MASONRY

NTQF Level -II

Learning Guide #64

Unit of Competence: - Erect Brick and Block Structures

Module Title: - Erecting Brick and Block Structures

LG Code: **EIS MAS2 M13 LO3 LG-64**

TTLM Code: **EIS MAS2 M13 TTLM 0919v1**

LO3:- Construct base brickwork/ block work

Instruction Sheet 3	Learning Guide #-64

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

- Preparing and checking mortar mix
- Laying bricks/blocks
- Determining and setting out brick/ block work gauge
- Constructing base brickwork/ block work

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 –**

- Prepare and check mortar mix
- Lay bricks/blocks
- Determine and setting out brick/ block work gauge
- Construct base brickwork/ block work

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, Sheet 2, Sheet 3 , Sheet 4, Sheet 5 and Sheet 6” **in page 3, 10, 19 and 23** respectively.
4. Accomplish the “Self-check 1, Self-check t 2, Self-check 3 , Self-check 4, Self-check 5 and Self-check 6 **in page 8, 17, 21 and 29** respectively
5. If you earned a satisfactory evaluation from the “Self-check” proceed to “Operation Sheet 1, Operation Sheet 2 and Operation Sheet 3 ” **in page 31, 32, 33 and 34** respectively **.**
6. Do the “LAP test” **in page 35**

Information Sheet-1	Preparing and checking mortar mix

1.1 mortar mix

Mortar mix is a critical important building component that must be combined thoroughly. Mortar is the bonding material between bricks, concrete block, stone, and many other masonry materials. It is made from Portland cement, lime, sand, and water in varying ratios. Each of the standard mortar mixes—Types N, M, S, and O—has different performance characteristics for different building applications.

1.2 Preparation of mortar mix

1.2.1 Mortar Mixing Procedure

Mortar is mixed on-site in a mechanical mixer but can be mixed in smaller amounts by hand, using a hoe and a mixing tub or wheelbarrow.

1. Use a dry bucket to measure out the materials.
2. Pre-wet mortar containers before filling them with fresh mortar.
3. Prepare a container with a flat, solid surface base and tall sides for mixing mortar, if mixing by hand.
4. Add the masonry cement, lime, and sand in the appropriate amounts to your mixing container, then add water on top of the dry ingredients.
5. Fold the mortar mix from the bottom into the water, when mixing by hand. Keep mixing until the water is mixed in. Then, add more water and keep mixing. Keep adding water until the mortar attains a smooth consistency.

1. Stop mixing when the mortar is wet enough to slip easily off the shovel but holds its shape if you make a hollow in the mix. Mortar has attained the correct viscosity when you can make a few ledges in the mortar mix and ledges stand up.

1.2.2 Mortar Mixing Tips

A few pro tips can ensure the best results when mixing mortar:

- Always wear eye protection and waterproof gloves when mixing mortar.
- If the mortar starts to dry during application, add more water. Do not add water once the mortar begins to set.
- You can add chemical plasticizers or masonry cement to improve the workability of the mixture.
- Use a good grade of fine sand in your mortar mix. The sand should be free of clay material; otherwise, it will create a paste that could expand and contract as the water dries up.
- Cover the sand during storage so it does not absorb water, which could change your mortar mix water requirements.

- Each type of mortar mix contains different quantities of material. Be sure to use the correct type of mortar mix for the application.
- Waterproofing agent may be added to mortar for brick fences to prevent damp.
- To color mortar, add dye before mixing the mortar.
- Successful mortar mixing relies on consistency. Try to use the same materials and use the exact amount of material batch after batch. You can use a pail or bucket to make sure you are using the same amount of material for subsequent batches.

- Mix mortar for not less than three minutes and not more than five minutes after the last materials have been introduced into the mixer or tub.
- When hand-mixing, be sure to add all components before adding the water.
- It is best to use fresh cement (unopened bags) when mixing mortar. Cement bags that are opened tend to absorb environmental humidity, thus changing the water percentage of the mortar mix.
- Portland cement is recommended for mixing mortar.
- Mortar is good for 90 minutes. After that time, discard the mortar because it starts to lose some of its characteristics.

- Weather can affect how mortar reacts and how manageable can be, so plan accordingly.

Mortar Mix Problems

It is important to understand that once the mix starts to set, it cannot be re-mixed because it will reduce the mortar's strength. Also, if too much water is added to the mix, it affects the chemical composition of the mortar, reducing its strength and potentially causing problems in the future. Adding the wrong admixture, such as dishwashing soap, also will affect the bonding and strength capabilities of the mortar mix.

