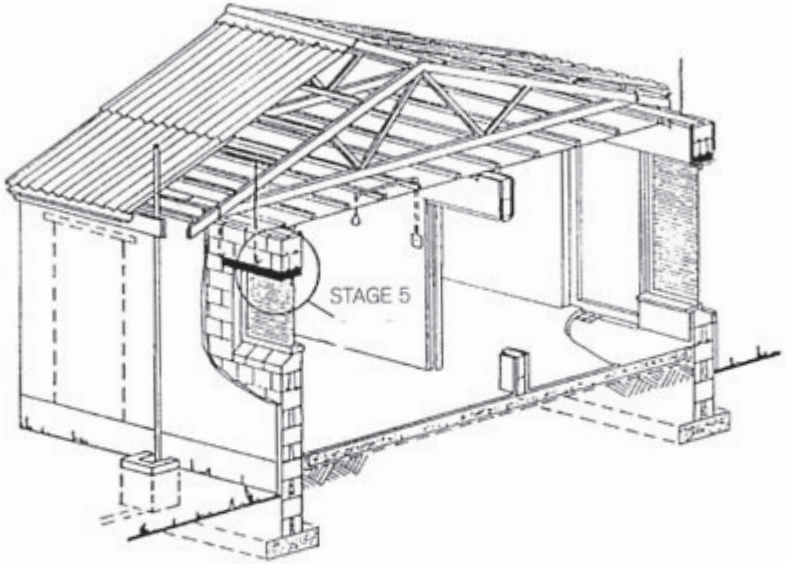


STAGE 4 : STEP 13

Positioning the Windows (Remember Brickforce)



STAGE 5

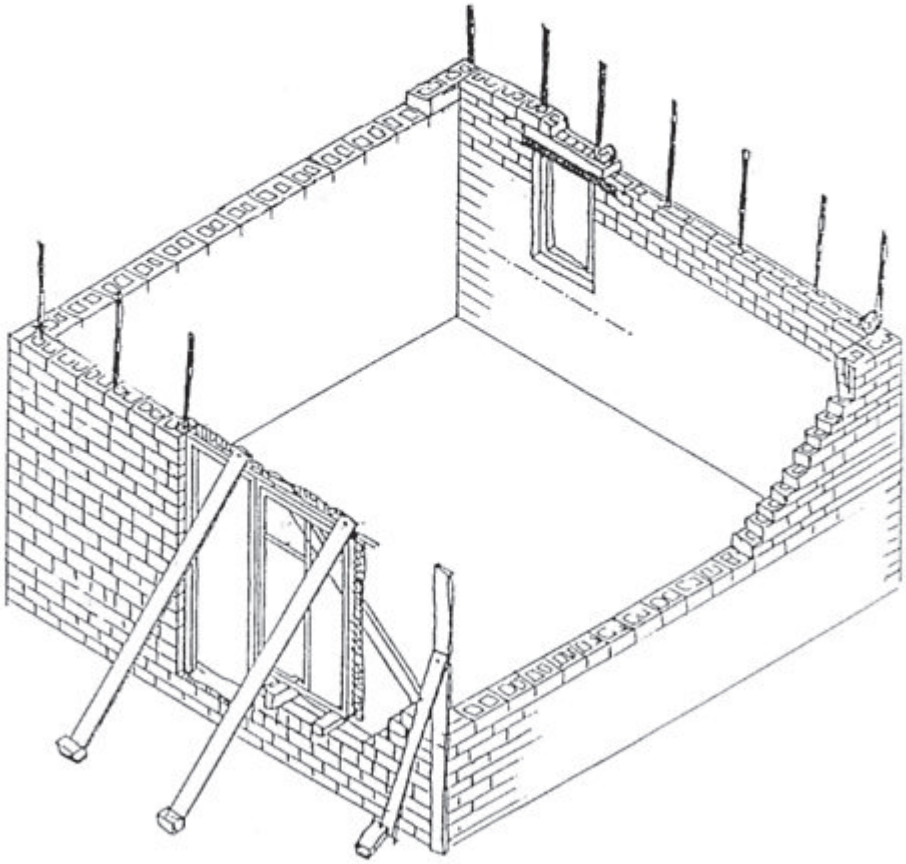


STEP 14
BUILDING IN THE LINTELS

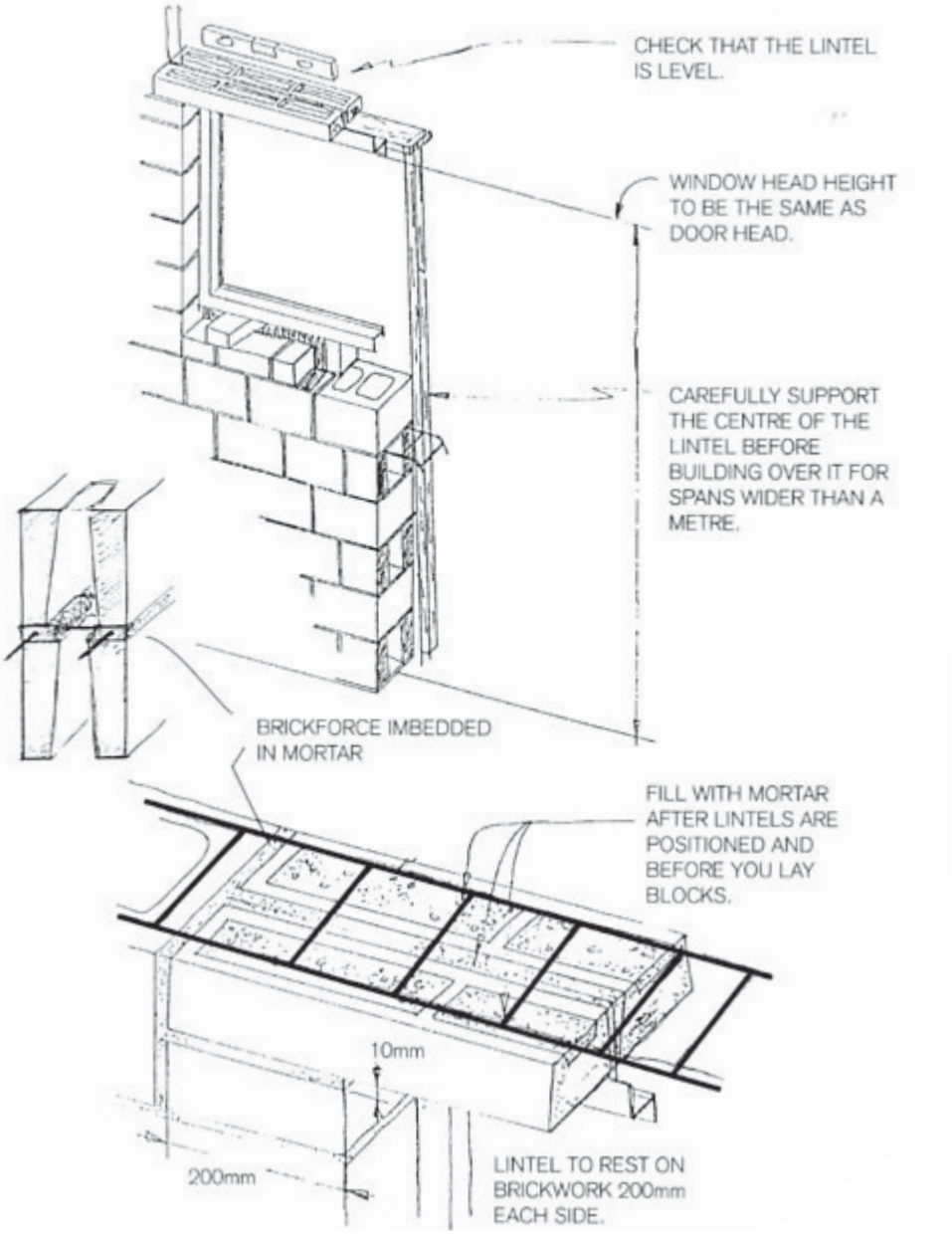
STEP 15
BUILDING IN THE ROOF TIES

STAGE 5 : STEP 14

Building in the Lintels

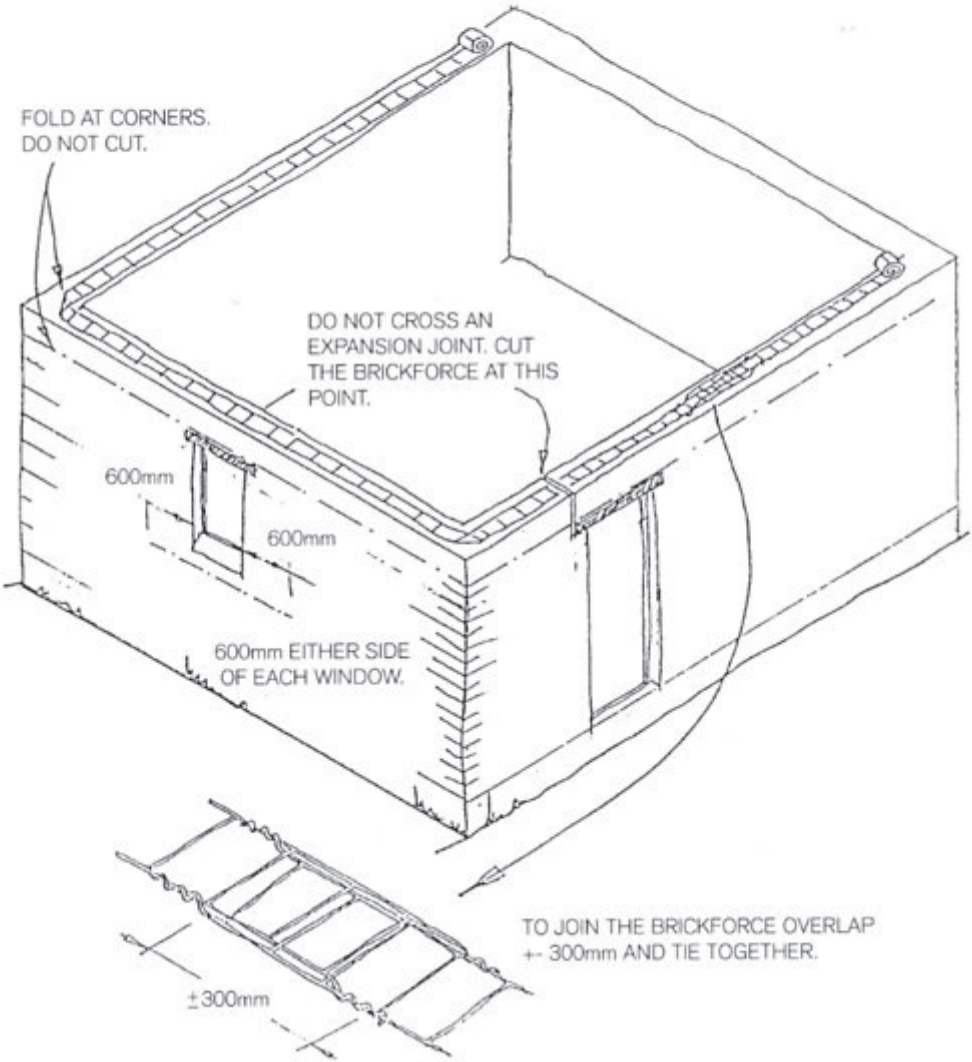


STAGE 5 : STEP 14



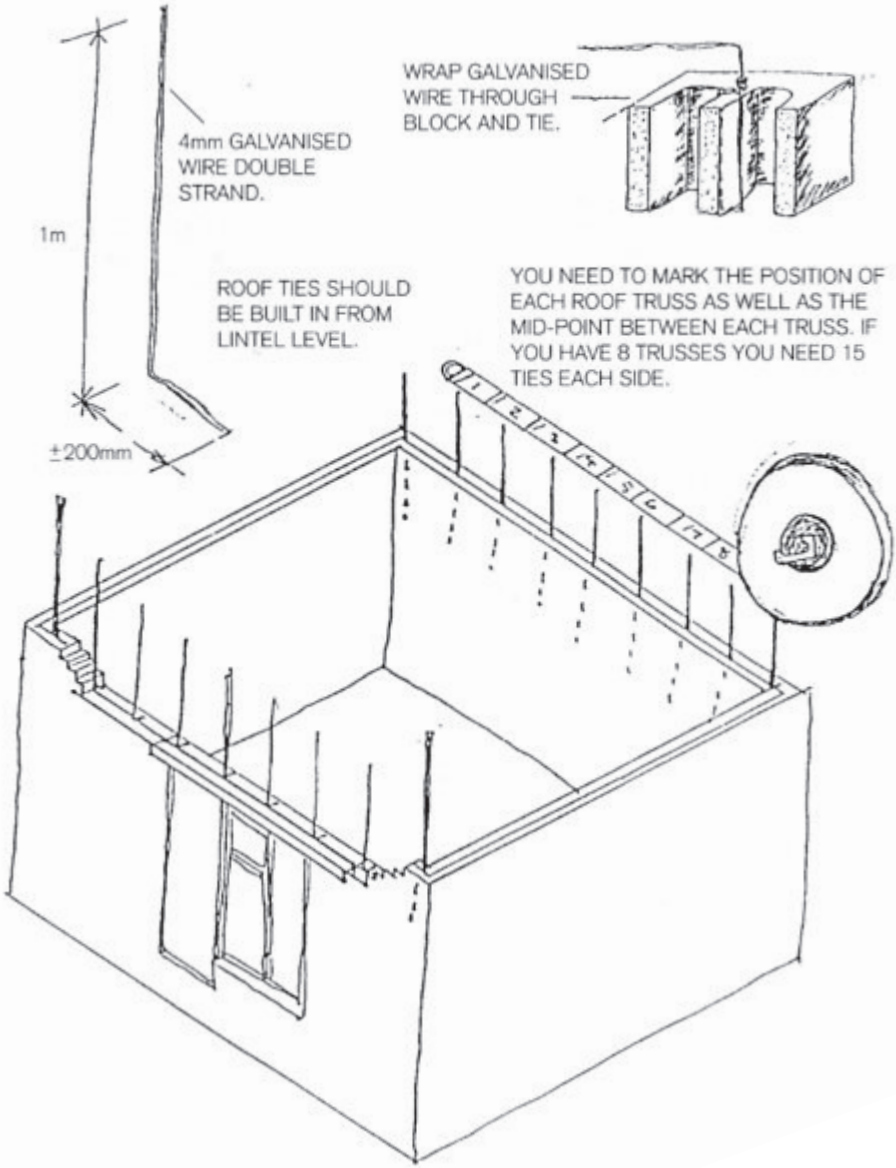
STAGE 5 : STEP 14

Brickforce

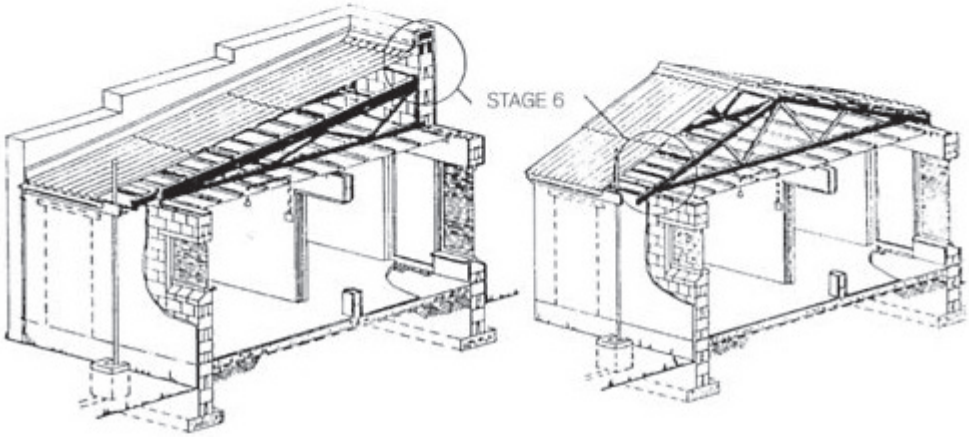


STAGE 5 : STEP 15

Building in the Roof Ties



STAGE 6



STEP 16

FIXING WALL PLATES IN POSITION
POSITIONING OF ROOF TRUSSES
FIXING OF ROOF TRUSSES

STEP 17

BUILDING THE GABLE WALL ROOF TIES

STEP 18

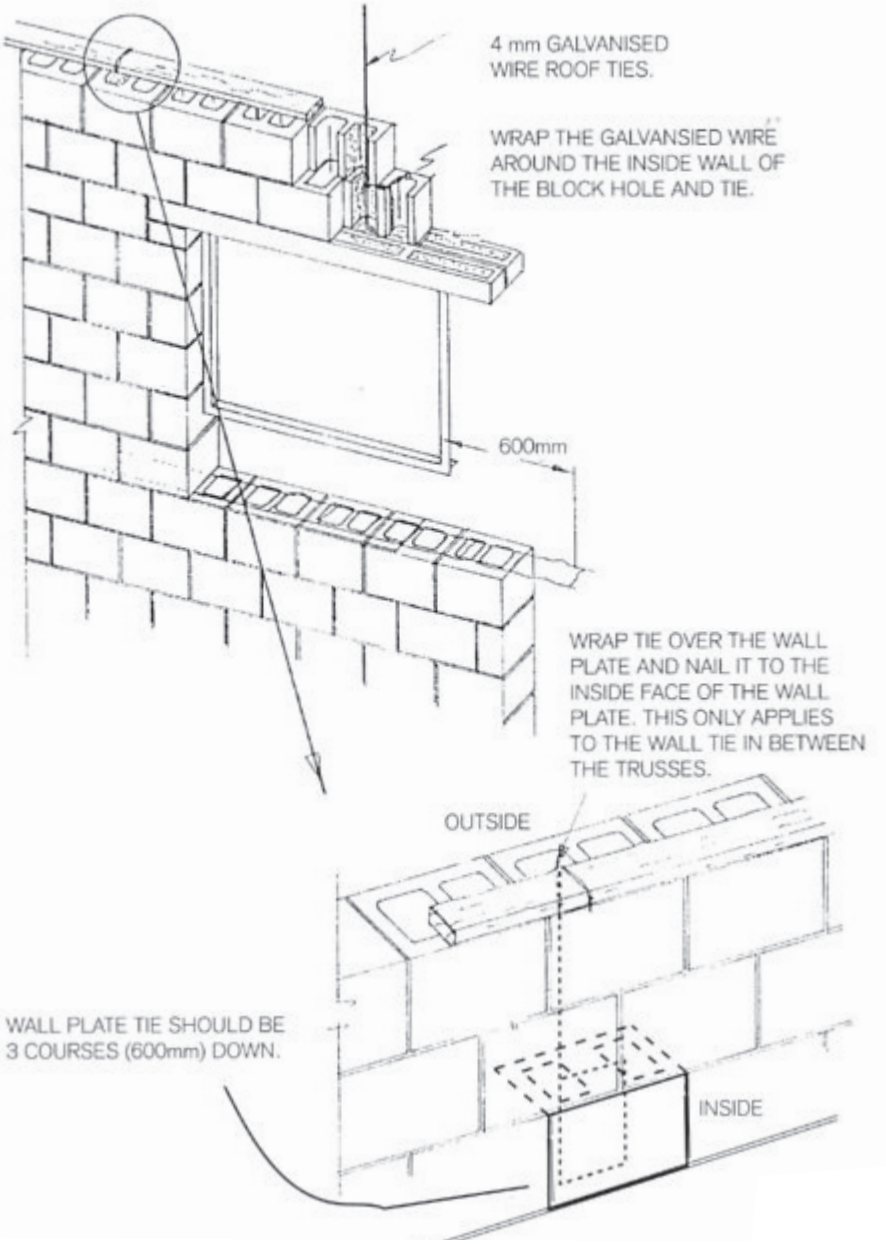
FIXING PURLINS IN POSITION
FIXING THE ROOF COVERING
BEAM FILLING
ROOF SHEETING
ROOF TILES