Many of pre-packaged mortar mixes have admixtures that are activated once they are mixed

1.2 checking of mortar mix

How to check mortar mix

Field check of mortar can be used to establish a quality control for mortar produced during construction at the job site. The checking should consist of both preconstruction and construction site evaluation. Preconstruction checking should be conducted to establish baseline values that can be expected during construction for the approved mortar mix design. Preconstruction checking and evaluation of mortar allows for comparisons of mortar produced in the laboratory to those mixed at the job site. Preconstruction evaluation establishes compatibility of individual constituents in the mortar and general physical characteristics of the mixture.

Construction site checking procedures establish a mortar's conformance to proportion specifications and monitors the consistency of mortar production. On-site testing makes evaluation of masonry mortars possible by sampling mortar at various stages of construction, and by performing tests on mortar in plastic and hardened states. The checking results could verify data derived from preconstruction checking and could reflect variations in mortar performance characteristics resulting from batching during mortar production and use at the job site. If inconsistencies between preconstruction mortar composition and on-site mortar composition exist, immediate corrective action to modify mortar batching and mixing can be introduced.

Interpreting Field checking Methods

The procedures for measuring physical properties of plastic mortar such as water retention and board life. It also defines methods for obtaining the aggregate ratio and water content of freshly mixed mortar, a procedure that can be used to verify the accuracy of site proportioning of mortars. Procedures for measuring properties of hardened mortars, such as compressive strength, are also defined.

Water Retention

Water retention measures the plastic life and workability of mortar. Mortars with sufficient water retention allow the mason time to set and adjust the mortar and

masonry unit before the mortar begins to harden. A water retention test indicates a mortar's ability to retain mixing water after being exposed to suction from a masonry unit. Water retention check must be performed in the laboratory.

Board Life

Board life is the time frame in which a masonry mortar can be used after it is removed from the mixer and placed on the mason's mortar board. Once mortar is placed on a board, it begins to stiffen through loss of water and harden through normal setting of cement. If mortar begins to stiffen before it is placed in usage, bonding will be negatively affected. This method is useful for determining whether a mortar is acceptable or unacceptable due to stiffness.

Mortar-Aggregate Ratio

Repeated testing for mortar aggregate ratio can indicate a mixer operator's ability to properly and consistently add the cementations materials and sand to the mixer and can determine batch-to-batch variations in mortar composition. The check is performed by obtaining a representative dry sample of mortar mix from the job site and performing a series of calculated measurements in the laboratory. However, the sieving operation utilized during this test is not capable of separating an individual cementitious material when more than one material is used.

Self-Check -1	Written Test

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

Write true if the statement is correct or false if the statement is wrong (2 point each)

1. Mortar is the bonding material between bricks, concrete block, stone, and many other masonry materials
2. Mortar mix is made from Portland cement, lime, sand, and water in varying ratios
3. Water retention measures the plastic life and workability of mortar
4. Board life is the time frame in which a masonry mortar can be used after it is removed from the mixer and placed on the mason's mortar board
5. Field check of mortar can be used to establish a quality control for mortar produced during construction at the job site

Note: Satisfactory rating – 5 and above points Unsatisfactory - below 5 points

Answer Sheet

Score = _____
Rating: _____

Name: _____ Date: _____

Answer true/false

1. _____
2. _____
3. _____
4. _____
5. _____

Information Sheet-2	Laying bricks /blocks

2.1 lying bricks/blocks

After Preparations and arrangement of work place as discussed earlier and cutting brick pieces to desired size, the following points are to be considered.

i) In some areas hot, dry wind and weather conditions, these who to be laid in cement or lime mortar, it necessary to wet the bricks before they are laid. This may apply depending on the weather conditions of the site.

It should be properly wetted with water to:

- Prevent the bricks from absorbing any moisture from the mortar so that the mortar can properly set.
- Provide better bond between the bricks and mortar as kiln dust is washed away during wetting the blocks and to facilitate spreading the mortar more evenly on the surface of bricks.