STEP 19

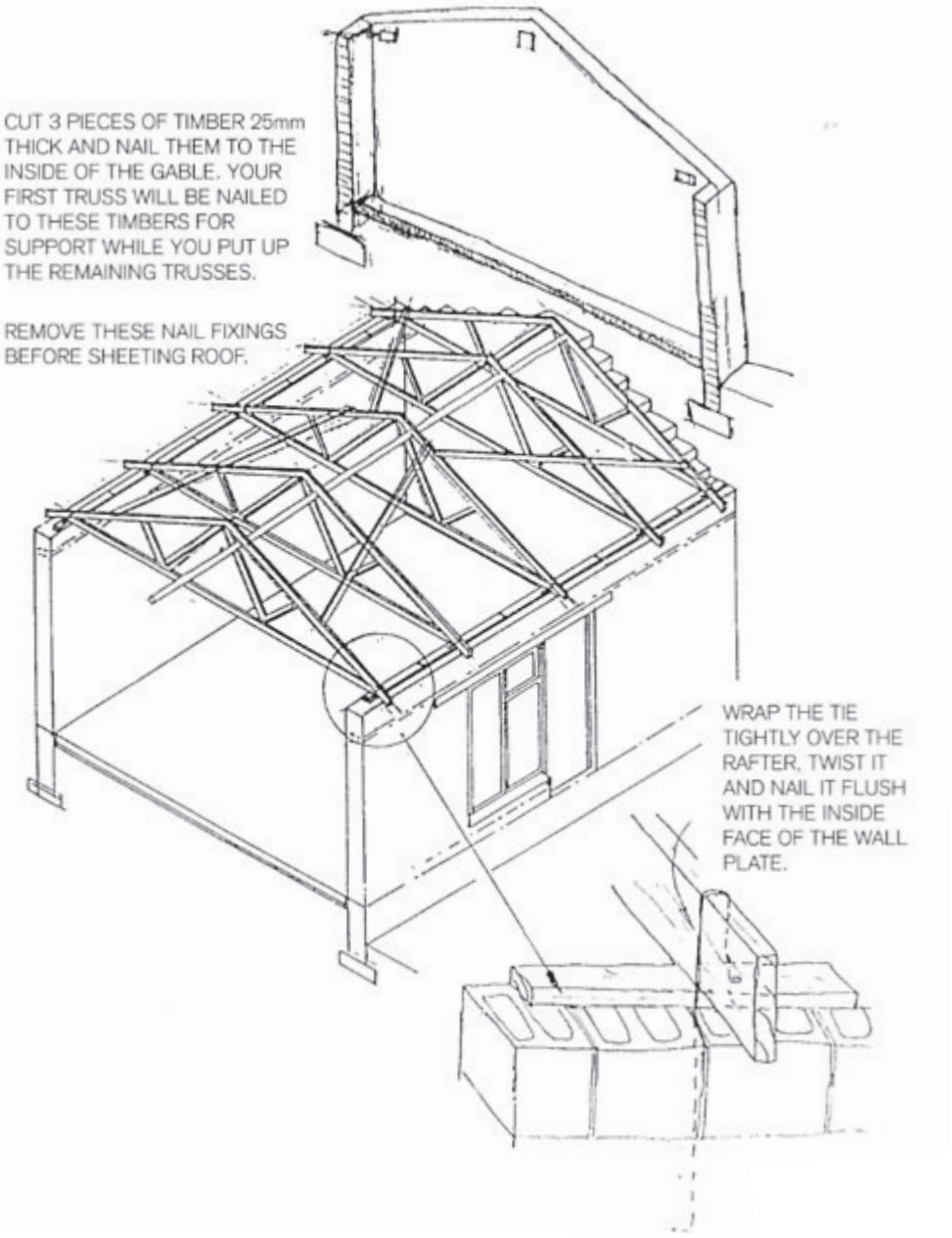
THE CEILING

STAGE 6 : STEP 16

Fixing the Wall Plates in Position



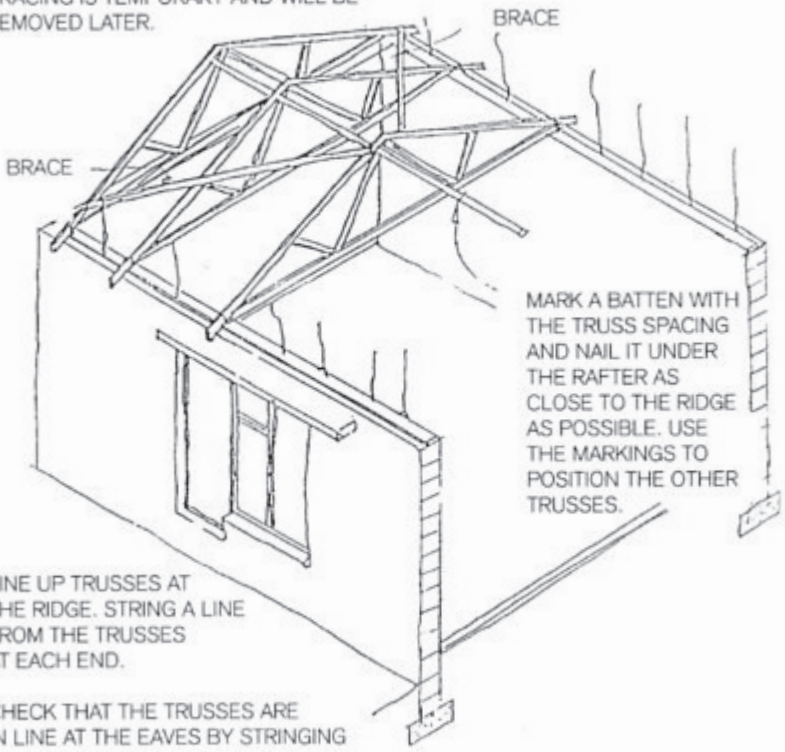
STAGE 6 : STEP 16



STAGE 6 : STEP 16

Positioning of Roof Trusses

POSITION TRUSSES AND BRACE THEM WITH BATTENS NAILED DIAGONALLY ACROSS. THIS BRACING IS TEMPORARY AND WILL BE REMOVED LATER.

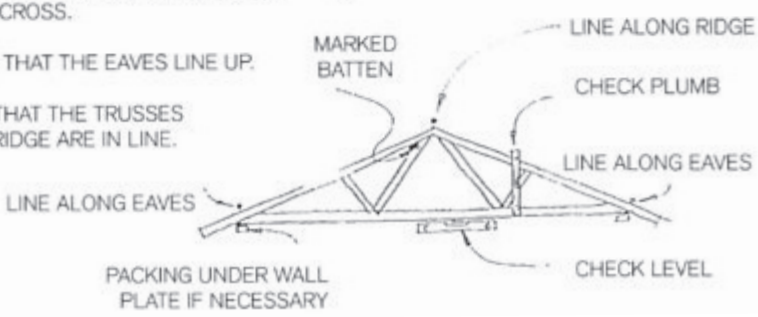


LINE UP TRUSSES AT THE RIDGE. STRING A LINE FROM THE TRUSSES AT EACH END.

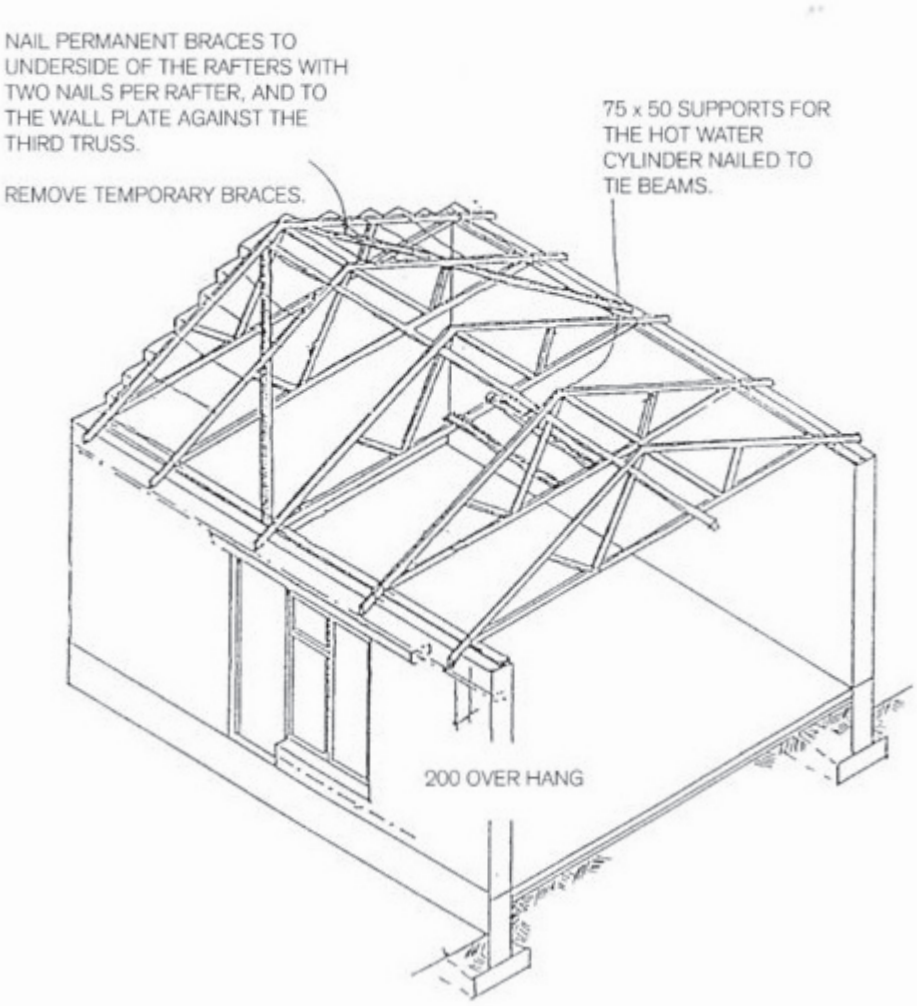
CHECK THAT THE TRUSSES ARE IN LINE AT THE EAVES BY STRINGING A LINE ACROSS.

ENSURE THAT THE EAVES LINE UP.

CHECK THAT THE TRUSSES AT THE RIDGE ARE IN LINE.

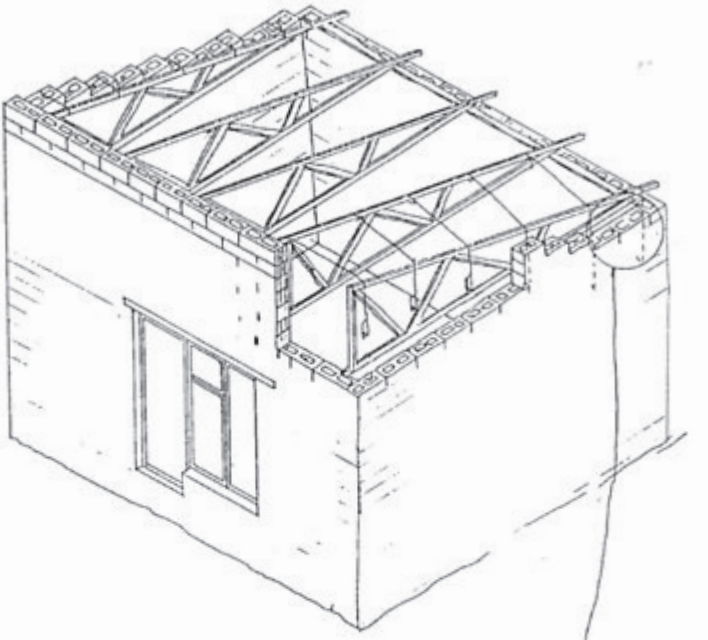


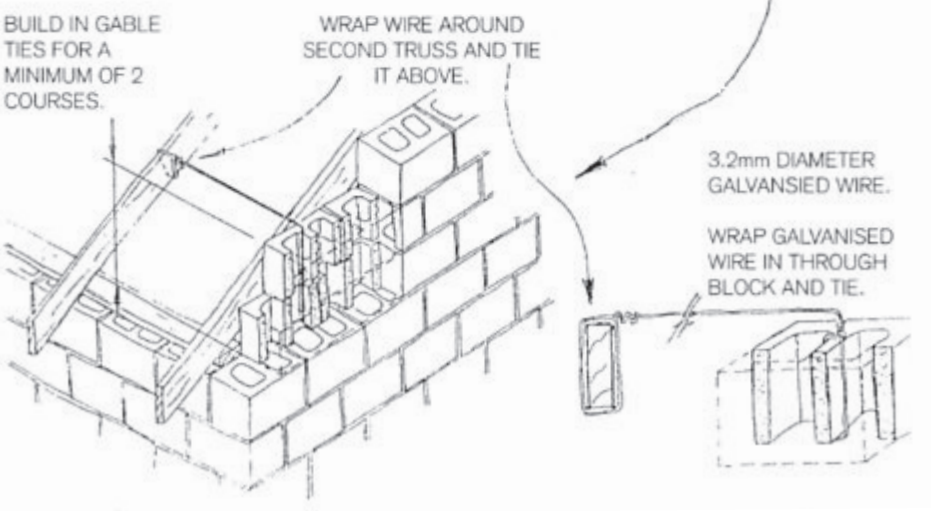
STAGE 6 : STEP 16



STAGE 6 : STEP 17

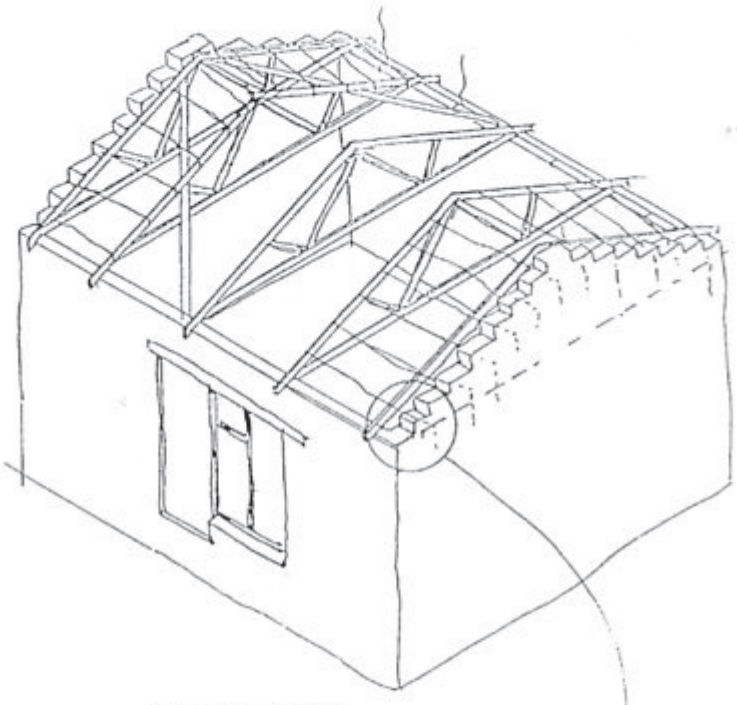
Building the Gable Wall Roof Ties

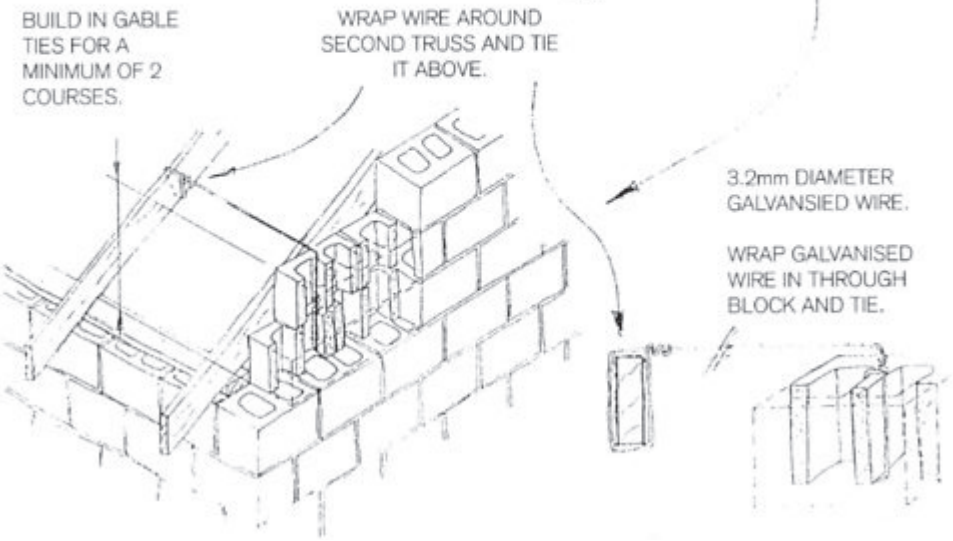




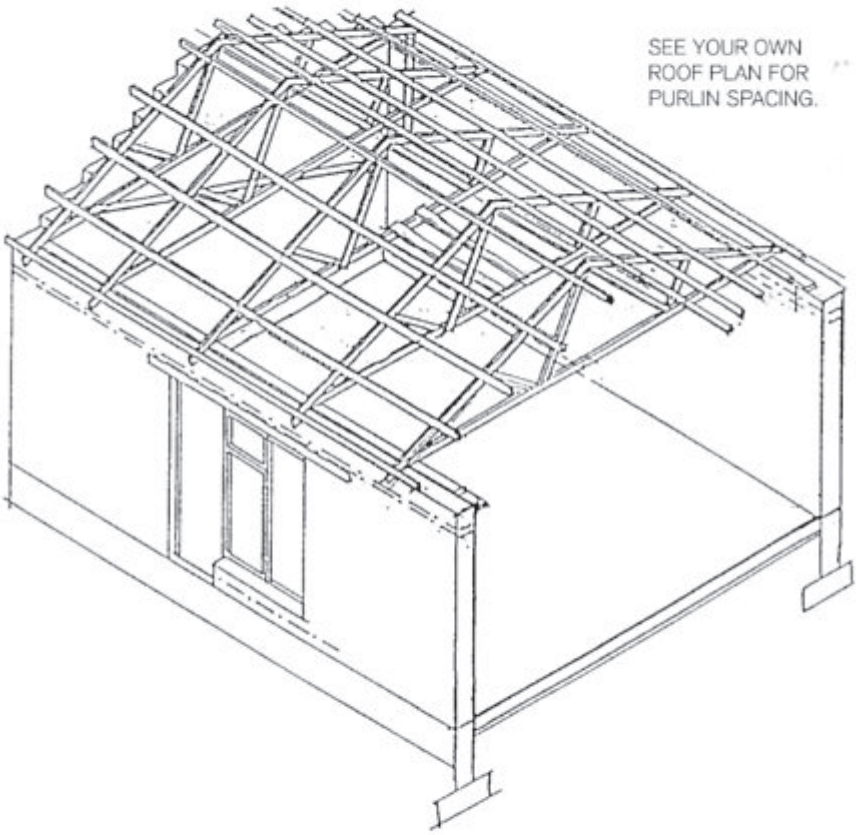
STAGE 6 : STEP 18

Fixing Purlins in Position





STAGE 6 : STEP 18



NOTE:

SHEET OR ROOF TILE COVERING?

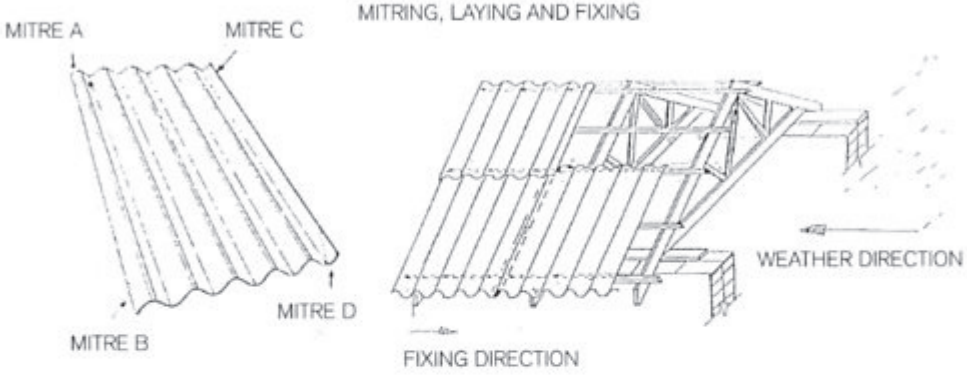
THE SPACING OF GABLES AND PURLINS OR BATTENS DEPEND ON THE TYPE OF ROOF COVERING.

YOU SHOULD CONSULT WITH THE SUPPLIERS AS TO THE EXACT REQUIREMENTS.

STAGE 6 : STEP 18

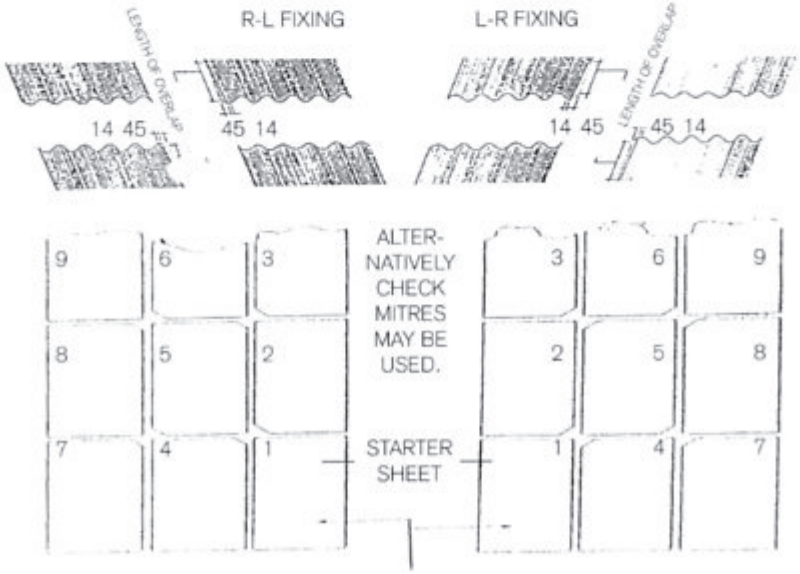
Fixing the Roof Covering

MITRING, LAYING AND FIXING



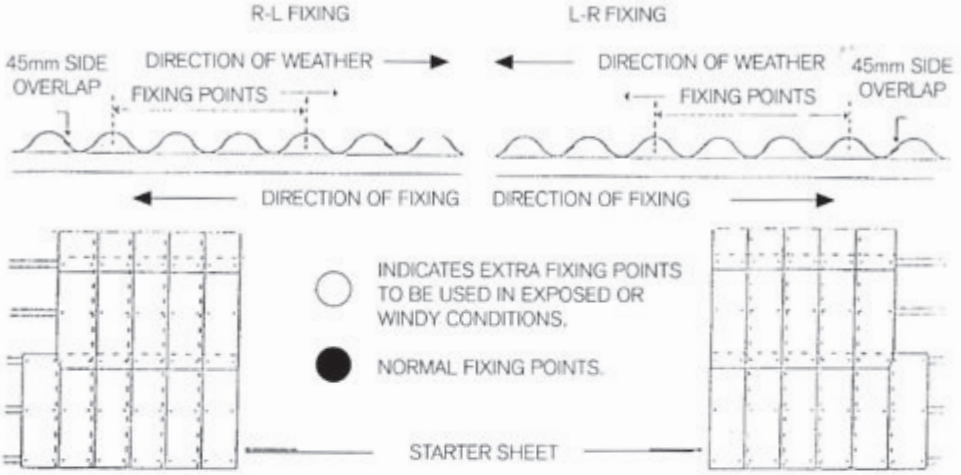
MITRING

EVERITE 'BIGSIX' SHEETS ARE DESIGNED FOR A 45mm SIDE LAP
AND CORNERS MUST BE MITRED FOR CORRECT LAYING.



STAGE 6 : STEP 18A

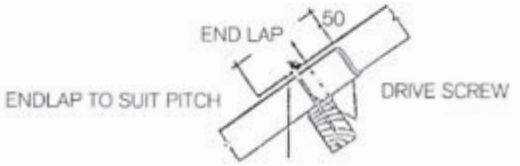
Sheet Roof Covering



NOTE: SIDE CLADDING TO BE FIXED IN A SIMILAR METHOD.

FIXING SHEETS

ALL FIXING ACCESSORIES ARE 8mm IN DIAMETER AND ALL HOLES DRILLED THROUGH THE CROWN OF THE CORRUGATION SHOULD BE 10mm IN DIAMETER.