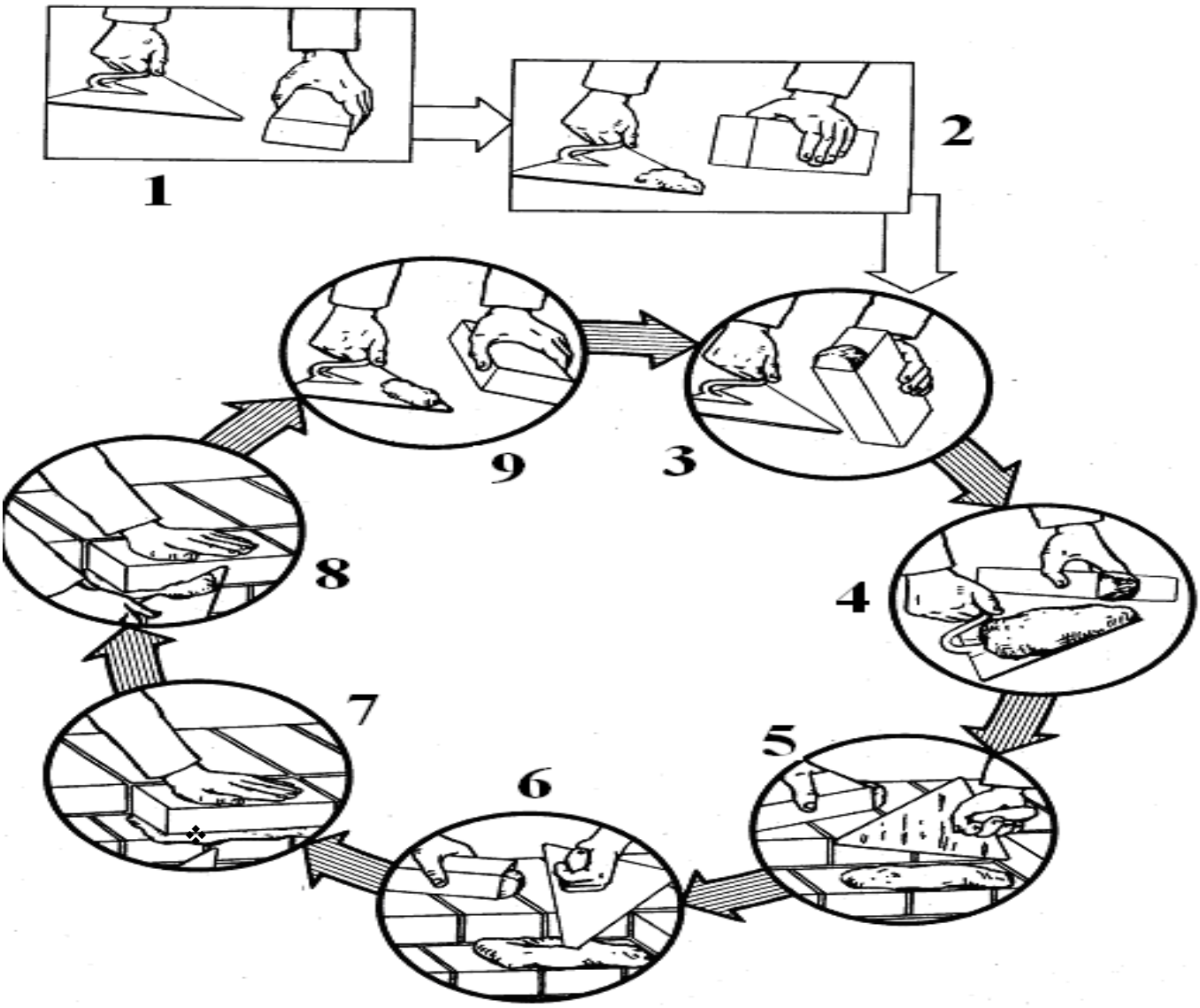
General methods and procedure of laying the bricks

Methods and procedure: -

- About 20mm thick layer of prepared mortar is first spread on the top of surface or floor in the area to be occupied by the corners of wall.
- Then the extreme corners of the wall are constructed in the required bond up to 3 to 5 courses in height and the bases of each corner is extended in steps.
- The height of each course is checked and then surface of the extreme corners are made truly plumb.
- After this each course is competed in turn by stretching mason line at the upper level between the extreme corners to mark the edges of the wall.

- In each course, the selected bricks for facing work are laid first in line and level with the external mason line and then other bricks are laid in between the external line on the layer of mortar according to the specified bond.
- When the masonry works up to the top of these extreme corners is completed.
- Again extreme corners 3 to 5 courses in height are constructed and this process is repeated till the wall is constructed about 1.25m from the ground level.
- For constructing walls beyond 1.25m in height above ground level, a temporary raised platform or scaffold is constructed for the mason to stand up on, to do the masonry work

The following figures are illustrating the steps under the procedures of laying brick in wall construction.



The figure above shows, how the bricks, mortar, trowel are handled and laying of the brick blocks.

❖**According to the above illustration the steps are described as follows.**

Step - 1: - Hold the trowel in one hand and the brick in the other hand properly.

Step - 2: - Pickup sufficient mortar for head joints.

Step - 3: - Apply the mortar properly on head of the brick

Step - 4: - While holding the brick with mortar for head joints, pickup sufficient mortar with the other hand using the trowel.

Step - 5: - Apply the mortar on top of brick wall surface.