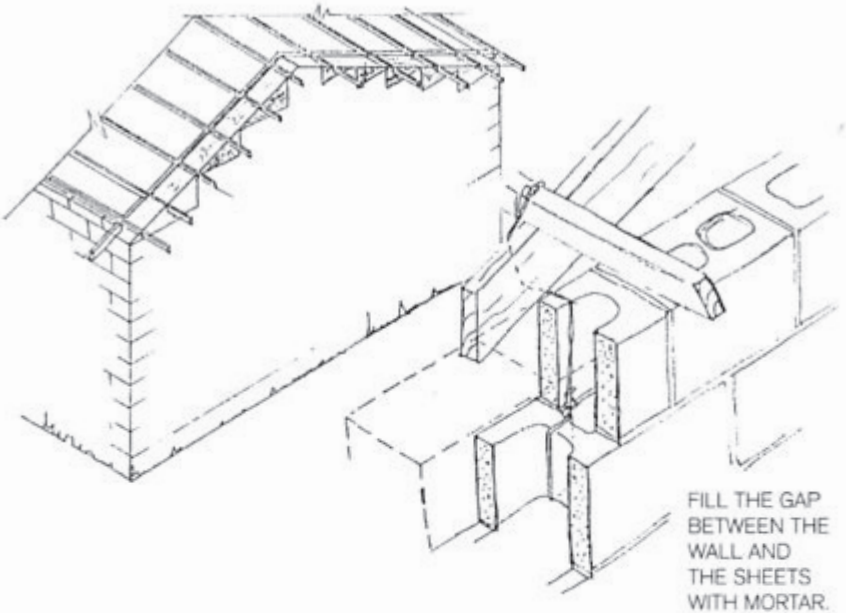


FIXING TO TIMBER PURLINS

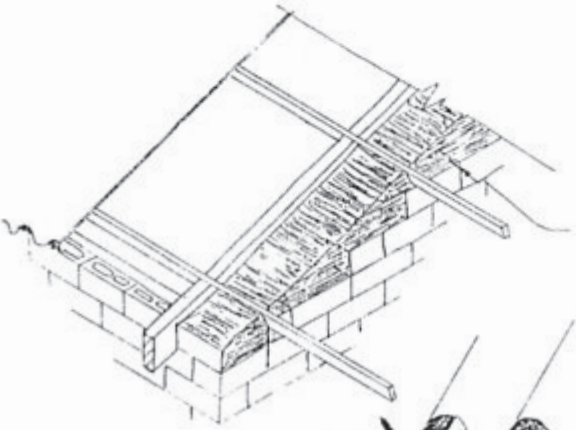
UNDER NORMAL CIRCUMSTANCES END LAPS SHOULD BE ALLOWED BUT FOR ROOF PITCHES BELOW 10° SEALING OF SIDE AND END LAPS MAY BE NECESSARY AND THE MANUFACTURERS SHOULD BE CONSULTED.

STAGE 6 : STEP 18A

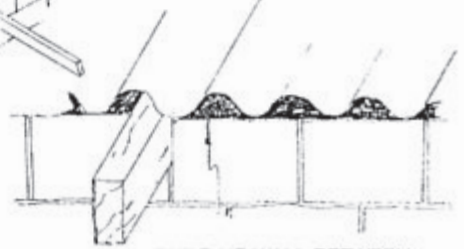
Beam Filling



FILL THE GAP BETWEEN THE WALL AND THE SHEETS WITH MORTAR.



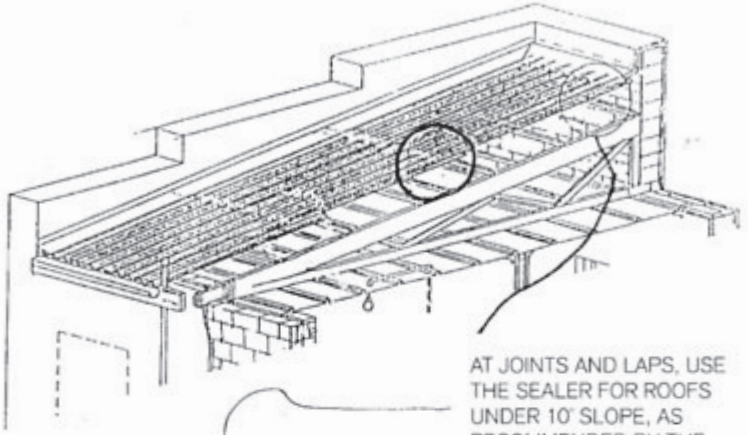
TO PREVENT BIRDS NESTING IN YOUR ROOF, FILL THE GAP BETWEEN THE TOP OF THE WALL AND SHEETS WITH MORTAR OR 'EAVES FILLER PIECES' AS SUPPLIED BY THE ROOF SHEET MANUFACTURER.



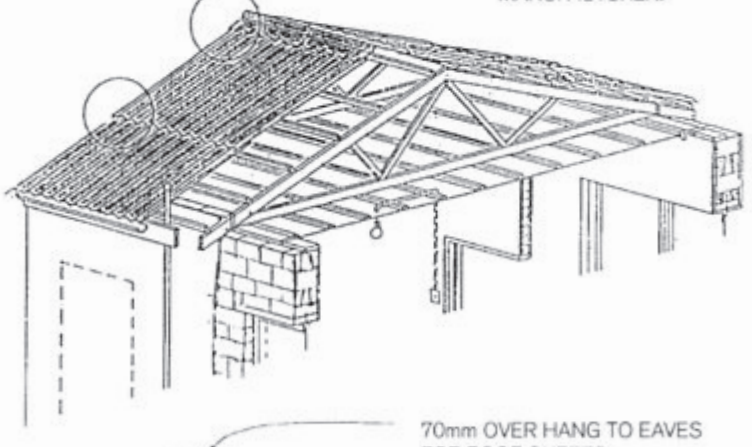
BUILD UP WALL BETWEEN RAFTERS WITH BLOCKS.

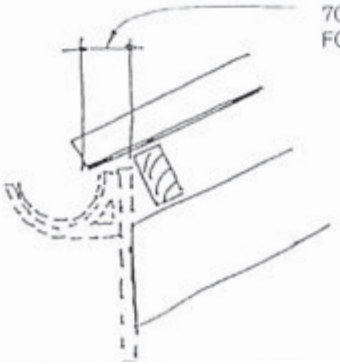
STAGE 6 : STEP 18A

Sealing the Roof Sheets



AT JOINTS AND LAPS, USE THE SEALER FOR ROOFS UNDER 10° SLOPE, AS RECOMMENDED BY THE ROOF SHEET MANUFACTURER.





70mm OVER HANG TO EAVES FOR ROOF SHEETS.

STAGE 6 : STEP 18B

Battening a Roof for Concrete Roof Tiles

Setting out procedure

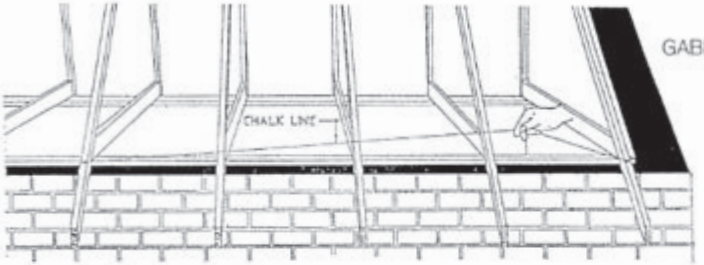


FIG. 1

1. MARK THE POSITION OF THE PLASTER BATTEN DIRECT IN LINE WITH THE EXTERIOR WALL FACE AT BOTH GABLE ENDS.

2. MARK THE POSITION OF THE RIDGE BATTEN 25MM FROM THE ROOF APEX AT BOTH GABLE ENDS AND STRIKE A CHALK LINE BETWEEN THE TWO POINTS.

Battening procedure

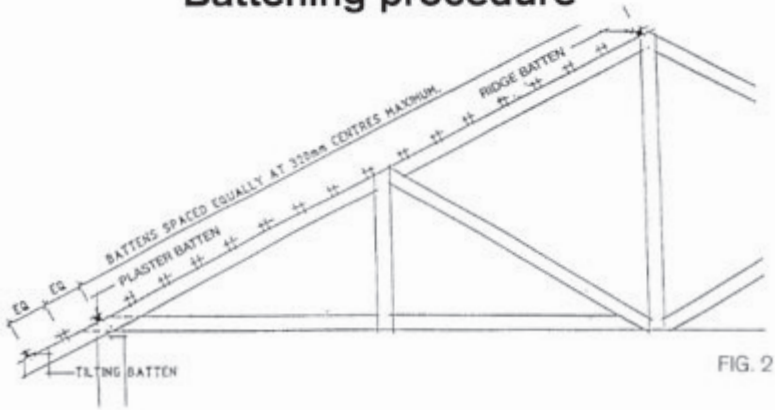


FIG. 2

1. PLACE TOP EDGE OF PLASTER AND RIDGE BATTEN ON THE CHALK LINE AND NAIL INTO RAFTER.
2. DIVIDE THE DISTANCE BETWEEN THE PLASTER AND RIDGE BATTENS INTO EQUAL BATTEN CENTRES.
3. MARK THE BATTEN CENTRES ONTO RAFTERS AND STRIKE A CHALK LINE.
4. PLACE THE BATTENS INTO POSITION AND NAIL TO THE RAFTERS.
5. USE THE SAME BATTEN CENTRES AT THE ROOF OVERHANG.

STAGE 6 : STEP 18B

Tiling a Roof with Concrete Roof Tiles

Setting out procedure

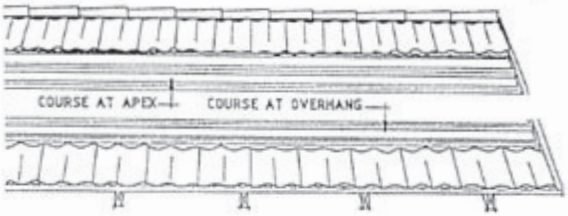


FIG. 3

1. SET OUT ONE COURSE OF TILES AT EAVES AND RIDGE ENSURING AN EQUAL OVERHANG IS ATTAINED AT EITHER END. IF NECESSARY ADJUST THE ROW OF TILES UNTIL OVERHANGS ARE EQUAL.

Tiling procedure

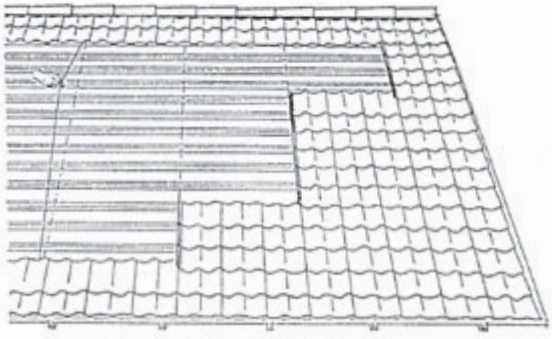


FIG. 4

1. ONCE SETTING OUT PROCEDURE IS COMPLETE MARK EACH THIRD TILE POSITION ON THE BATTENS.

2. START TILING FROM RIGHT TO LEFT AND FROM BOTTOM TO TOP TAKING THREE ROWS OF TILES UP AT THE TIME.

STAGE 6 : STEP 18B

Tiling a Roof with Concrete Roof Tiles

Mortar for Ridge Tiles

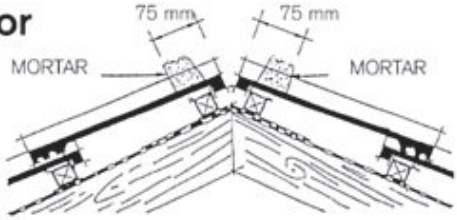


FIG. 5

1. MIX MORTAR FOR BEDDING AND POSITIONING OF RIDGE/TILES TO THE DESIRED WORKABILITY.
2. THE MIX CONSISTS OF 3 PARTS PLASTER SAND AND ONE PART OF CEMENT.
3. TINT MORTAR WITH PIGMENT TO THE COLOUR OF THE ROOF TILES.

Bedding of Ridge Tiles

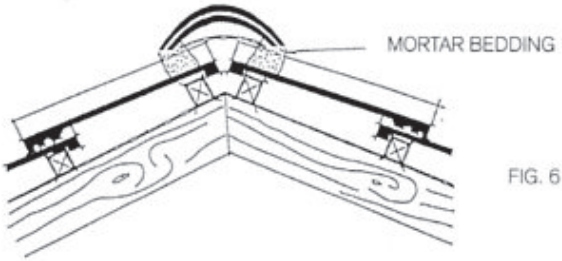


FIG. 6

1. PLACE SUITABLE DAMPCOURSE 150mm WIDE OVER THE TOP COURSE OF TILES.
2. PLACE MORTAR WITH A TROWELL ONTO THE TOP COURSE OF TILES TO FORM A CONTINUOUS BED INTO WHICH THE RIDGE TILES ARE PRESSED.
3. POINT THE MORTAR AT RIGHT ANGLES TO THE TILES AND WETBRUSH FOR A SMOOTH FINISH.

Eaves detail

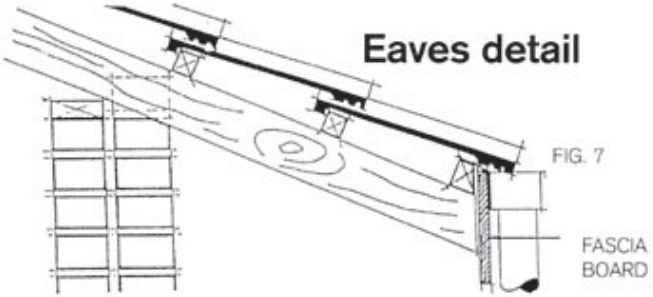


FIG. 7

1. THE GUTTER OVERHANG OF TILES AT THE FASCIA BOARD IS NORMALLY 50mm.
2. USE TILTING FILLET OR THE FASCIA BOARD TO KEEP THE TILES AT EAVES IN THE CORRECT PLAIN.

STAGE 6 : STEP 18B

Tiling a Roof with Concrete Roof Tiles

Verge detail

FIG. 8
ONCE THE VERGE OVERHANG HAS BEEN ESTABLISHED USING FULL TILES, MARK THE TOP AND BOTTOM BATTENS ONLY. STRIKE A CHALK LINE BETWEEN THE TWO POINTS. CUT THE BATTENS ON THE CHALK MARK.

FIG. 9
FIX THE COUNTER BATTEN TO THE ENDS OF THE TILING BATTENS FLUSH WITH THE TOP EDGE OF THE BATTENS.

FIG. 10
POSITION THE FIRST RAKE TILE AGAINST THE SECOND COURSE OF TILES AND NAIL INTO POSITION.

POSITION THE REMAINING RAKE TILES ONE AT THE TIME AGAINST THE NEXT COURSE OF TILES AND FIX INTO POSITION USING NON CORRODIBLE NAILS.

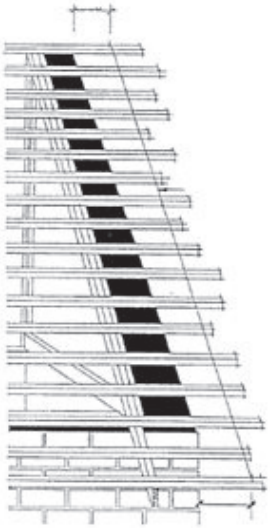


FIG. 8

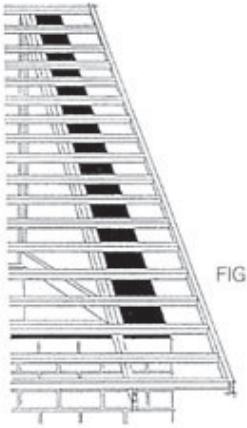


FIG.9

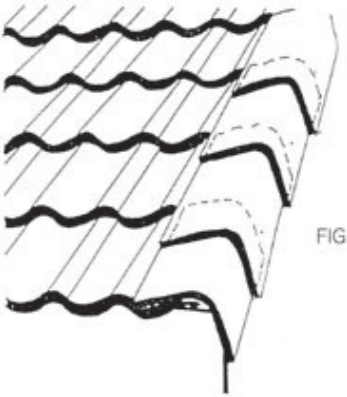
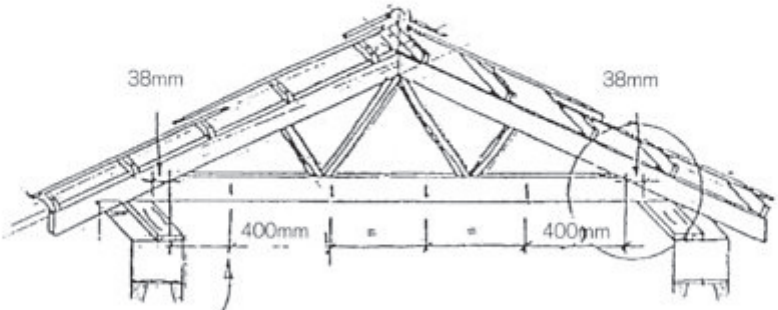


FIG.10

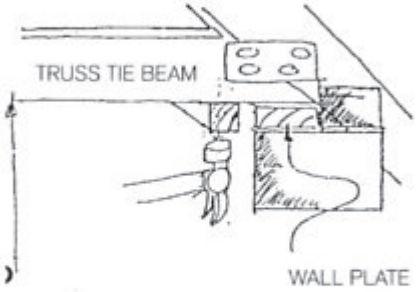
STAGE 6 : STEP 19

The Ceiling



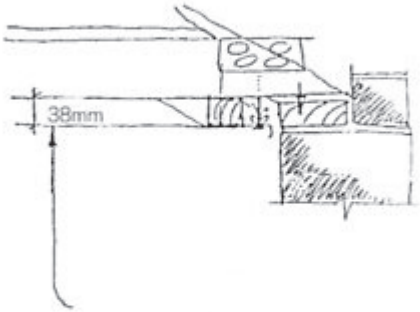
1 MARK THE CENTRES OF YOUR BRANDERING ONTO THE TRUSSES AT EACH END.

KNOCK A NAIL AT EACH MARK AND USING A CHALK STRING, MARK THE TRUSSES IN BETWEEN.



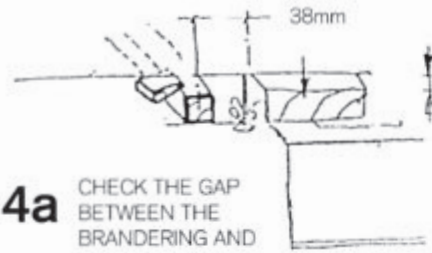
2 FIND OUT WHICH IS THE LOWEST TRUSS TIE BEAM. THIS WILL INDICATE THE LEVEL OF THE TOP OF THE BRANDERING THROUGHOUT.

NAIL THE BRANDERING TO THE UNDERSIDE OF THE TIE BEAMS USING THE CHALK MARKS TO KEEP THEM IN LINE.



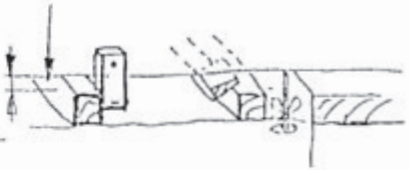
3 USING FISHING LINE AND NAILS KNOCKED INTO THE ENDS OF THE TIE BEAMS, EXTEND THE LINE ALONG THE TIE BEAMS FROM SIDE TO SIDE.

STAGE 6 : STEP 19

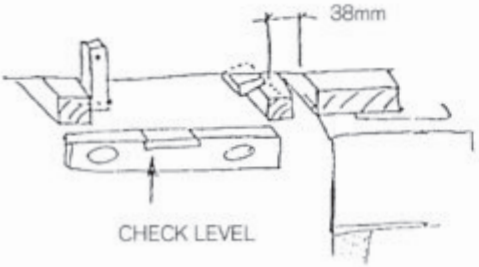


4a CHECK THE GAP BETWEEN THE BRANDERING AND THE FISHING LINE.

HAMMER GENTLY ON TOP OF THE BRANDERING UNTIL IT JUST TOUCHES THE LINE. USE PACKING TO FILL THE GAP BETWEEN THE BRANDERING AND THE TIE BEAM THEN FIX PERMANENTLY WITH A 75mm LONG SCREW NAIL.



4b IF THE GAP IS MORE THAN 12mm USE A PIECE OF BRANDERING AS A CLEAT.



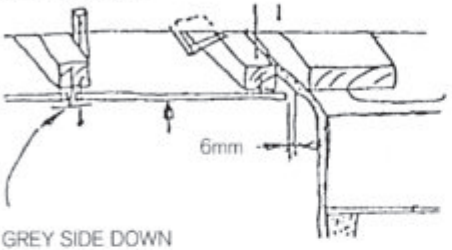
TRY TO USE SCREW NAILS FOR ALL BRANDERING FIXINGS OF AT LEAST 75mm LONG.

WHEN YOU ARE SURE THAT ALL BRANDERINGS ARE SECURE AND LEVEL, REMOVE ALL THE NAILS YOU USED FOR THE LINES.

STAGE 6 : STEP 19

PLASTERED RHINOBOARD

IVORY SIDE UP

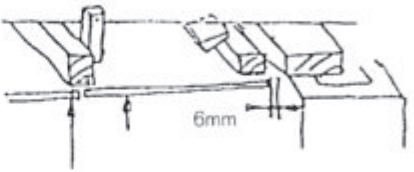


GREY SIDE DOWN

5a FIX RHINO BOARD WITH 38mm GALV CLOUT NAILS +- 150mm CENTRES.

UNPLASTERED RHINOBOARD

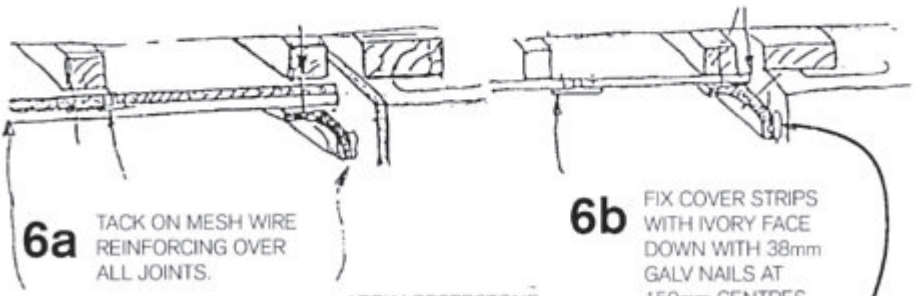
GREY SIDE UP



IVORY SIDE DOWN

5b FIX RHINO BOARD WITH 38mm GALV CLOUT NAILS +- 150mm CENTRES.

FIX CORNICE TO BRANDERING THROUGH THE CEILING USING 38mm GALVANISED NAILS AT 350mm CENTRES.



6a TACK ON MESH WIRE REINFORCING OVER ALL JOINTS.