Step - 6: - Trench or spread the mortar properly, (sufficient for 3 bricks).

Step - 7: - Lay brick to the line then press and shove/push/ in to the mortar.

Step - 8: - Cutoff excess mortar

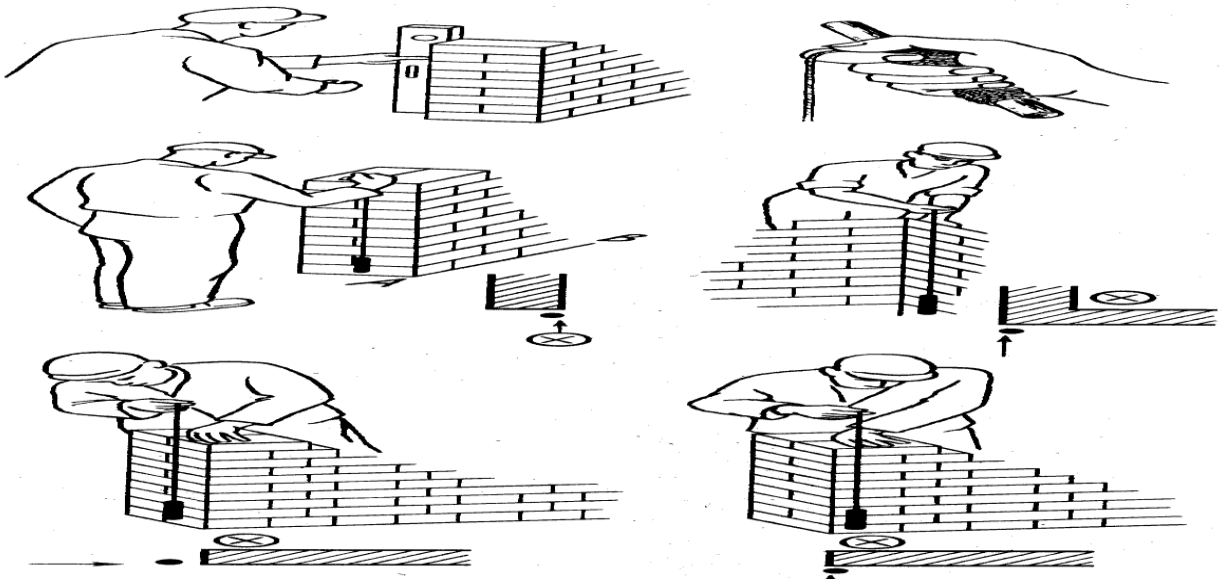
Step - 9: - Same procedure in ***Step – 1,*** Pickup next brick and apply mortar for head joint

Note:

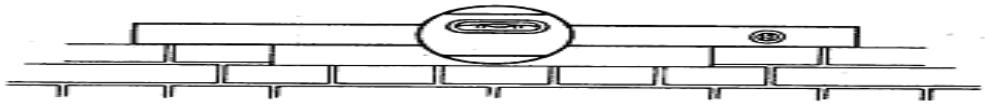
1. **Repeat steps – 4, 5, 6, 7, 8 until the three bricks are laid.**
2. **After the bricks are laid Repeat Procedures/Steps/1 to 9.**

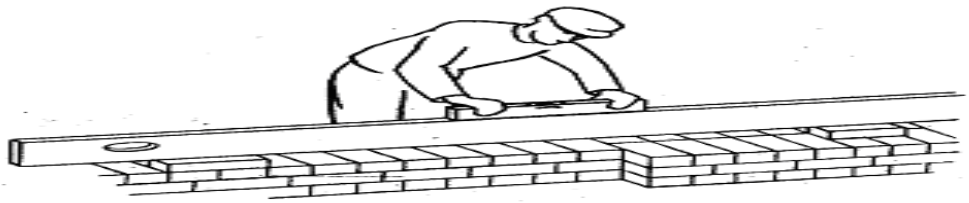
❖ **Useful example of horizontal and vertical alignments on a corner and horizontal level fixing using mason line lead and nails.**

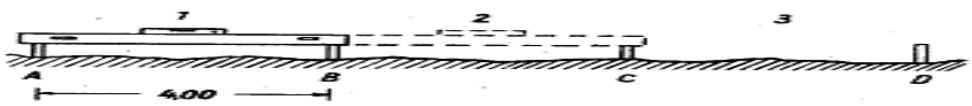
➢ **Correct plumbing of a corner lead.**



- **Horizontal level and fixing mason line lead with help of nails.**
- **Correct horizontal alignment using straight edge, Spirit level and water hose level**







Laying of Concrete Blocks in wall

- **The following figures /below/shows the steps and procedures of laying concrete blocks and methods of alignment and leveling.**

Handling the trowel and preparing the bed joint mortar

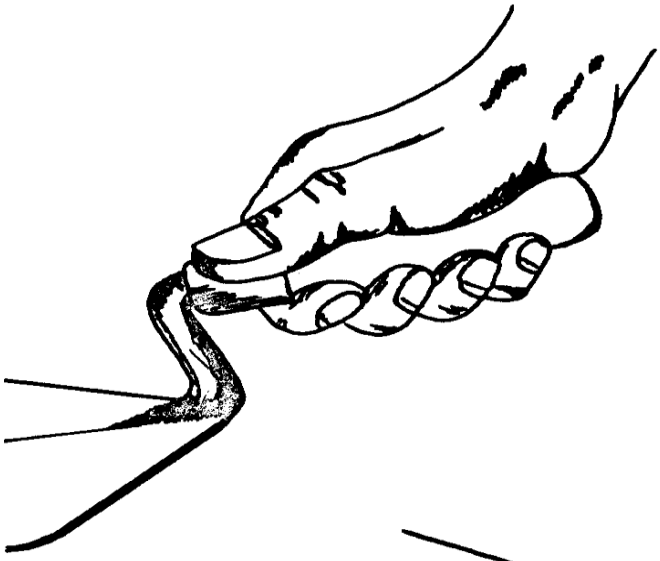


Fig. 1

CORRECT GRIP

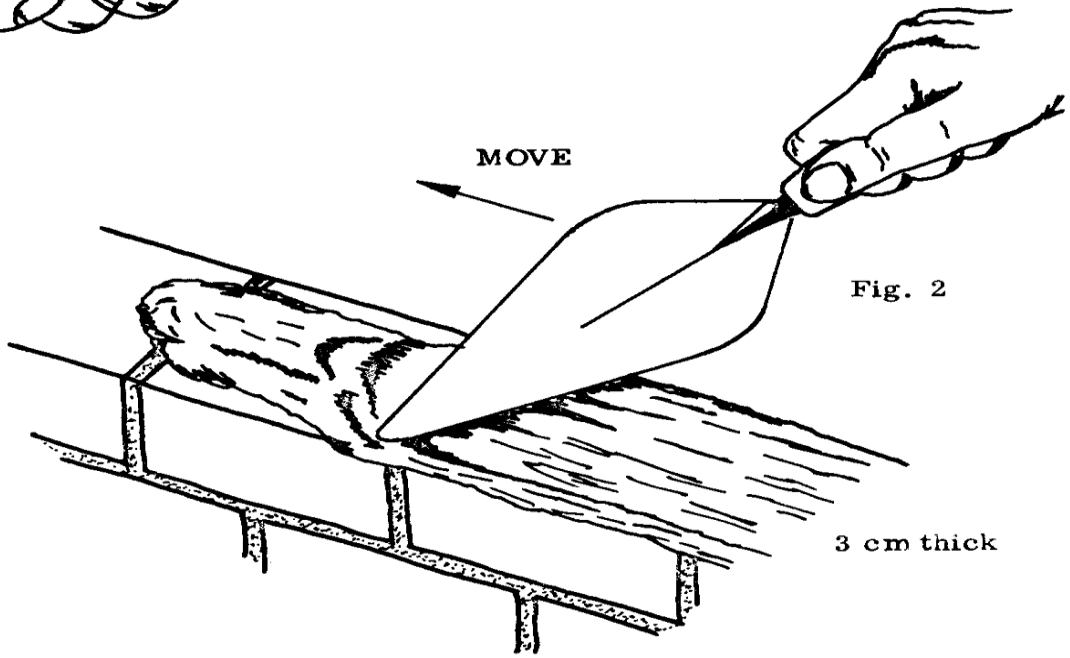
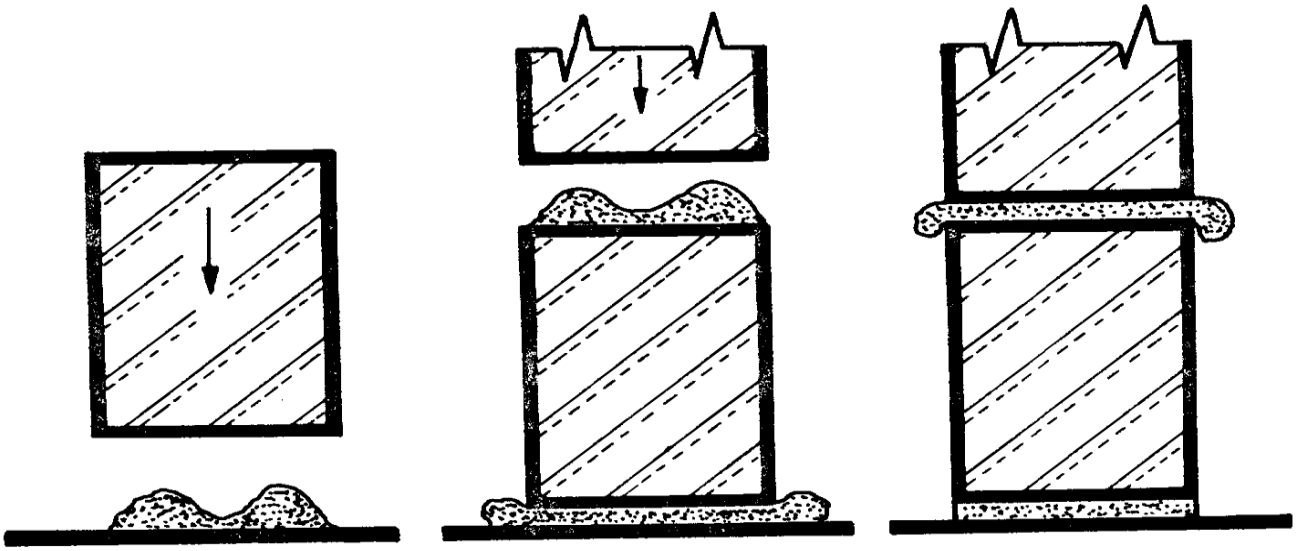