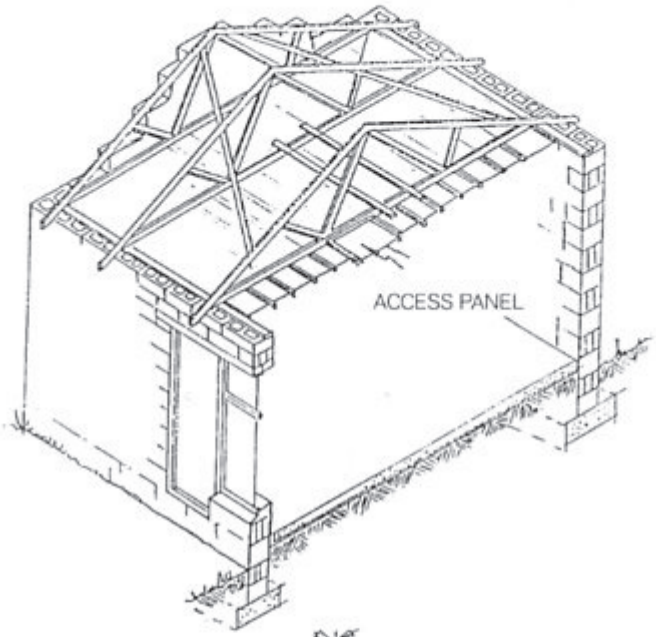
7a PLASTER ENTIRE SURFACE WITH 6mm CRETESTONE PLASTER FOLLOWED BY A SKIM COAT OF 'GLADSTONE' / CRETESTONE TO SMOOTH SURFACE.

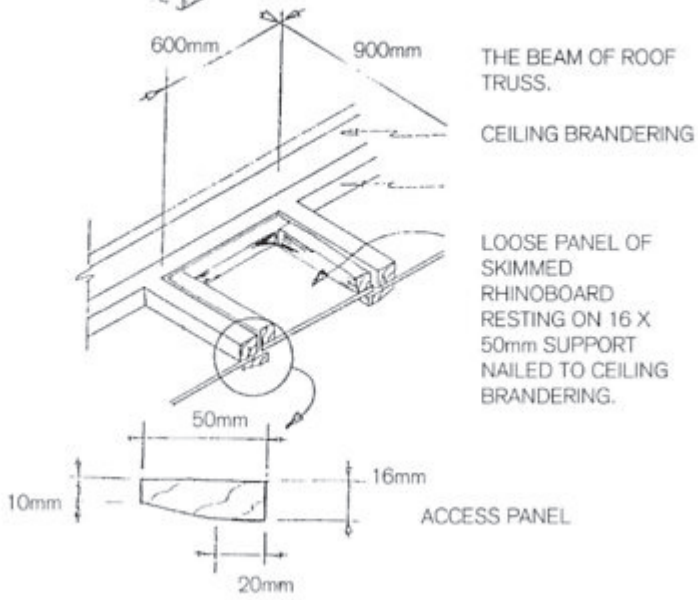
APPLY CRETESTONE FILLING BEFORE FIXING CORNICE.

6b FIX COVER STRIPS WITH IVORY FACE DOWN WITH 38mm GALV NAILS AT 150mm CENTRES.

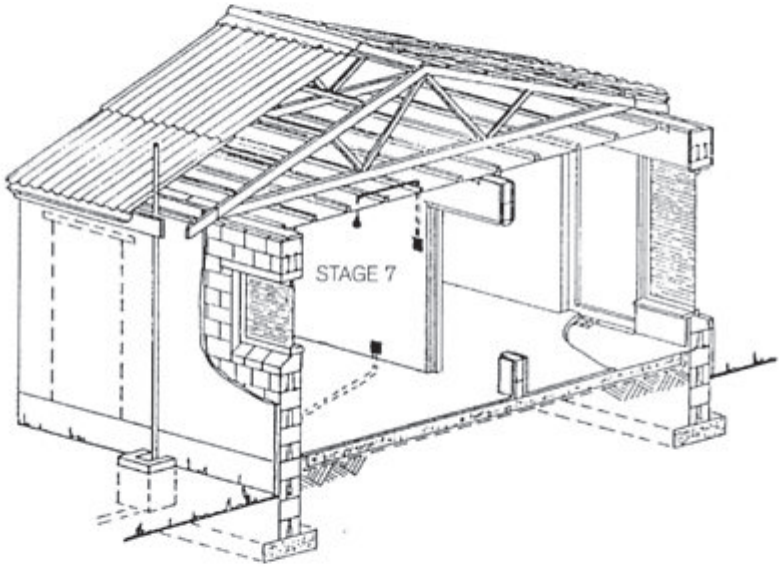
APPLY CRETESTONE FILLING BEFORE FIXING CORNICE.

STAGE 6 : STEP 19





STAGE 7



STEP 20

ELECTRICAL INSTALLATION

STAGE 7 : STEP 20

Electrical Installation

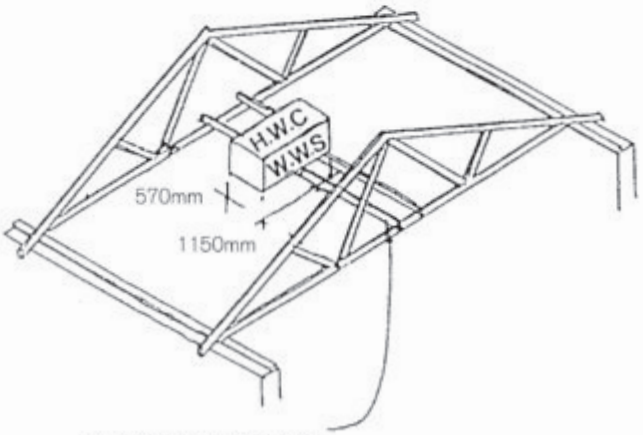
THE ELECTRICAL INSTALLATION MUST BE DONE BY A QUALIFIED ELECTRICIAN.

TO PREPARE FOR THE ELECTRICIAN YOU SHOULD:

1. CONSTRUCT SUPPORTS FOR THE HOT WATER CYLINDER.

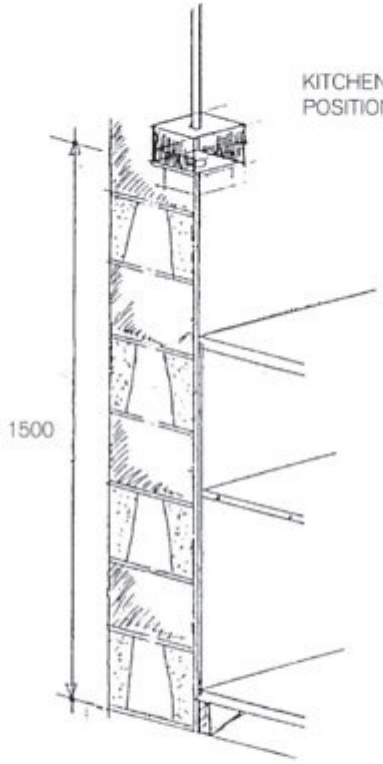
2. CUT CHASES (GROOVES) IN THE WALLS TO CONCEAL CONDUITS (IF REQUIRED).

A HOT WATER CYLINDER OF 150 LITRES CAPACITY IS ADEQUATE FOR A SMALL FAMILY (4-6).



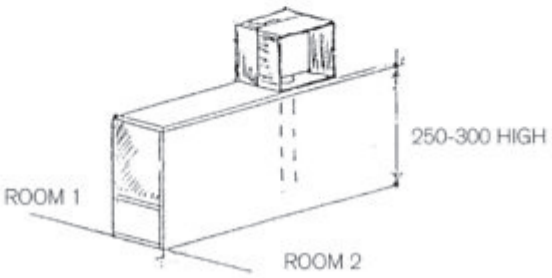
75 X 50mm SUPPORTS NAILED BETWEEN TRUSSES.

STAGE 7 : STEP 20



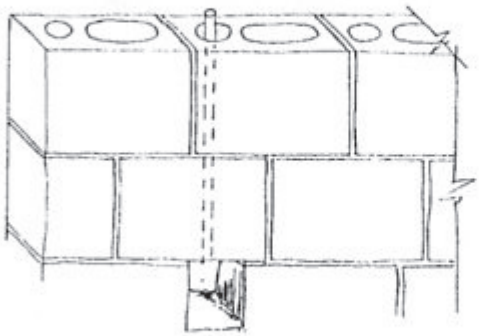
IT IS CHEAPER TO BUILD IN PLUGS BACK TO BACK.

OTHER PLUG POSITONS

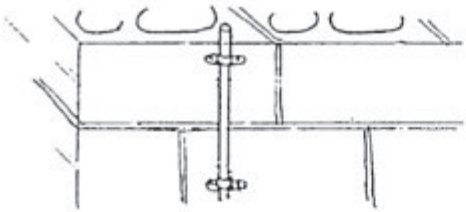


STAGE 7 : STEP 20

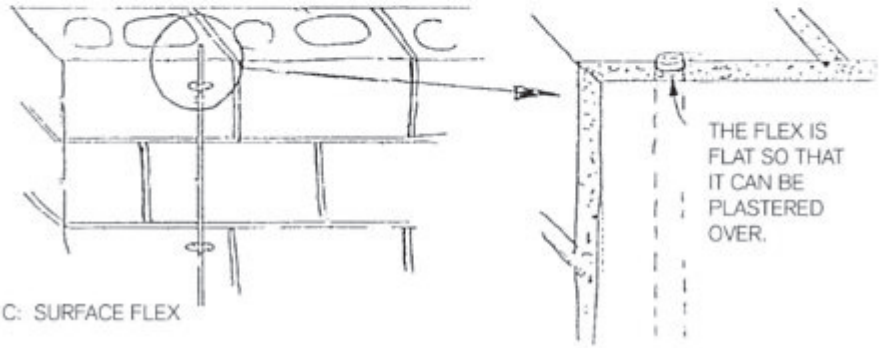
3 Ways to Run Wiring



A: CONCEALED CONDUIT

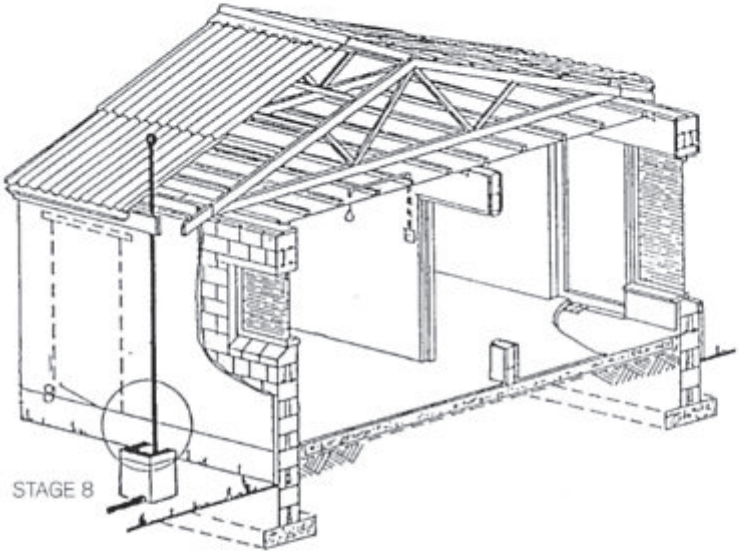


B: EXPOSED CONDUIT



C: SURFACE FLEX

STAGE 8



STEP 21
WATER SUPPLY

STEP 22A
OPEN DRAINAGE
GULLEY AND INSPECTION CHAMBER
DRAINAGE

STEP 22B
CLOSED DRAINAGE SYSTEM
GULLEY

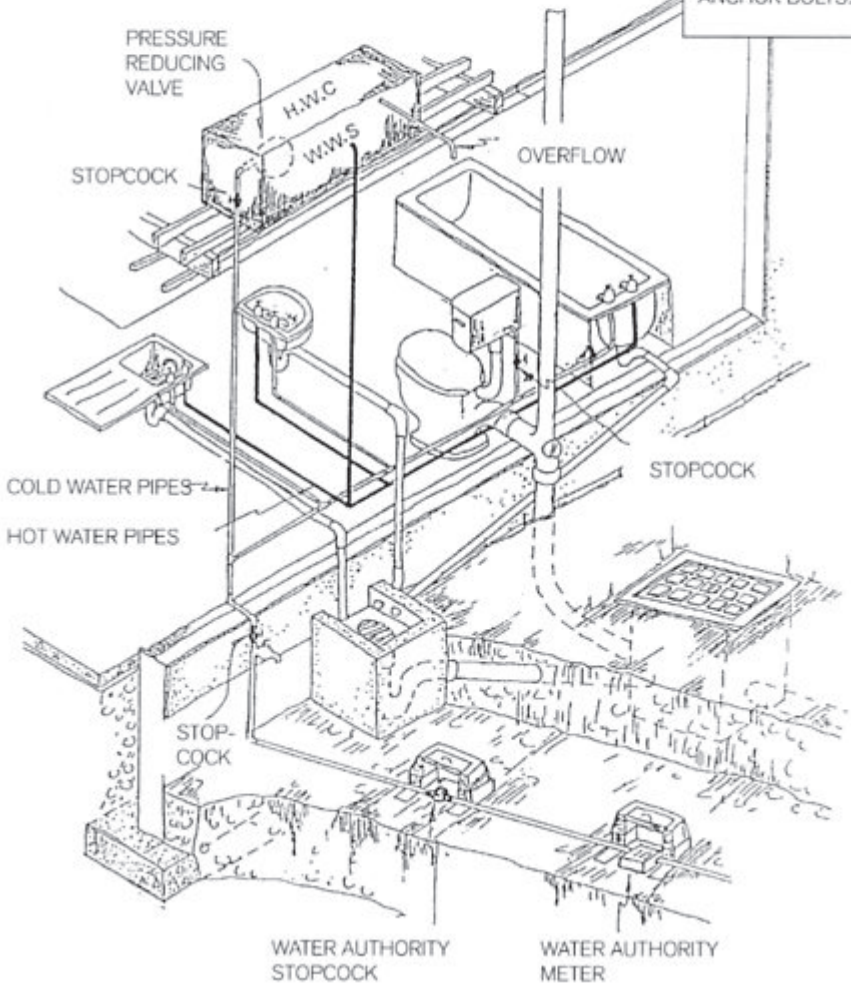
STEP 22C
SEPTIC TANK DRAINAGE
GULLEY AND INSPECTION CHAMBER
SEPTIC TANK
SOAKAWAY

STAGE 8 : STEP 21

Water Supply

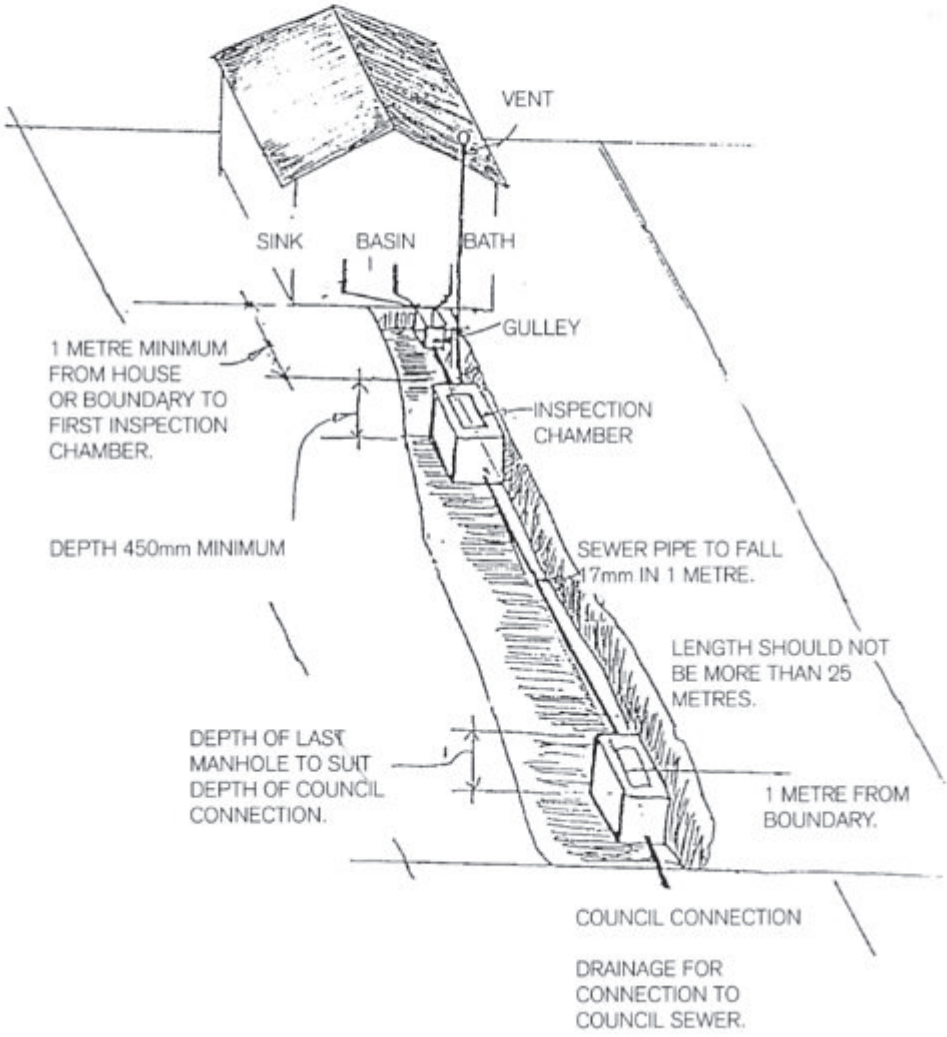
This is a very important and difficult installation and should be done by a licenced plumber.

FOR FIXING SINKS, BASINS ETC TO HOLLOW BLOCKS, FILL THE APPROPRIATE CORE WITH MORTAR TO TAKE ANCHOR BOLTS.