Fig. 2



Laying the Concrete Blocks

Spread the mortar along the corner. Use your trowel to spread a few slabs of mortar around the corner's base of the footing. Spread the mortar 1" deep and 8" wide in the marked area. Continue to spread the mortar to account for the distance of about three to four blocks.

Spread the mortar along the corner. Use your trowel to spread a few slabs of mortar around the corner's base of the footing. Spread the mortar 1" deep and 8" wide in the marked area. Continue to spread the mortar to account for the distance of about three to four blocks.

1. **Apply mortar to the side.** Apply mortar to each side of the concrete block using your trowel. You'll need to apply at least an inch to each side. Once applied, position the stone in the desired location. Try to align the corner to the string set up earlier.

- Don't apply mortar to outer edge of the corner.
- Try not to leave any gaps when applying mortar, or it'll weaken the bond between the blocks.

1. **Continue to lay the concrete blocks.** Start laying blocks from the corner or edge of the wall so you can work in one direction.

- Apply mortar at the end of the block before you place the block adjacent to it.

1. **Check the alignment.** Before stacking more concrete blocks on top of your initial foundation, check if everything is aligned. Use your mason's level by laying it on the first set of blocks. Check both the outside and center section of the bricks.

- Tap the blocks for any alignment adjustments while the mortar is still wet.
- Do not try to move a block after the concrete has set.
- Measure the length and height every two or three layers

Apply mortar to the top. Place the mortar 1 inch (2.5 cm) deep and use the same width as the width of the block. You can then spread the mortar so it covers the length of about 3 blocks in the direction that you are laying the bricks.

Self-Check -2	Written Test

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

Write true if the statement is correct or false if the statement is wrong (2 point each)

1. The height of each course is checked and then surface of the extreme corners are made truly plumb
2. Before placing the block apply mortar at the end of the block.
3. Before stacking more concrete blocks on top, everything must aligned
4. Placing the thickness of mortar is 2.5 cm

Note: Satisfactory rating – 4 and above points Unsatisfactory - below 4 points

Answer Sheet

Score = _____
Rating: _____

Name: _____ Date: _____

Answer true/false

1. _____
2. _____
3. _____
4. _____

Information Sheet-3	Determining and setting out brick/ block work gauge

3.1 Determining and setting out brick/ block work gauge

The building is set out square the next stage is to level your footings and set out the brickwork gauge, once this is done you can take your brickwork up as high as you like checking that every 4 courses you build is 300mm high, most bricklayers will also bond out the brickwork whilst its still in the footings as any mistakes will be hidden and your bond will be correct before you get to damp course height.

Methods of setting out brick/ block work gauge

Step 1

Start by setting a level on all 4 corners, the highest corner will be where you take your gauge from; you can do this by using a dumpy level or laser level and putting a mark on your peg.

Step 2

Now you have an accurate level mark you can start to bond out the brickwork, you can do this by dividing the length of your house by 225mm to find out if it works full bond, the best way though is to run a dry course from your gauged corner to the next corner. Check as you go along that every 4 bricks are 900mm long, this will make sure your bonding is accurate whether the bricks that you use are too big or small, when you reach the next corner it should hopefully work brickwork (full bricks). If it doesnt there are 2 things you can do, if its slightly off then you can open or close the joints up slightly to accommodate the difference, if this still doesnt work then you will have to use a bat (¾ cut brick), the problem with this is it will show if travelling up the building, so a good bricklayer will hide this by moving it under a window or door opening to minimize the amount of cuts showing to the naked eye, this way no one will be able to tell the difference and it will blend in.

Step 3

Now your ready to start, the building is set out square and too the right length, the gauge marks or datums are in place, you can now start laying the first course by running a line in by starting at your highest point, if the other corner is too low you can lay a bigger bed at one end or turn a brick on edge, sometimes blocks are used for the first course at one end to match the difference in height run a course all the way around now you have a level floor to start laying on.

Step 4

Start building your 4 corners up to d.p.c height, then run them fitting air bricks as you go if needed.

Step 5

Now the outside skin is built set a mark on the inside to whatever your cavity size should be, usually its 300mm, you know the buildings square so this should be easy

Step 6

Now take the inside skin up to d.p.c height copying the bond used on the outside, once this is done your ready to construct your floor, fit your damp proof membrane and pour your concrete, now your brickwork is ready to be taken up to roof height.

Self-Check 3	Written Test

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

Write true if the statement is correct or false if the statement is wrong (2point each)

1. a brick wall check every 4 courses you build is 300mm high
2. starting to setting for brick erection is for every four corner
3. Check as you go along that every 4 bricks are 900mm long

Note: **Satisfactory rating – 3 and above points** **Unsatisfactory - below 3 points**

Answer Sheet

Score = _____
Rating: _____

Name: _____ Date: _____

Short Answer Questions

1. _____
2. _____
3. _____

Information Sheet-4	Constructing base brickwork/ block work

4.1 Construct base brickwork/ block work

Brickwork is masonry produced by a bricklayer, using bricks and mortar. Typically, rows of bricks—called courses are laid on top of one another to build up a structure such as a brick wall.

Bricks may be differentiated from blocks by size. For example, in the UK a brick is defined as a unit having dimensions less than 250x120x60mm and a block is defined as a unit having one or more dimensions greater than the largest possible brick.

Brick is a popular medium for constructing buildings, and examples of brickwork are found through history as far back as the Bronze Age. The fired-brick faces of the ziggurat of ancient Dur-Kurigalzu in Iraq date from around 1400 BC, and the brick buildings of ancient Mohenjo-daro in Pakistan were built around 2600 BC. Much older examples of brickwork made with dried (but not fired) bricks may be found in such ancient locations as Jericho in Judea, Çatal Hüyük in Anatolia, and Mehrgarh in Pakistan. These structures have survived from the Stone Age to the present day.

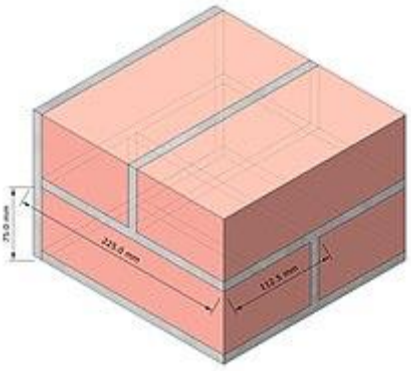
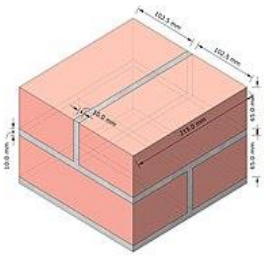


Fig 1

Co-ordination dimensions of a brick in a wall

Working dimensions of a brick in a wall

Brick dimensions are expressed in construction or technical documents in two



ways as co-ordinating dimensions and working dimensions. Fig 2

- Coordination dimensions are the actual physical dimensions of the brick with the mortar required on one header face, one stretcher face and one bed.
- Working dimensions is the size of a manufactured brick. It is also called the nominal size of a brick.

Brick size may be slightly different due to shrinkage or distortion due to firing etc.
An example of a co-ordinating metric commonly used for bricks in the UK is as follows:
Bricks of dimensions 215 mm × 102.5 mm × 65 mm;

- Mortar beds and perpends of a uniform 10 mm.

In this case the co-ordinating metric works because the length of a single brick (215 mm) is equal to the total of the width of a brick (102.5 mm) plus a perpend (10 mm) plus the width of a second brick (102.5 mm).

There are many other brick sizes worldwide, and many of them use this same co-ordinating principle.