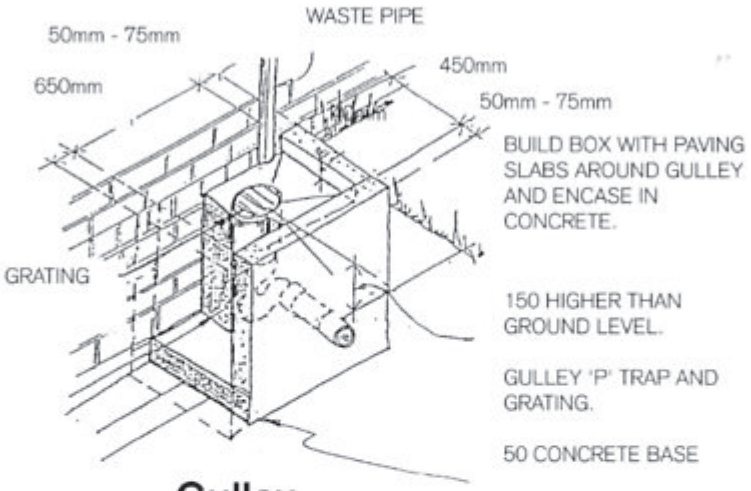
STAGE 8 : STEP 22A

Open Drainage System

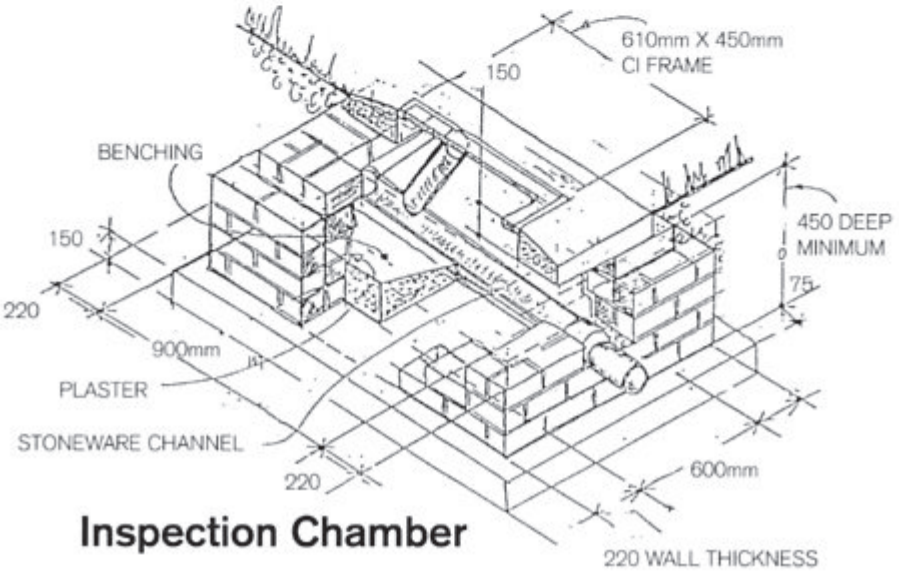


STAGE 8 : STEP 22A

Gulley and Inspection Chamber



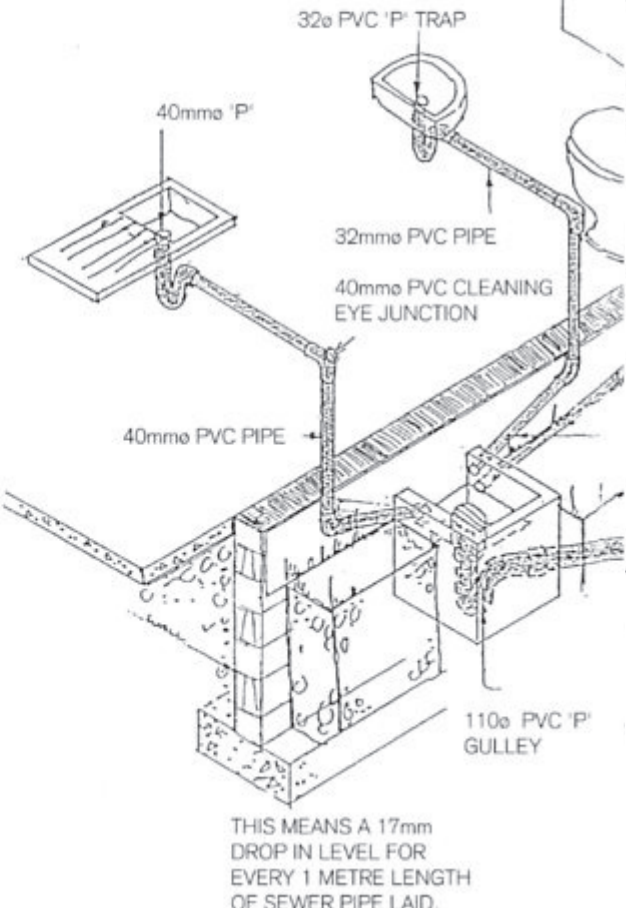
Gulley



Inspection Chamber

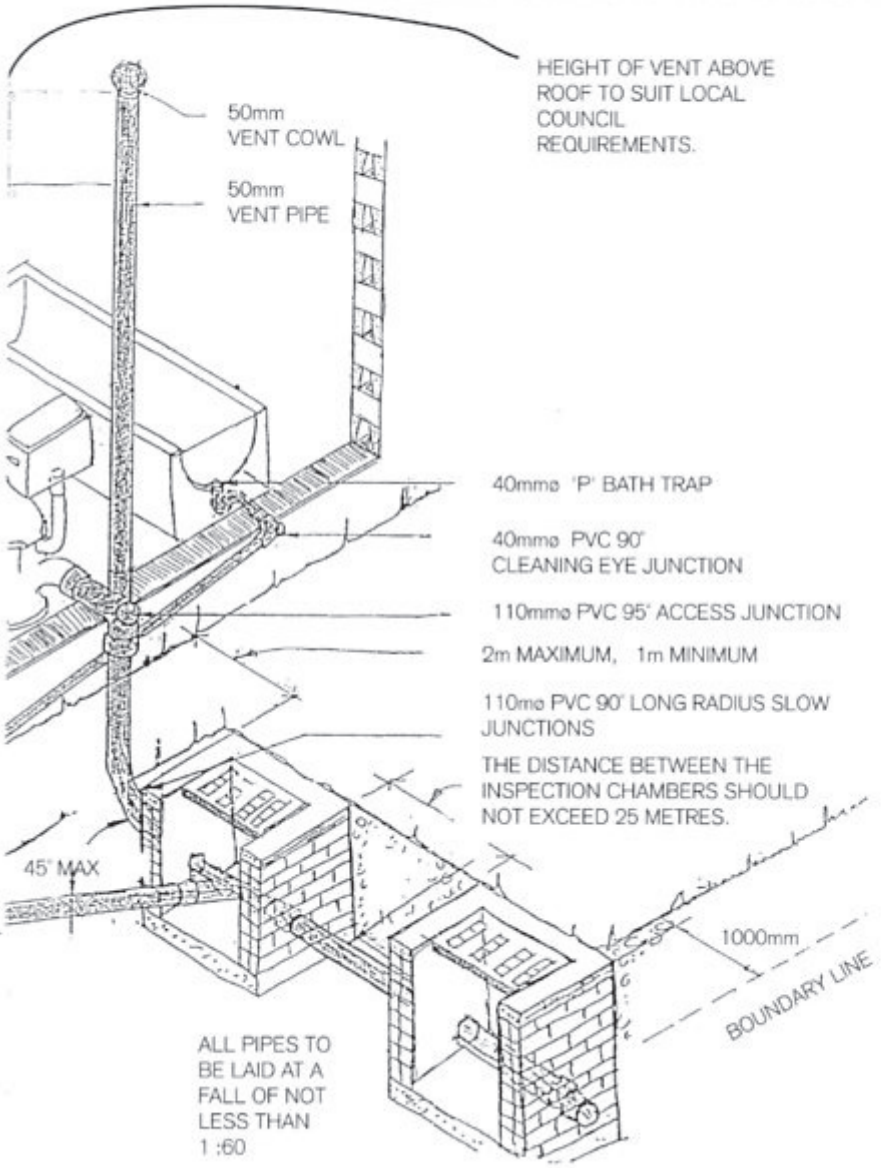
STAGE 8 : STEP 22A

Drainage



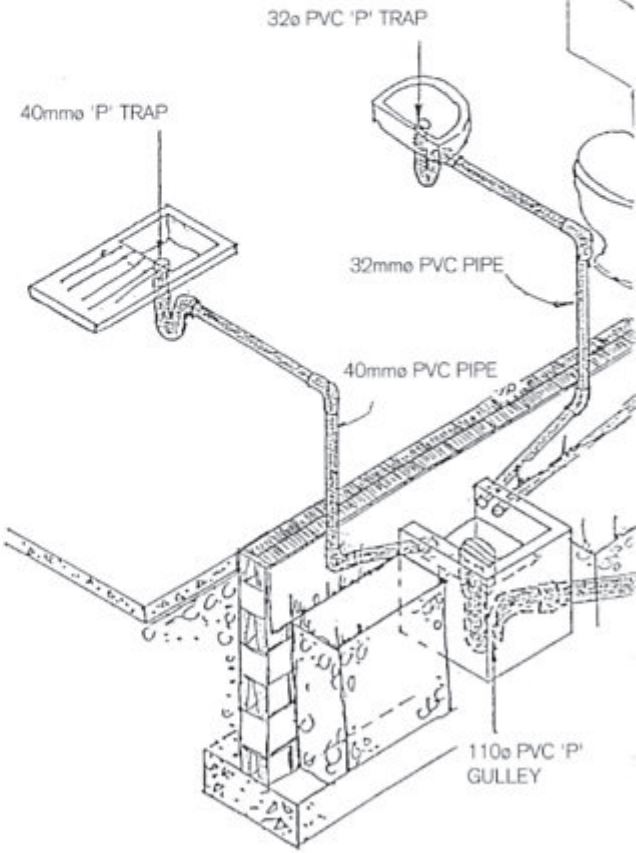
STAGE 8 : STEP 22A

Drainage



STAGE 8 : STEP 22B

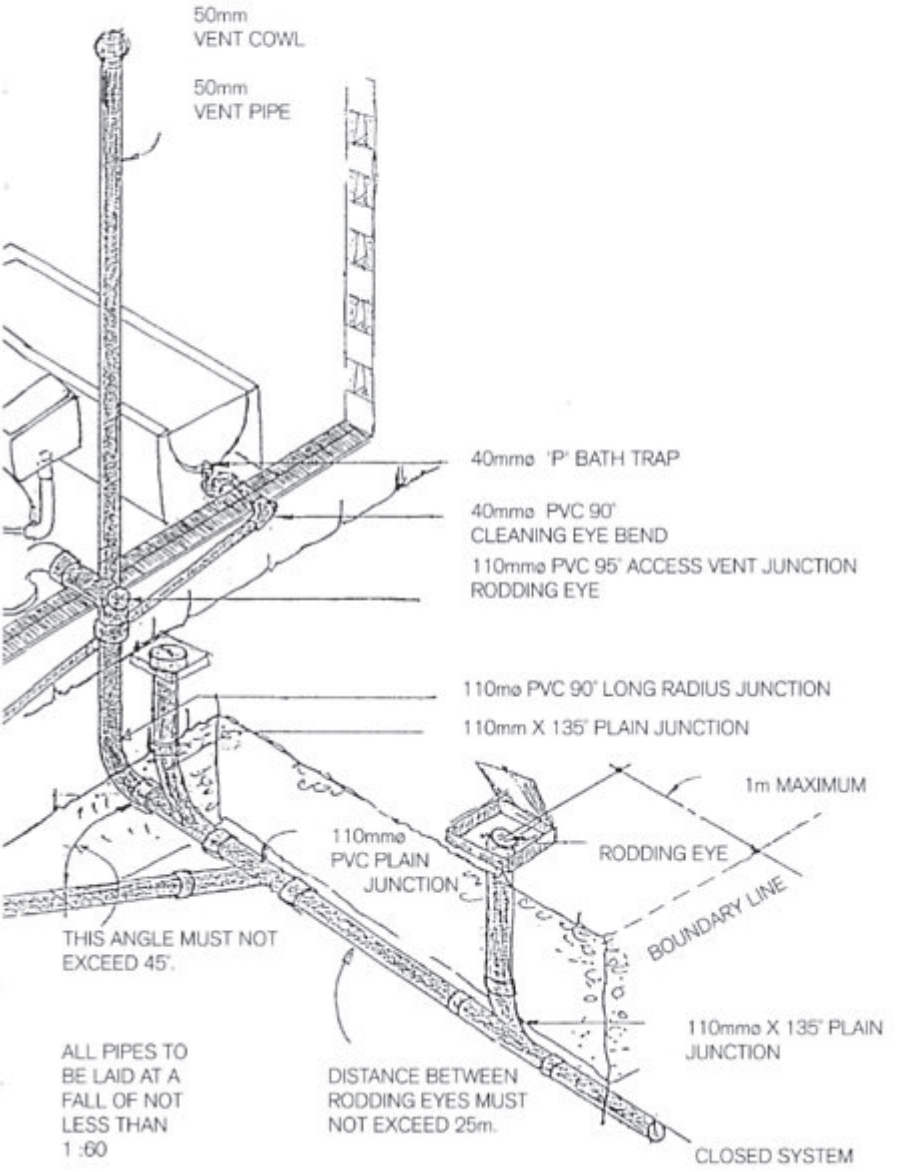
Closed Drainage System



THIS MEANS A 17mm DROP IN LEVEL FOR EVERY 1METRE LENGTH OF PIPE.

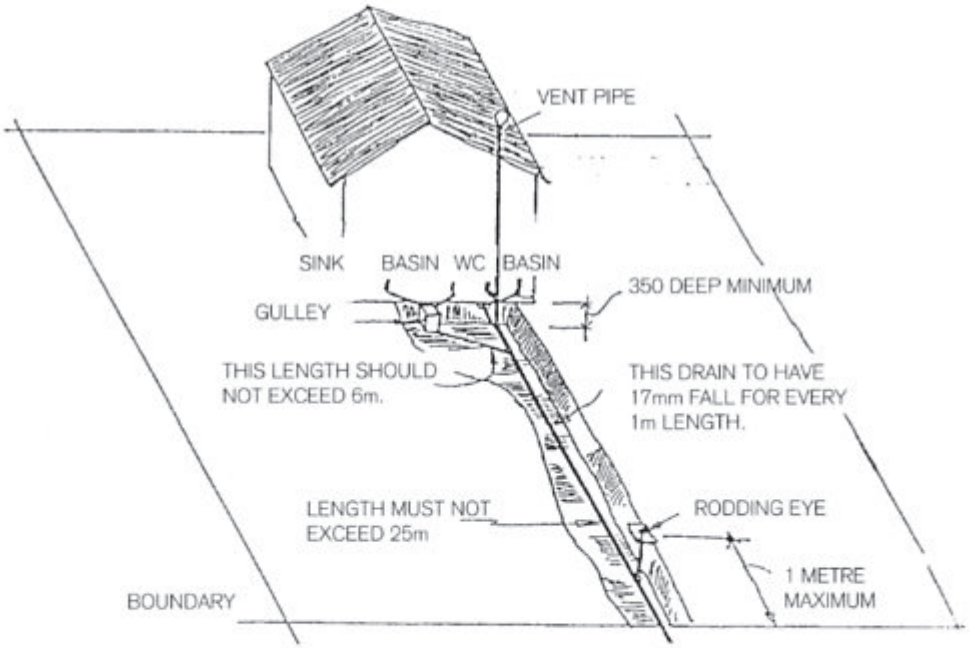
STAGE 8 : STEP 22B

Closed Drainage System



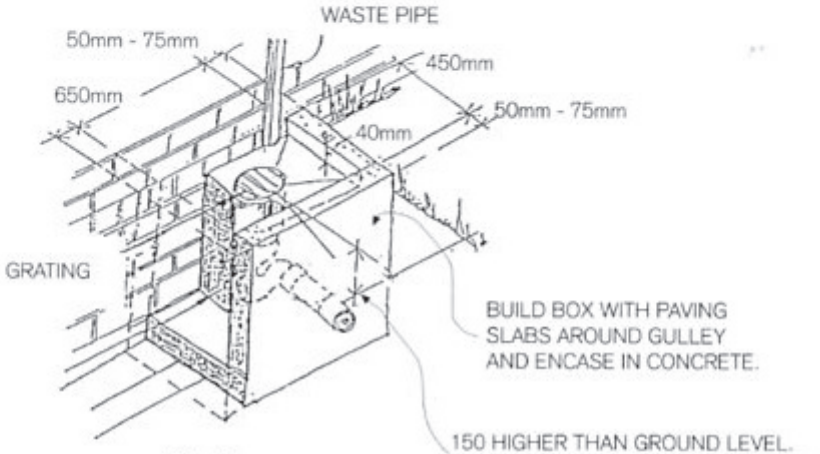
STAGE 8 : STEP 22B

Closed Drainage System

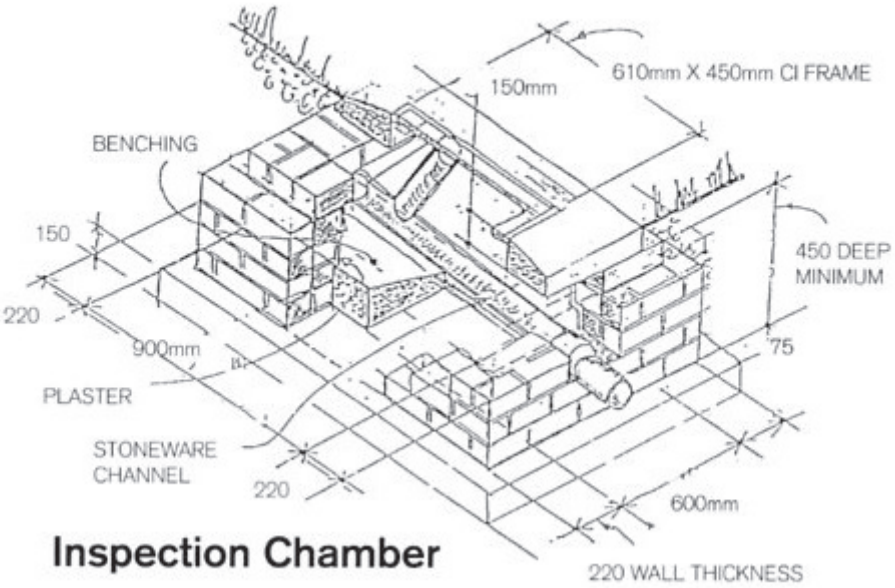


STAGE 8 : STEP 22C

Gulley and Inspection Chamber



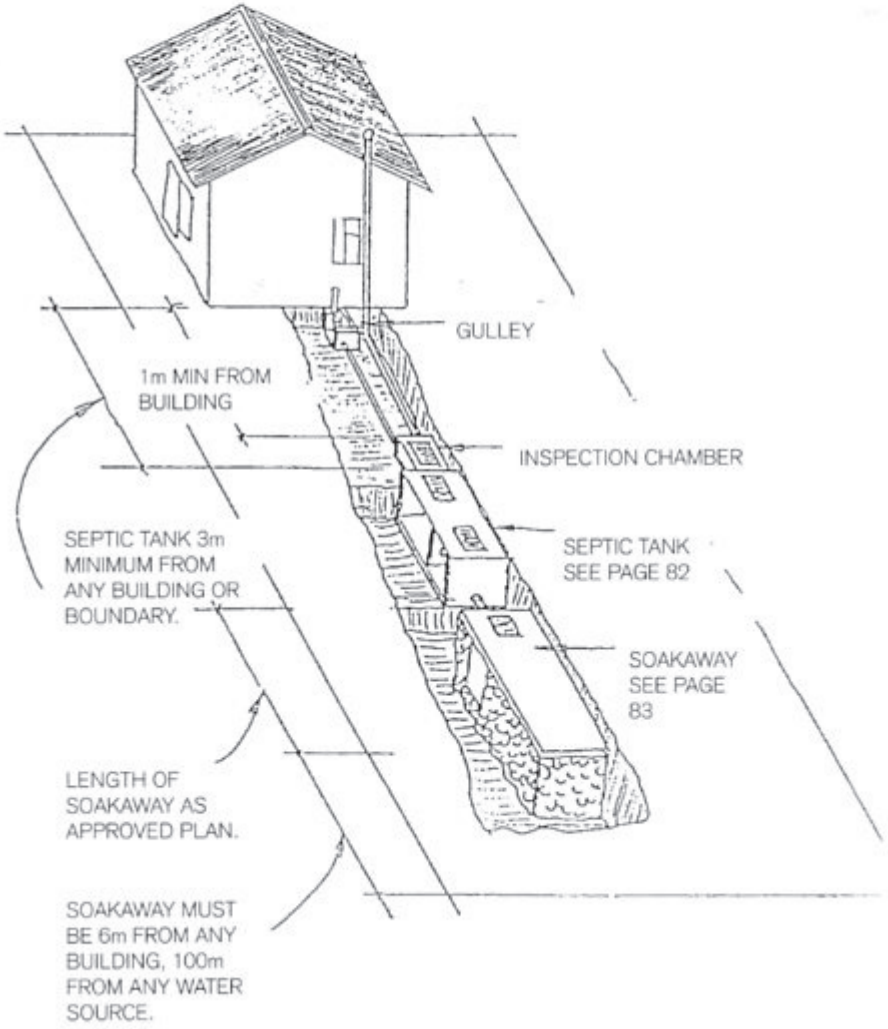
Gulley



Inspection Chamber

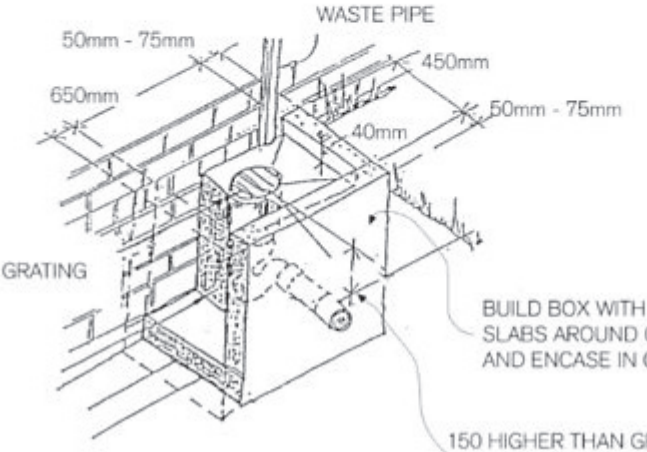
STAGE 8 : STEP 22C

Septic Tank Drainage

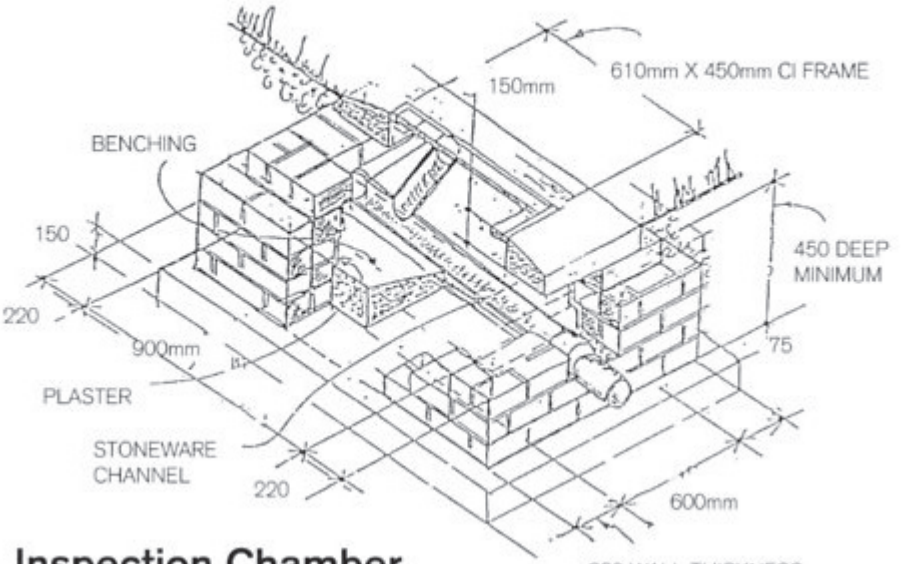


STAGE 8 : STEP 22C

Gulley and Inspection Chamber



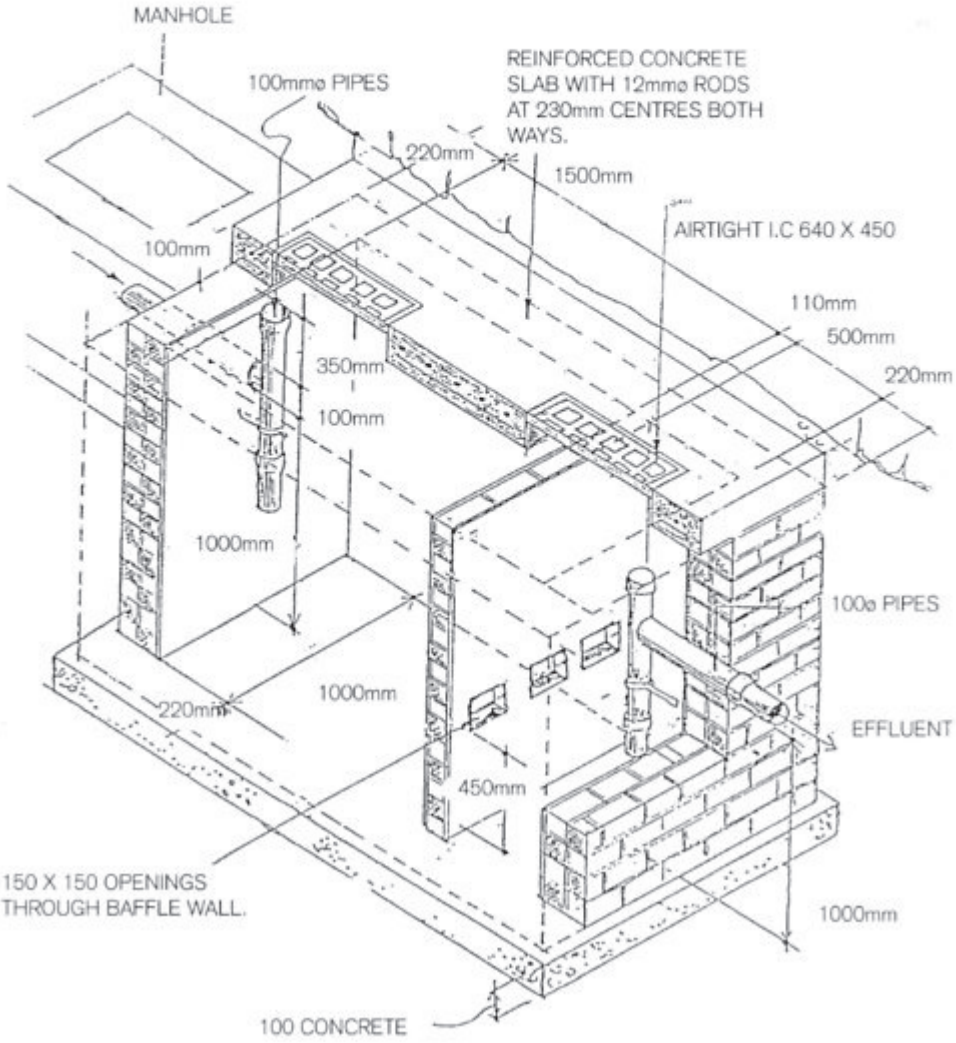
Gulley



Inspection Chamber

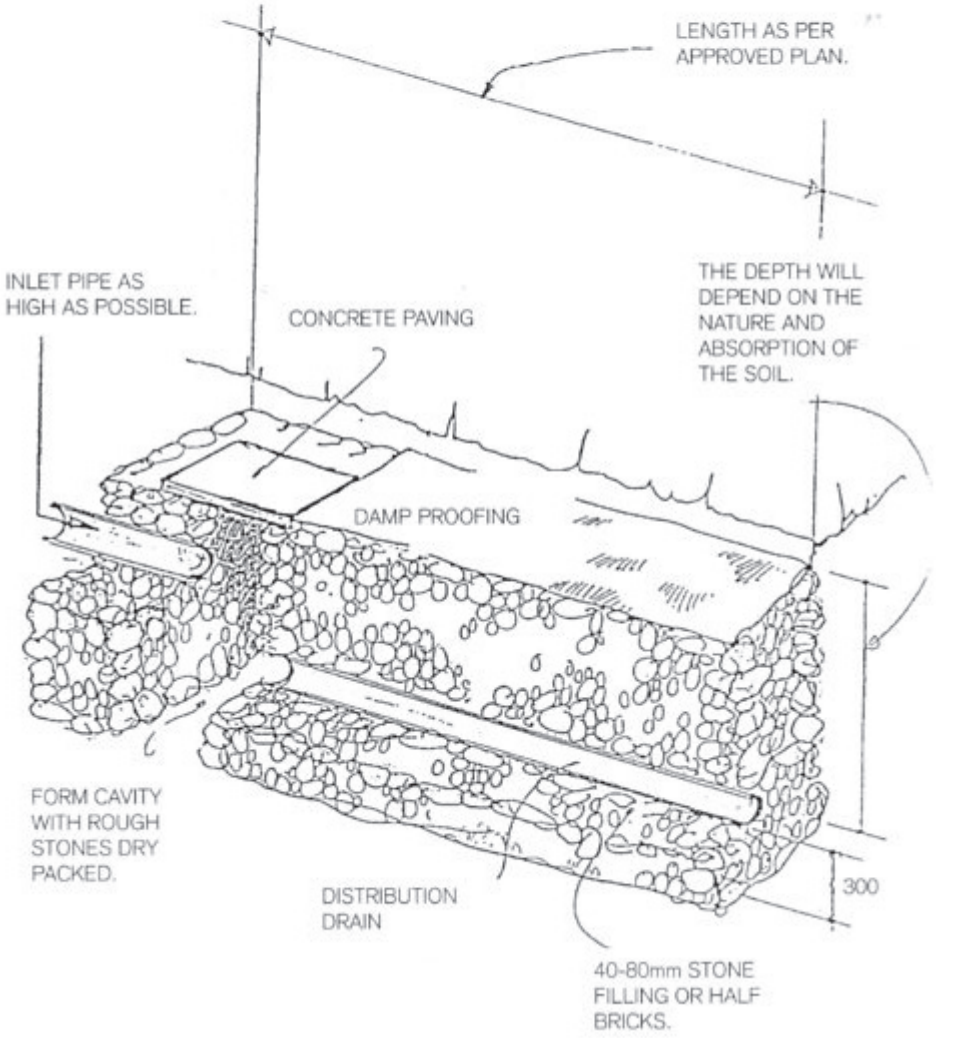
STAGE 8 : STEP 22C

Septic Tank

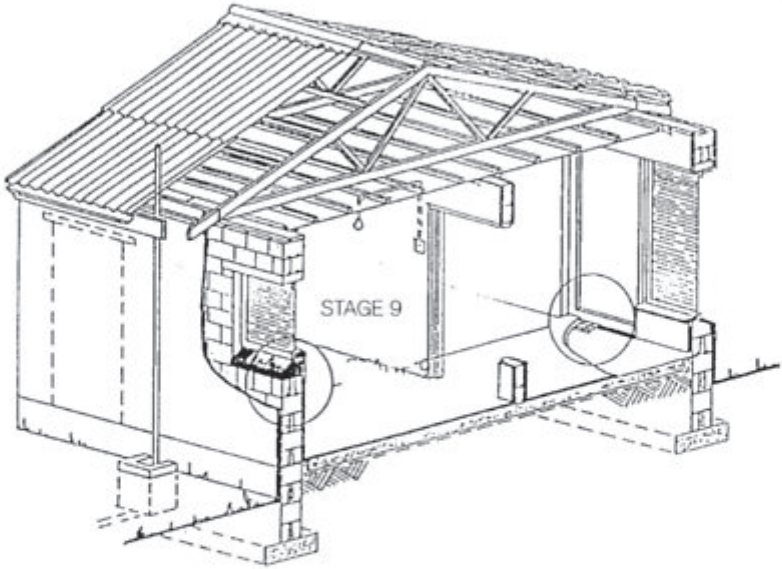


STAGE 8 : STEP 22C

Soakaway



STAGE 9



STEP 23

MIXING THE PLASTER
SPRAY AND PLASTER
LEVEL AND FLOAT
PLASTERING REVEALS

STEP 24

PARAPET WALL FLASHING

STEP 25

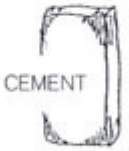
THRESHOLDS

STEP 26

WINDOWS

STAGE 9 : STEP 23

Mixing of plaster



1 BAG = 33 LITRES

25 LITRE DRUM MEASURE.

MIX THE SAND AND CEMENT BEFORE ADDING WATER

THE ADDING OF THE CORRECT AMOUNT OF WATER IS IMPORTANT SO AS TO MAKE THE PLASTER MIX EASY TO USE.

BUT NOT TOO WET !!

WATER

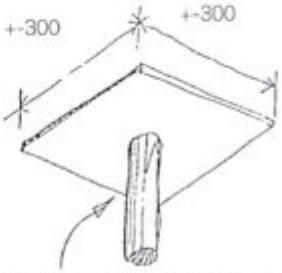
MIX ON A LARGE FLAT BOARD WITH SIDES.

STAGE 9 : STEP 23

Spray and Plaster

GREAT SKILL IS NECESSARY TO OBTAIN A GOOD SMOOTH FINISH. IF POSSIBLE ASK AN EXERIENCED PLASTERER TO HELP YOU.

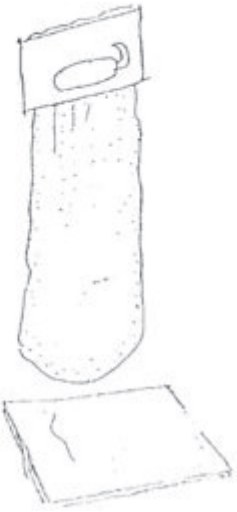
WET THE WALL THOROUGHLY.



MAKE A HAWK: A SQUARE PIECE OF BOARD WITH A PIECE OF BATTEN 38 X 38 AS A HANDLE.

SCOOP THE PLASTER FROM THE HAWK AND APPLY DIRECTLY TO THE WALL IN A SMOOTH UPWARD SWEEP.

PLASTER SMALL AREAS AT A TIME. A COMPLETE WALL MUST BE PLASTERED IN ONE OPERATION.



STAGE 9 : STEP 23

Level and Float

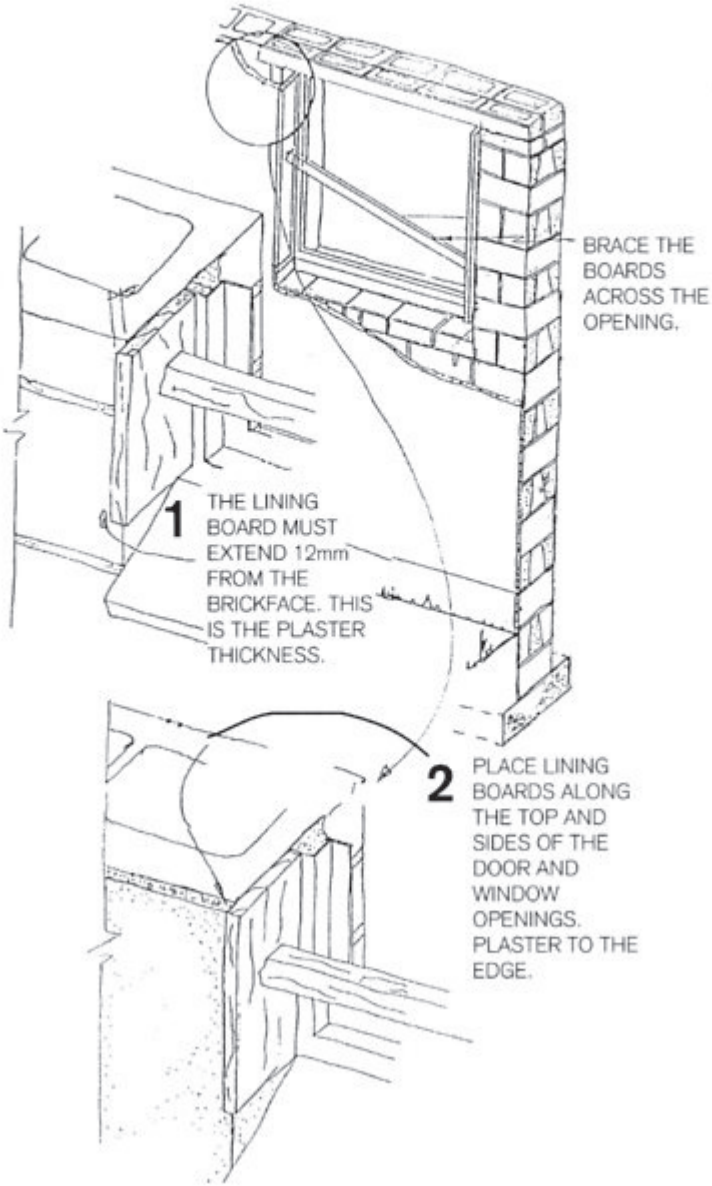
LEVEL THE PLASTER BY PULLING A WOODEN STRAIGHT EDGE OVER THE PLASTERED AREA WITH A SAWING MOVEMENT.

THE PLASTER SHOULD BE 12mm THICK.

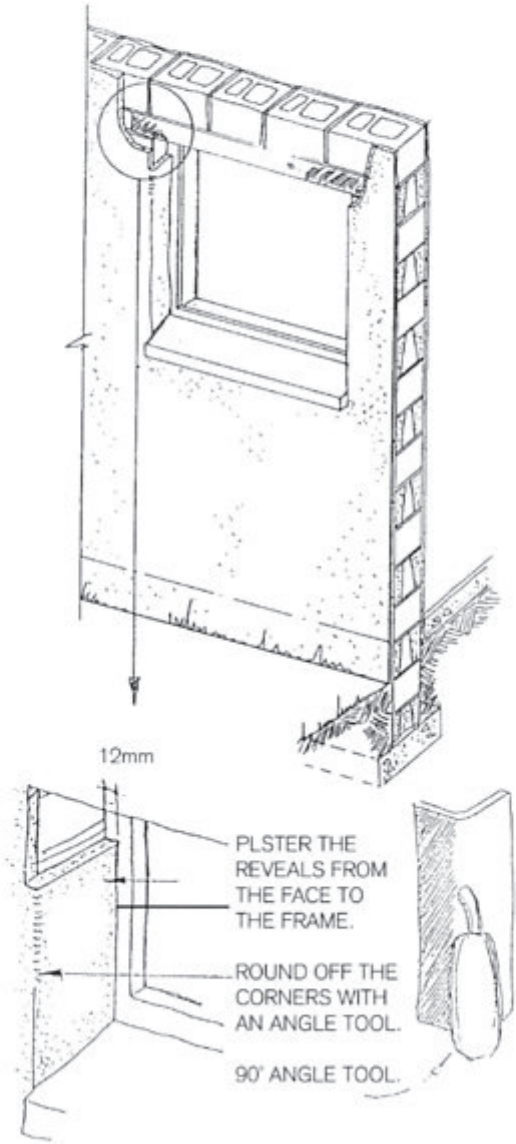
WET THE LEVELLED PLASTER A LITTLE THEN USE A WOOD FLOAT TO SMOOTH THE SURFACE.

STAGE 9 : STEP 23

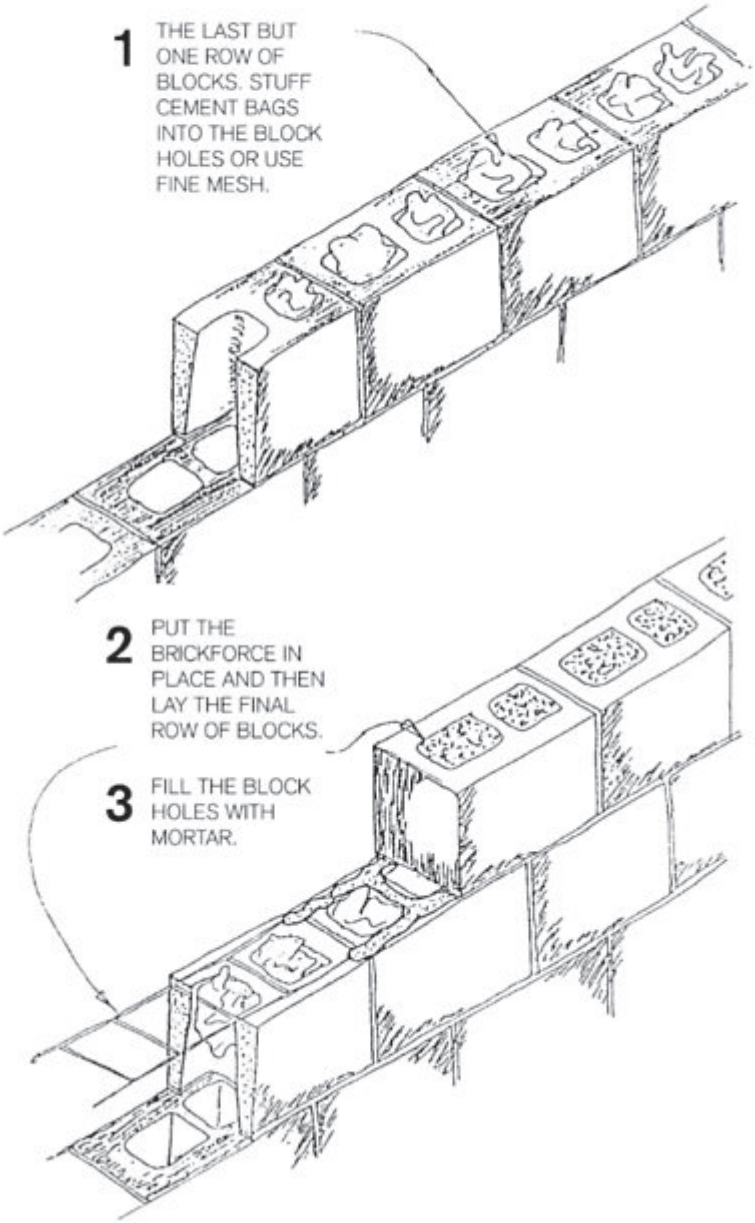
Plastering Reveals



STAGE 9 : STEP 23

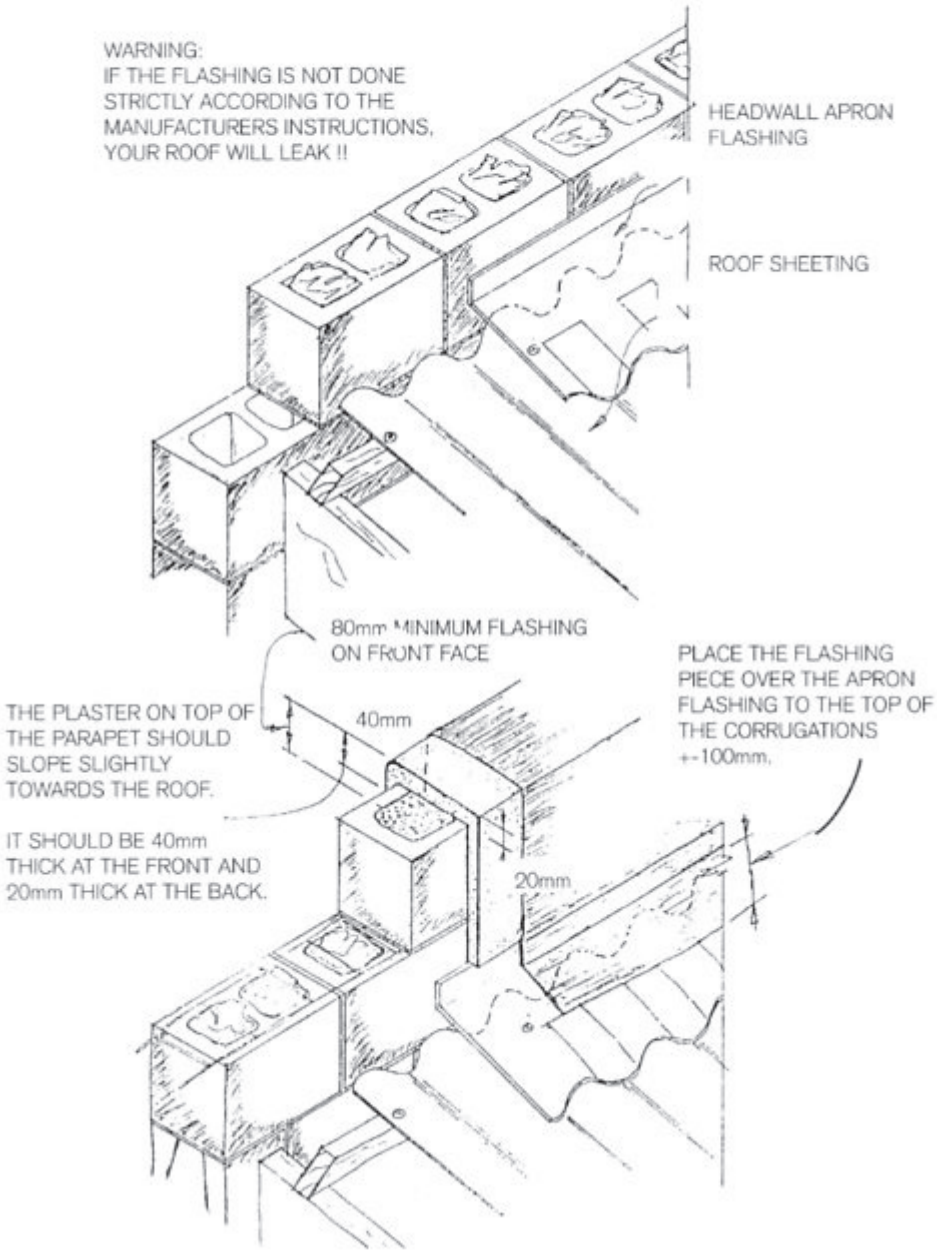


STAGE 9 : STEP 24



STAGE 9 : STEP 24

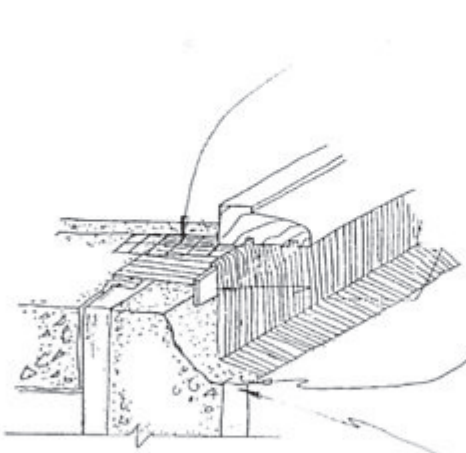
Parapet Wall Flashing

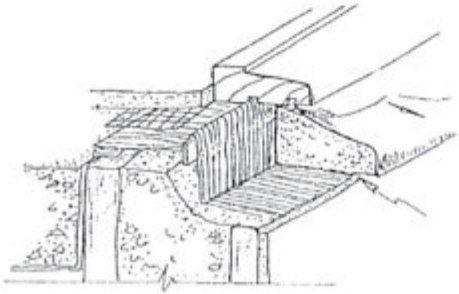


STAGE 9 : STEP 25

Thresholds

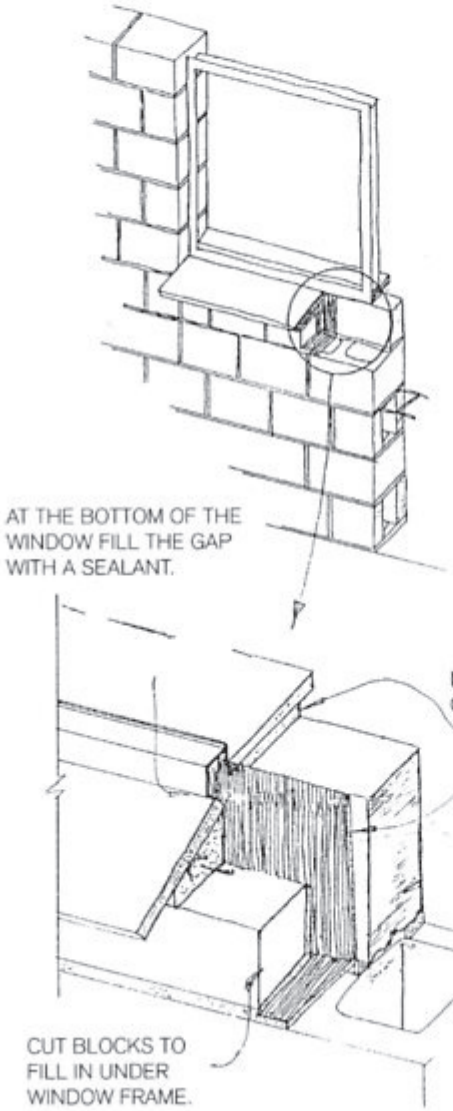
LAY REINFORCING MESH OVER THE JOINT BETWEEN THE CONCRETE SLAB AND FOUNDATION WALL DIRECTLY BEHIND THE THRESHOLD.





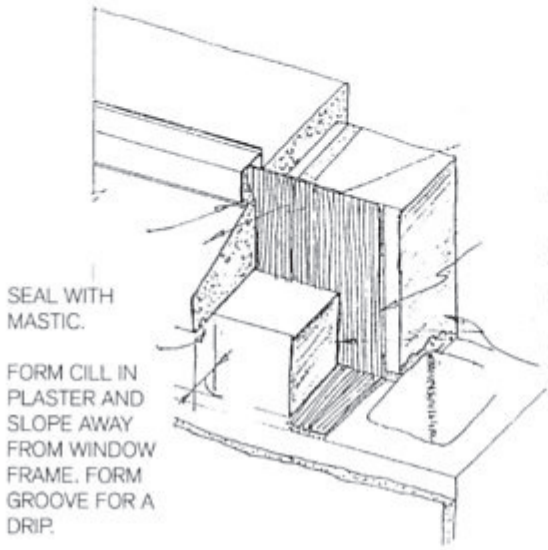
STAGE 9 : STEP 26

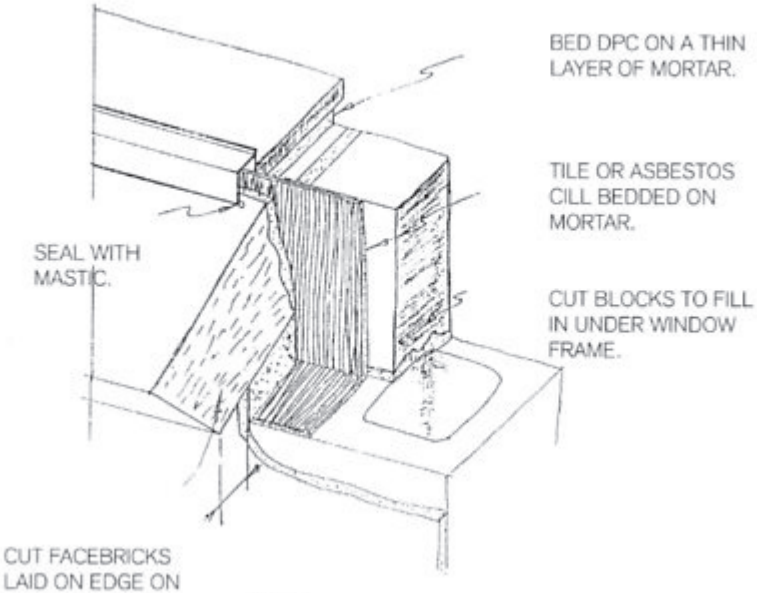
Steel Window Frames



STAGE 9 : STEP 26

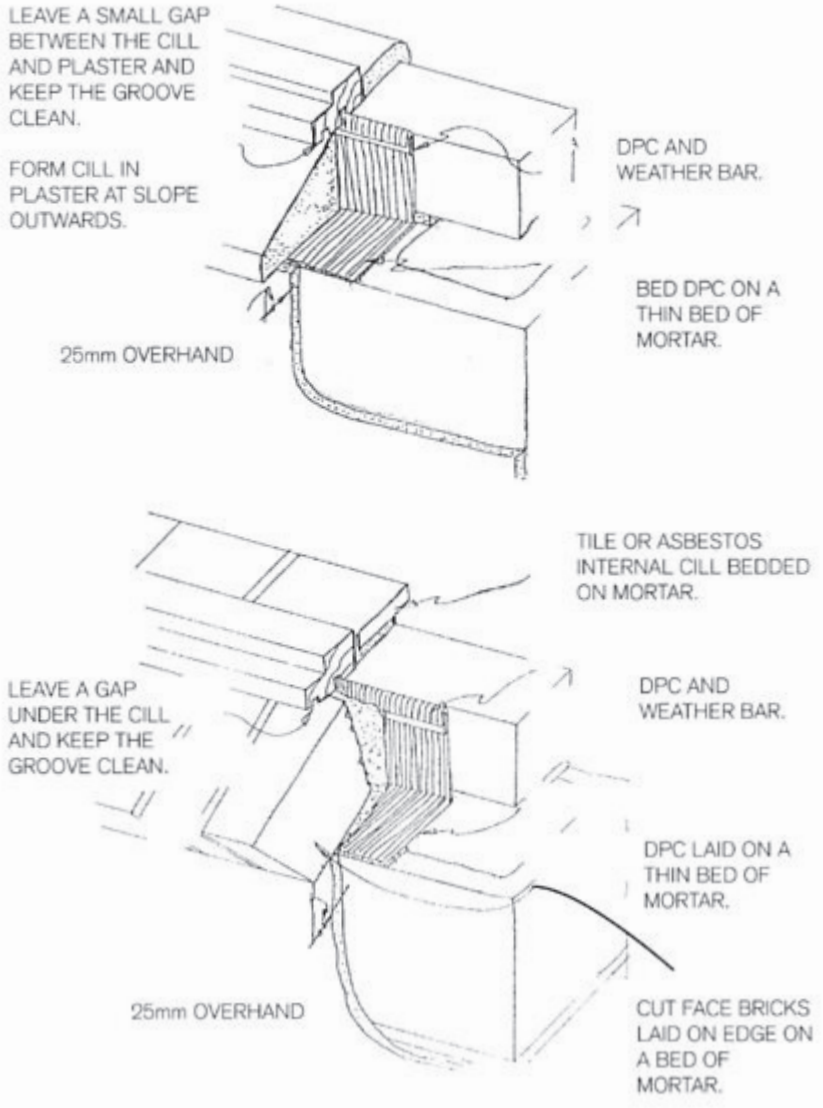
Steel Window Frames



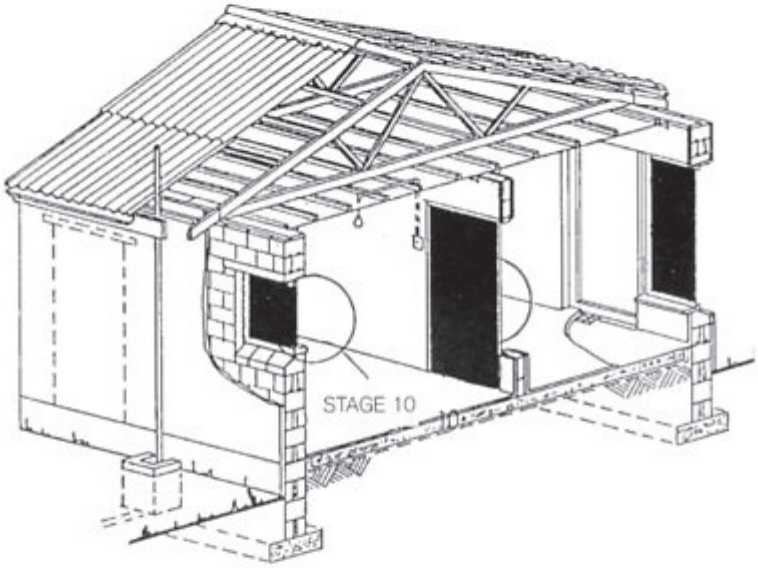


STAGE 9 : STEP 26

Wooden Window Sills



STAGE 10



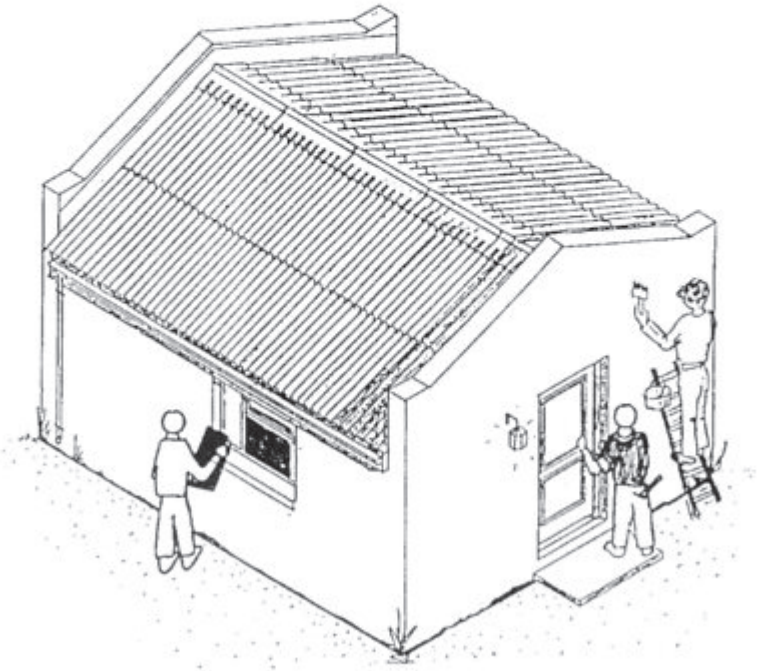
STEP 27
GLAZING WINDOWS

STEP 28
HANGING THE DOORS

STEP 29
PAINTING THE HOUSE

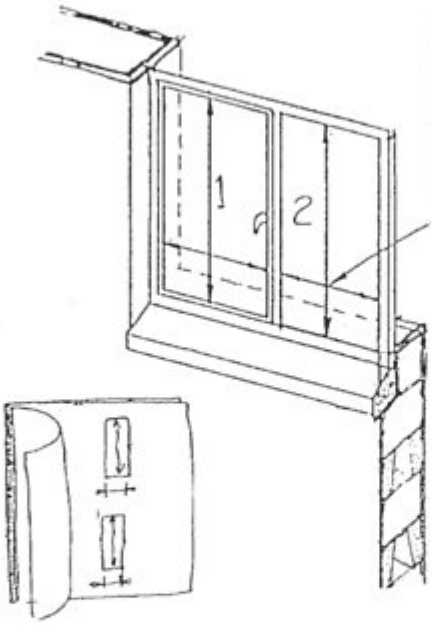
STAGE 10 : STEP 27

Glazing Windows



STAGE 10 : STEP 27

Glazing Windows



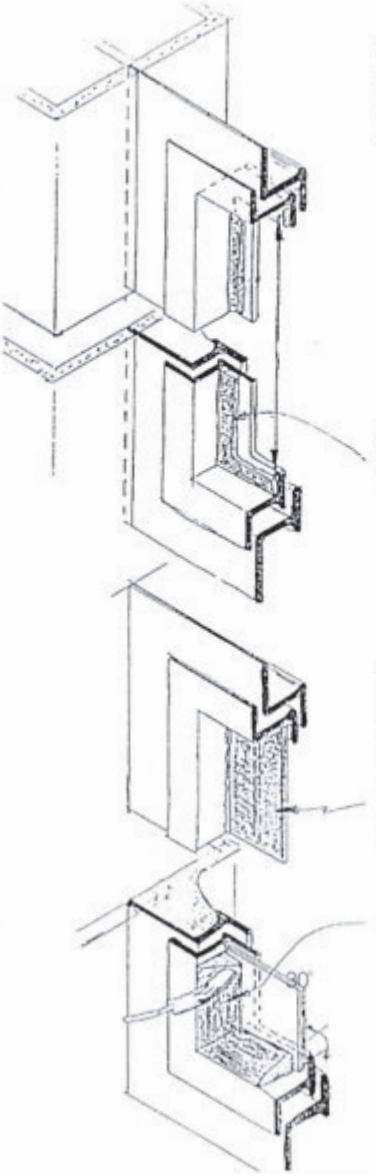
MARK THE WINDOW FRAME WITH A NUMBER FOR EACH PIECE OF GLASS. MAKE A NOTE OF THE NUMBER WITH THE MEASUREMENTS OF THE GLASS.

COMPILE A LIST OF THE MEASUREMENTS OF EACH PIECE OF GLASS.

IF YOU ARE CUTTING THE GLASS ALLOW 4mm OFF THE VERTICAL AND OFF THE HORIZONTAL MEAUREMENTS.

STAGE 10 : STEP 27

Puttying Windows



PAINT NON-GALVANISED WINDOW FRAMES WITH A RUST PROOF PRIMER COAT BEFORE GLAZING.

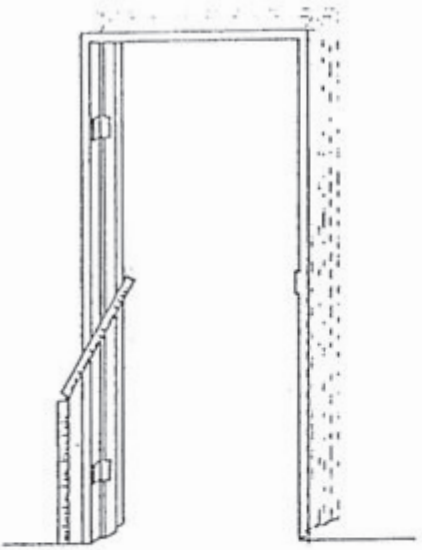
PRESS A THIN LAYER OF SOFTENED PUTTY INTO THE GLASS RECESS.

CAREFULLY PRESS THE GLASS FIRMLY AND EVENLY INTO THE PUTTY ENSURING THAT THE GLASS IS EVENLY POSITIONED IN THE RECESS.

PRESS A THICK LAYER OF PUTTY INTO THE REMAINING RECESS AND THUMB IT FIRMLY INTO PLACE. KNIFE IT SMOOTH TO A 30° SLOPE AND CLEAN OFF EXCESS.

STAGE 10 : STEP 28

Hanging the Doors

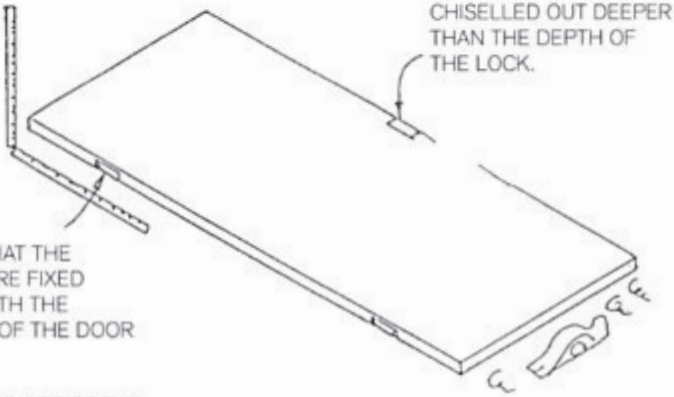


DOUBLE CHECK MEASUREMENTS BEFORE CUTTING !!

MEASURE THE HINGE POSITIONS FROM THE FRAME HEAD AND TRANSFER THE MEASUREMENTS TO THE DOOR.

DO THE SAME WITH THE STRIKER PLATE AND LOCK.

CHECK THAT THE SLOT FOR THE LOCK IS NOT CHISELLED OUT DEEPER THAN THE DEPTH OF THE LOCK.



CHECK THAT THE HINGES ARE FIXED FLUSH WITH THE SURFACE OF THE DOOR EDGE.

CHECK THE SIZE OF THE DOOR IN THE FRAME. IF YOU HAVE TO CUT THE DOOR, DO SO ON THE LOCK SIDE AND AT THE BOTTOM OF THE DOOR.

STAGE 10 : STEP 29

Painting the House

ROLLER AND TRAY FOR PAINTING LARGE AREAS SUCH AS WALLS AND CEILINGS.

BRUSHES, 100mm AND 50mm: FOR PAINTING SMALL AREAS. THE CORNERS AND FRAMES WHEN USING A ROLLER.

MAKE A WIRE HANDLE FOR A LARGE COFFEE TIN. POUR THE PAINT INTO IT FROM THE BIG DRUM.

TO PREPARE THE SURFACE FOR PAINTING, IT IS IMPORTANT TO USE A MEDIUM TO FINE SANDPAPER.

CLEAN YOUR BRUSHES CAREFULLY. IF YOU HAVE TO CONTINUE WITH THE SAME PAINTWORK THE NEXT DAY, LEAVE YOUR BRUSH IN WATER IN AN UPRIGHT POSITION OVERNIGHT.

GENERAL PAINTING GUIDE

Consult the paint supplier and follow his advice using the paint he has supplied to you. If you omit applying the required coats or steps your house will soon look shabby and need repainting.

WALLS

- Do not paint before all the plaster is quite dry and ensure that there are no damp patches.
- Remove all mortar droppings, dirt, etc.
- Apply one coat of acrylic filler coat and allow to dry completely.
- Apply two coats of acrylic PVA.

CEILINGS

- Clean the ceiling.
- Apply one coat of acrylic PVA thinned with 20% (1/5) of water or PVA sealer, and allow to dry completely.
- Then apply two coats of acrylic PVA.

METAL

- Clean off all dirt, grease, etc.
- Apply one coat of red lead primer to steel if it is not galvanised.
- When dry apply one coat of under coat and allow to dry.
- Apply one coat of gloss enamel.

NATURAL WOOD

- Sand smooth, round edges and wipe clean.
- Apply two coats of wood dressing.

PAINTED WOOD

- Sand smooth, round edges and wipe clean.
- Apply one coat pink wood primer.
- Apply one coat universal undercoat.
- Apply two coats of acrylic top coat.

ROOF

Asbestos Sheets

You can leave it unpainted or:

- Clean the surface and allow to dry.
- Apply two coats of acrylic roof paint.

Metal Roof Sheets

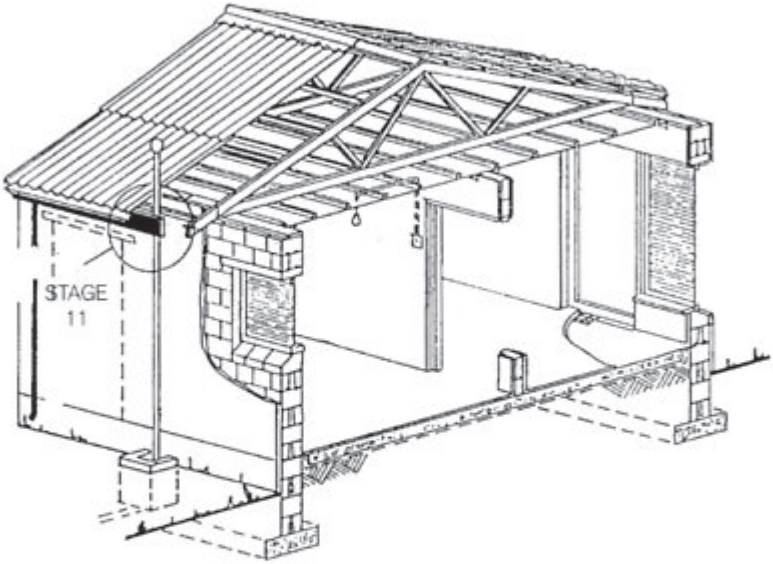
- Clean the surface and allow to dry.
- Apply one coat calcium plum bate primer.
- Apply two coats of roof paint.

GENERAL PAINTING GUIDE

Paint is an important part of building. Not only does it add to the looks, it can improve the durability and reduce moisture penetration through walls. Certain paints may even eliminate the need to plaster.

The choice of a good quality paint is essential. The better paints are more expensive, but in return they will outlast the cheaper ones and you will be more certain of their performance.

STAGE 11



FASCIAS

EAVES CLOSERS

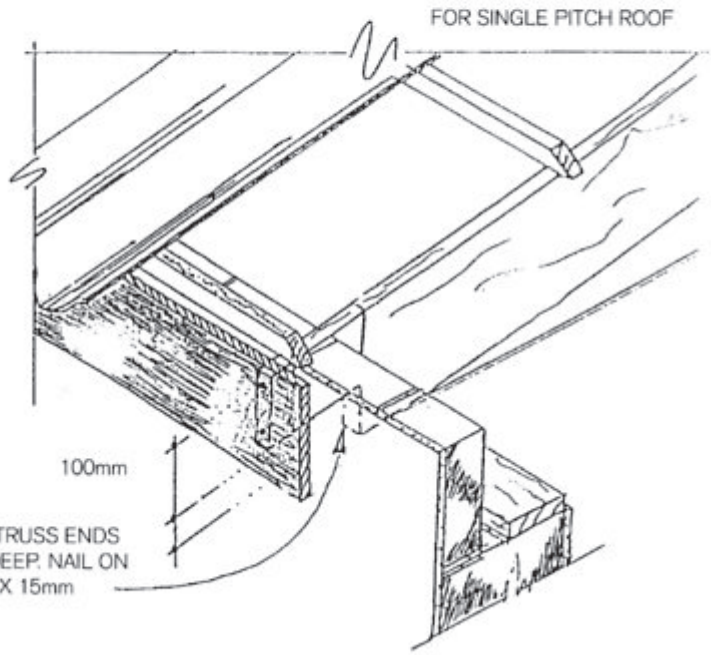
BARGE BOARDS

GUTTERS

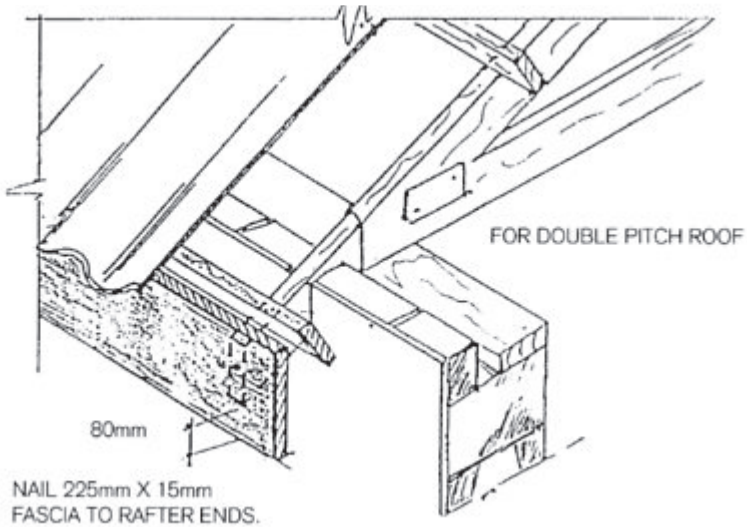
DOWNPIPES

STAGE 11

FASCIAS



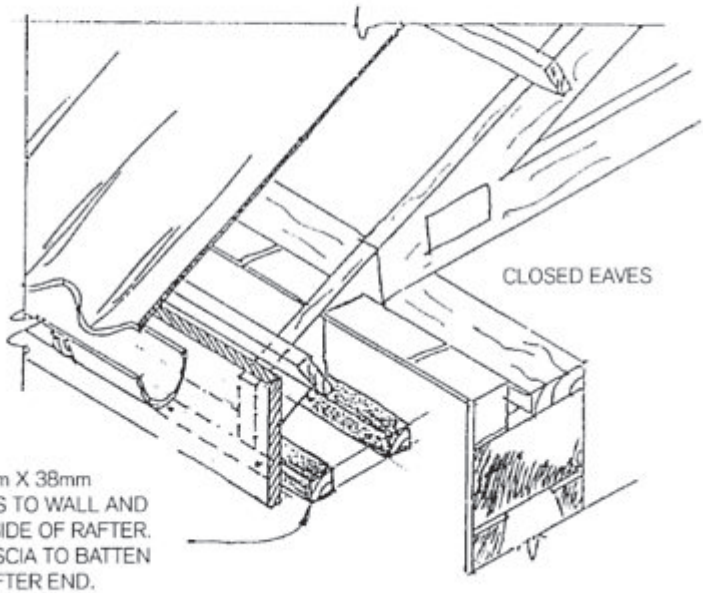
1 CUT DOWN TRUSS ENDS TO 100mm DEEP. NAIL ON THE 225mm X 15mm FASCIA.



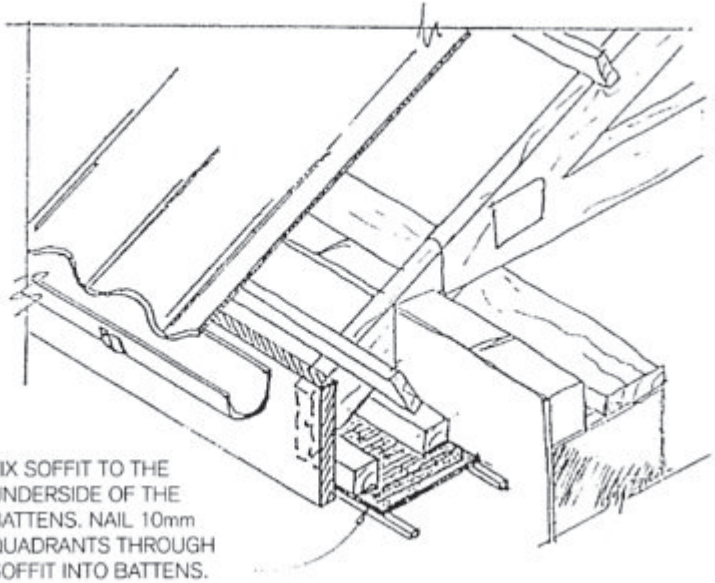
2 NAIL 225mm X 15mm FASCIA TO RAFTER ENDS.

STAGE 11

EAVES CLOSERS



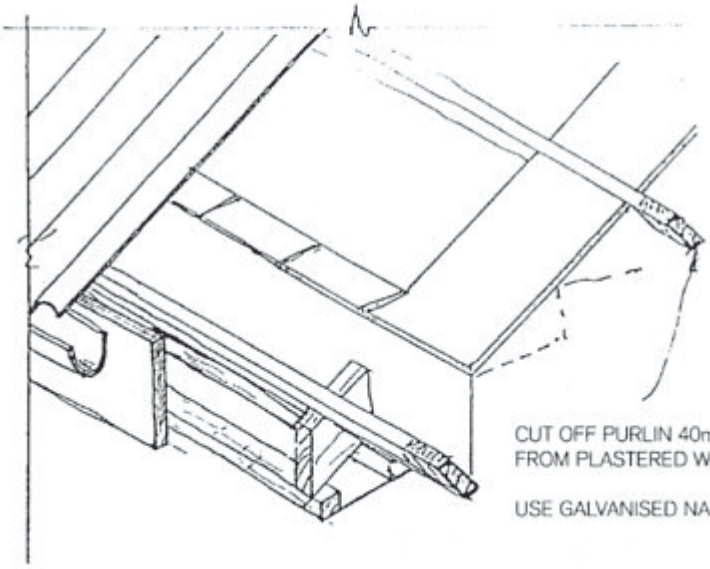
2 FIX 38mm X 38mm BATTENS TO WALL AND UNDERSIDE OF RAFTER. NAIL FASCIA TO BATTEN AND RAFTER END.

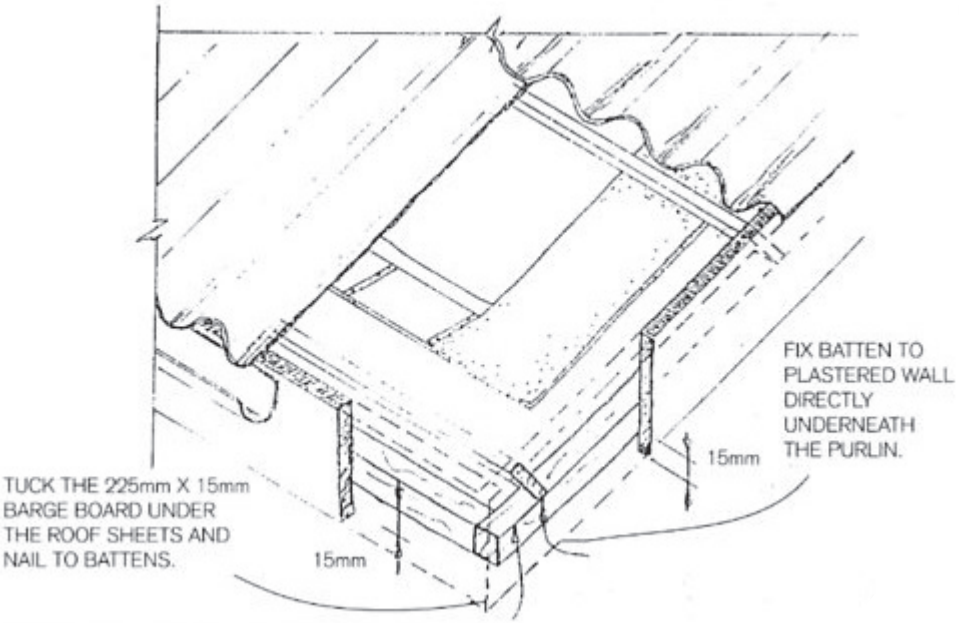


3 FIX SOFFIT TO THE UNDERSIDE OF THE BATTENS. NAIL 10mm QUADRANTS THROUGH SOFFIT INTO BATTENS.

STAGE 11

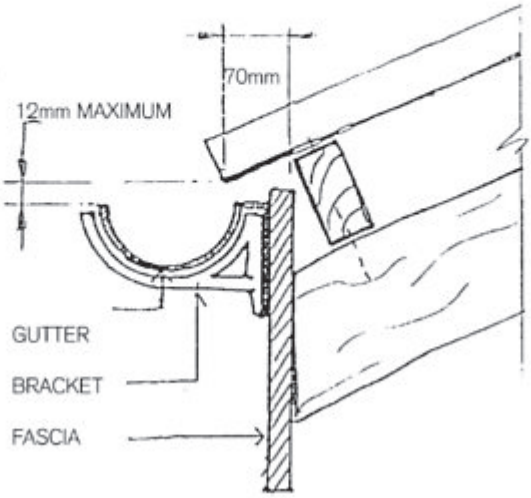
BARGE BOARDS

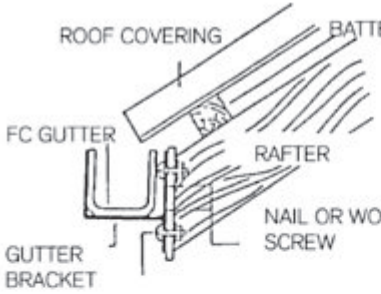




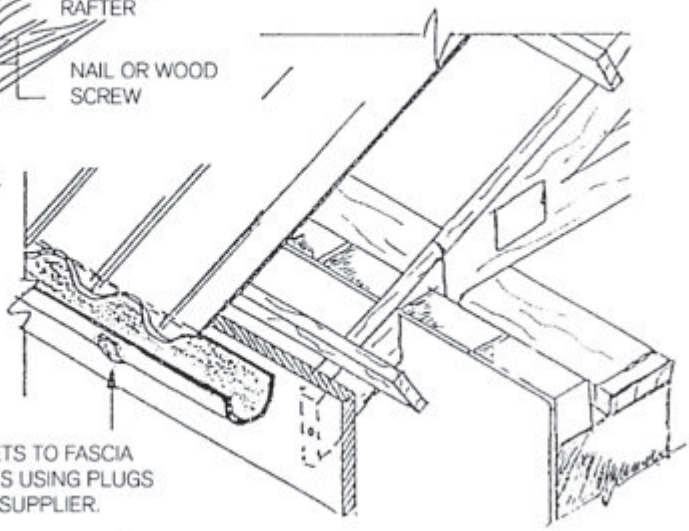
STAGE 11

GUTTERS





6mm X 25mm GALV. VERANDAH BOLTS AND NUTS

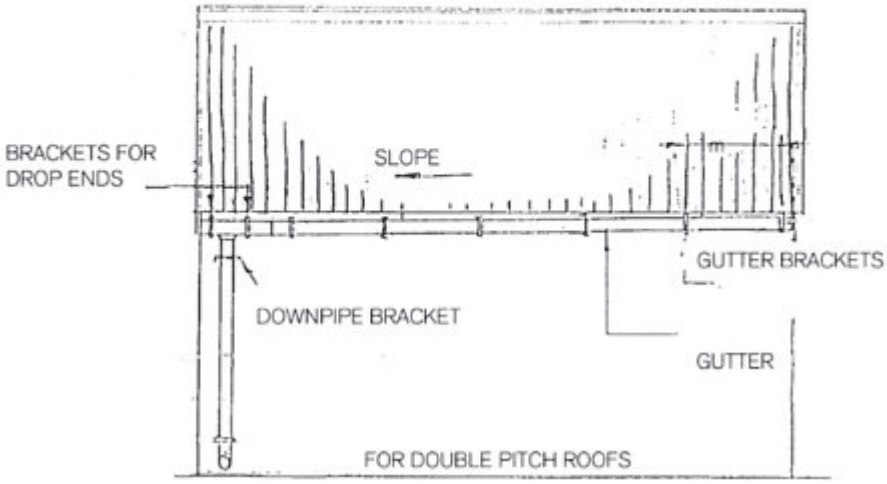


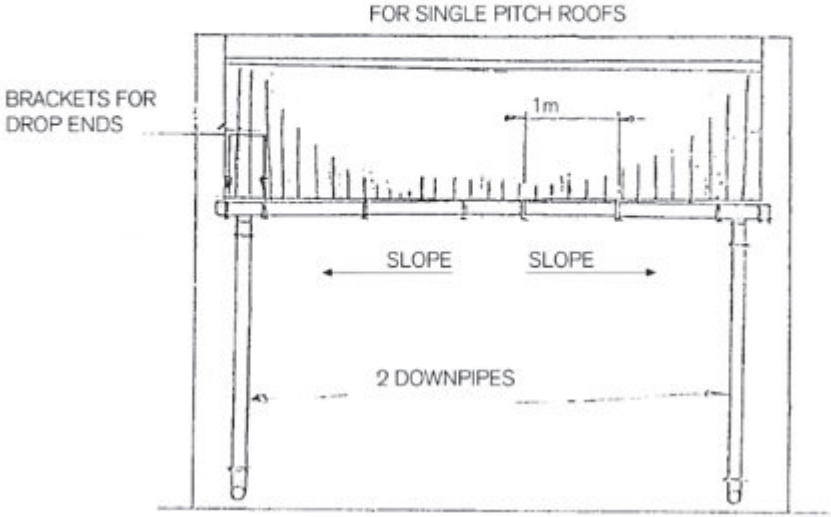
FIX GUTTER BRACKETS TO FASCIA AT 1 METRE CENTRES USING PLUGS RECOMMENDED BY SUPPLIER.

GUTTER MUST SLOPE DOWN TOWARDS THE DOWN PIPES.

STAGE 11

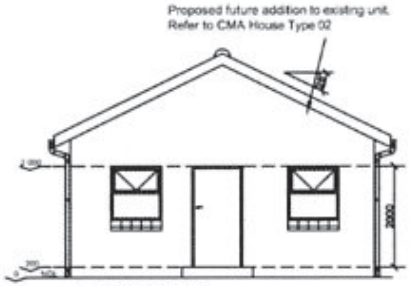
DOWNPIPES



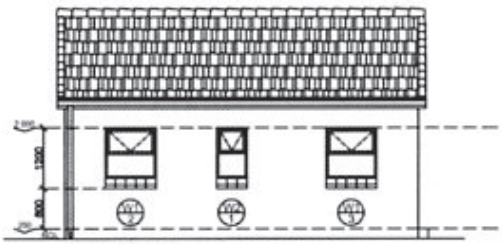


Type 01 House - 42m² - 2 bedroom

Elevations/section

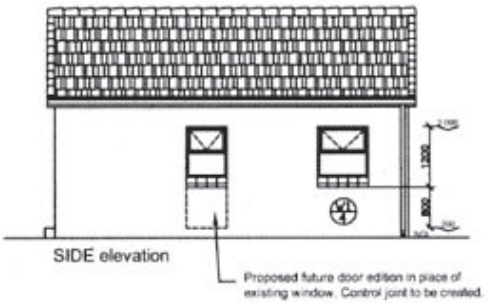


FRONT elevation

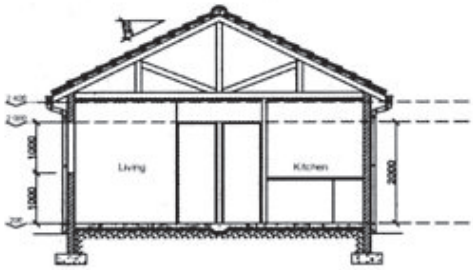


SIDE elevation

BACK elevation



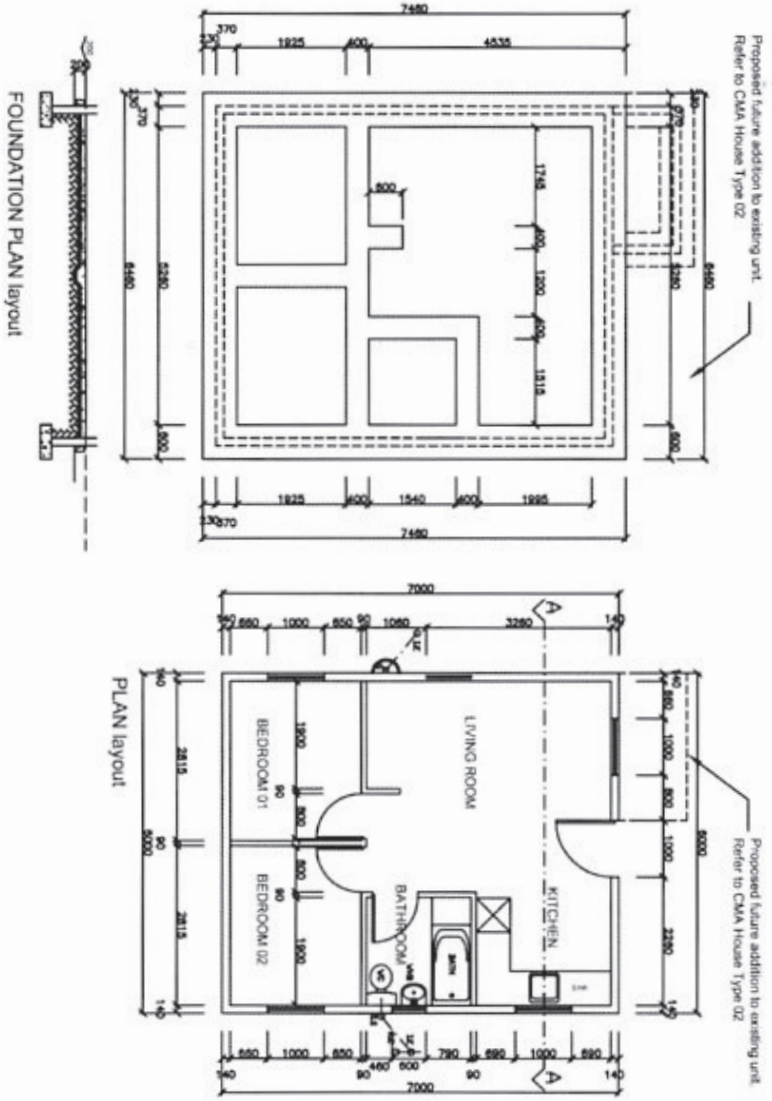
SIDE elevation



Section A-A

Type 01 House - 42m² - 2 bedroom

Plans



House plans are available from Concrete Manufacturers Association at a nominal fee.

Type 01 House - 42m² - 2 bedroom

Materials	Units	Qty	Unit Cost	Total
Walls to be built using either hollow 140mm concrete blocks or Maxi blocks. Quantities are given for both types. **For calculating and ordering, you must choose only one (a) or (b)**				
a) MASONRY WALLS USING 140MM HOLLOW BLOCKS*				
Foundation Walls:				
- 390 x 190 x 140mm hollow blocks	no.	135		
- 190 x 190 x 140mm hollow blocks	no.	6		
- Cement	bags	7		
- Mortar sand	m³	1,2		
Walls:				
- 390 x 190 x 140mm hollow blocks	no.	750		
- 190 x 190 x 140mm (half blocks)	no.	46		
- Corner Blocks	no.	70		
- Cement	bags	5		
- Mortar Sand	m³	1,2		
- DPC (140mm wide) 40m roll	no.	1		
- Reinforcement (to reinforce lintel above openings)				
- 10mm dia. mild steel bars	m	34		
- OR -				
b) MASONRY WALLS USING MAXI BLOCKS*				
Foundation Walls:				
- 290 x 90 x 140mm hollow blocks	no.	530		
- Cement	bags	3		
- Mortar Sand	m³	1,2		
Walls:				
- 290 x 90 x 140mm hollow blocks	no.	2710		
- cement	bags	3		
- Mortar sand	m³	1,2		
- DPC (140mm wide) 40m roll	no.	1		
FLOOR SLAB				
- Sand Filling	m³	6		
- 250 micron damp proof plastic sheeting	m²	50		
- River Sand	m³	4		
- Stone	m³	4		
- Cement	bags	18		
DOORS:				
- Steel/Timber door frames 2000 x 1000 x 90 mm	no.	2		
- Steel/Timber door frames 2000 x 800 x 90mm	no.	3		
- External doors	no.	2		
- Internal doors	no.	3		
- Hinges, handles & locks	sets	5		

Type 01 House - 42m² - 2 bedroom

Materials	Units	Qty	Unit Cost	Total
WINDOWS:				
- As per Shedule and to include 6mm float glass	5	5		
ROOF TIES:				
- 3mm thick by 30mm wide galvanised mild steel hoop iron	m	30		
ROOF TRUSS:				
- As per accredited factory design system (CMA Roof System) or approved by an engineer or competent person.				
ROOF COVERING:				
- Underlay (30m x 2m)	Roll	1		
- Roof tiles	no.	650		
- Ridge tiles	no.	32		
- Nails (75mm galvanised wire nails)	kg.	1		
CEILINGS:				
- 6,4mm ceiling boards (3,0m x 1,2m)	no.	12		
- 75mm cove cornice	m	47		
- Metal cover strips (3,0m)	no.	14		
- Brandering (38mm x 38mm)	m	86		
- 75mm galvanised wire nails	kg	3		
- 32mm galvanised clout nails	kg	3		
- Coverbond	kg	14		
PLASTERING: (External Walls)				
- Skimplaster (6mm thick)	bags	32		
	Total Material:			

Building your home - General notes

The plan on page 110-111 is **House type 01**. House type 02 is a modified version of 01 that will include an additional single bedroom. House type 03 is a larger version of type 02, and House type 04 is designed for a double storey application.

Phase/ House type	Description	Size of this phase/type	Total size
01	Basic structure of starter house	42m^2	42m^2
02	Addition of extra bedroom	-	-
03	Semi detached unit	-	-
04	Two storey house	-	-

The house has been designed to comply with the National Building Regulations of the NHBRC Standards and Guidelines. A building application must be submitted to your local authority for approval by them before any construction is to be carried out. Before submitting the plan to the municipal building inspector for approval, the following must be completed.

- check with the building inspector regarding the number of copies to be submitted;
- a draughtsman must draw in the site plan showing the drainage details and North point;
- colour in the plans as per the building inspectors requirements.

The quantities given on page 112 are to help you with estimating the cost of material and for ordering purposes. Allowance has been made for breakages and wastage. **Note:** The quantities do not include electrical and plumbing fittings or finishes and paintings.

Depending on the slope of the ground, additional bricks or blocks may be required for the foundation walls. **Note:** For foundations and walling, quantities are given for block work (390 x 140 x 190) and for maxi bricks (290 x 140 x 90). **You must only use <u>one</u> of these types of masonry for calculating cost and ordering.**

Ensure that you use good quality material, preferably dense concrete masonry with the SABS mark.

The plans show strip footing foundations which are suitable for building a house on good soil. Discuss the foundation requirements with the building inspector. In area's with problem soils, stronger foundations will be necessary.

Although every endeavour is made to ensure that the plans are correct, the Concrete Manufacturers Association or its members cannot be liable or responsible for the correct construction of the house. House plans are available from Concrete Manufacturers Association at a nominal fee.

QUALITY

Building your houses is most probably the single biggest investment you will ever make. To make sure that the investment will last a lifetime and grow in value, there are two simple rules that you must follow:

- use quality building materials
- follow the correct building procedures.

For quality building material, buy products from a reputable manufacturer, preferably one with the SABS mark. (a list of CMA members is given on the back page of this booklet. These members will stand by their products.)

As far as the correct building procedures are concerned, this booklet details all the steps required to build a good house. Follow the steps and do not take short cuts. If you have a query, write or phone the CMA or its members for advice.

House plans are available from Concrete Manufacturers Association at a nominal fee.

BUILDING HINTS

Masonry units can differ greatly in quality. Density of block units indicate the moisture resistance to rain penetration into particular external walls. The proprietary product SKIM-PLASTER (Agre'ment approved) can greatly enhance the moisture resistance of blocks and mortar. Most low cost housing units are constructed with Modular 140mm wide blocks. Shell bedding of 140mm units has not been proven effective.

In addition to the basic block units (390 L x 140 W x 190 H), the supplier should be able to provide Half Blocks and Corner Blocks (340 L x 140 W x 190 H). One needs only 5 units per meter vertically). For Bond Beams U-Block units (or Ring Beams for tying down roof trusses). 5 units per linear meter are required). (190 L x 190 H x 140 W (or 190 W).

Mortar: (1:1:6) i.e. 1 pocket of cement (50kg) : 1 pocket of Builders Lime : 3 slightly heaped standard wheel-barrows of clean sand.

Plaster: (same as for mortar but up to 2 pockets of Builders Lime and 4 standard wheel-barrows of clean sand.

Pointing: Joints should be pressed after mortar has partially set (1 to 2 hours). Half-round jointing is best for appearance and moisture shedding. Avoid raked and square jointing in external walls.

Cutting: Avoid chopping blocks with a bolster, this is untidy and produces waste. Use a carborundum saw on well-soaked blocks and allow to dry before use. Preferably use complimentary blocks if they are available.

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