Terminology

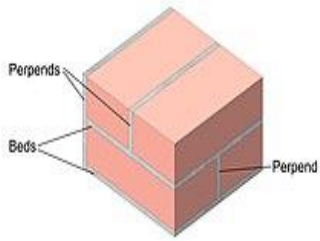
fig 3

Faces of brick

As the most common bricks are cuboids, six surfaces are named as followed:

- Top and bottom surfaces are called Beds
- Ends or narrow surfaces are called Headers or header faces
- Sides or wider surfaces are called Stretchers or stretcher faces[7]

Mortar terminology- showing perpends and bed.



Mortar placed between bricks is also given separate names with respect

to their position. Mortar placed horizontally below or top of a brick is

called a bed, and mortar Placed vertically between bricks is called a perpend. Fig 4

Solid brick

Single frogged brick

Double frogged brick

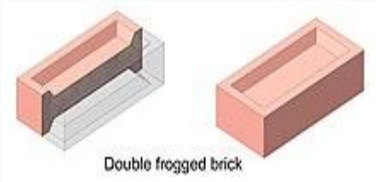


fig 5

Cellular brick

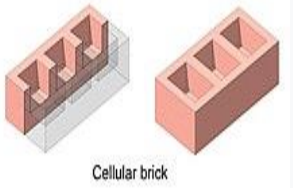


Fig 6

Perforated brick

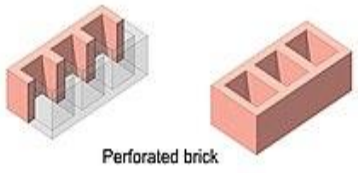
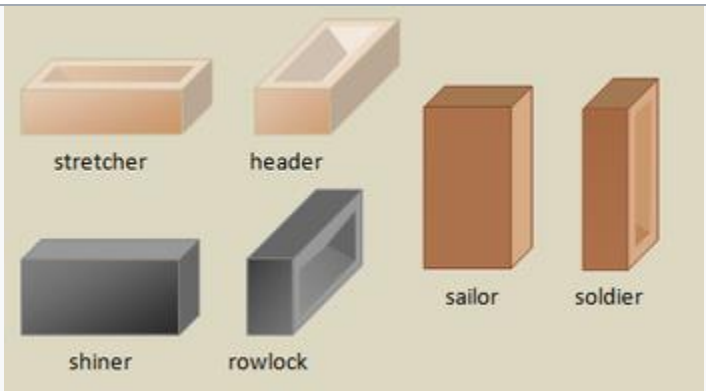


fig 7

A brick made with just rectilinear dimensions is called a solid brick. Bricks might have a depression on both beds or on a single bed. The depression is called a frog, and the bricks are known as frogged bricks. Frogs can be deep or shallow but should never exceed 20% of the total volume of the brick. Cellular bricks have depressions exceeding 20% of the volume of the brick. Perforated bricks have holes through the brick from bed to bed, cutting it all the way. Most of the building standards and good construction practices recommend the volume of holes should not exceeding 20% of the total volume of the brick.

Parts of brickwork include *bricks*, *beds* and perpends. The bed is the mortar upon which a brick is laid. A perpend is a vertical joint between any two bricks and is usually—but not always—filled with mortar.

Orientation



Six positions fig 8

A brick is given a classification based on how it is laid, and how the exposed face is oriented relative to the face of the finished wall.

Stretcher or **stretching brick**

A brick laid flat with its long narrow side exposed.

Header or **heading brick**

A brick laid flat with its width exposed.

Soldier

A brick laid vertically with its long narrow side exposed.

Sailor

A brick laid vertically with the broad face of the brick exposed.

Rowlock

A brick laid on the long narrow side with the short end of the brick exposed.

Shiner or **rowlock stretcher**

A brick laid on the long narrow side with the broad face of the brick exposed.

Cut

The practice of laying uncut full-sized bricks wherever possible gives brickwork its maximum possible strength. In the diagrams below, such uncut full-sized bricks are coloured as follows:

Stretcher

Header

Occasionally though a brick must be cut to fit a given space, or to be the right shape for fulfilling some particular purpose such as generating an offset—called a *lap*—at the beginning of a course. In some cases these special shapes or sizes are manufactured. In the diagrams below, some of the cuts most commonly used for generating a lap are coloured as follows:

Three-quarter bat, stretching

A brick cut to three-quarters of its length, and laid flat with its long, narrow side exposed.

Three-quarter bat, heading

A brick cut to three-quarters of its length, and laid flat with its short side exposed.

Half bat

A brick cut in half across its length, and laid flat.

Queen closer

A brick cut in half down its width, and laid with its smallest face exposed and standing vertically. A queen closer is often used for the purpose of creating a lap.

Less frequently used cuts are all coloured as follows:

Quarter bat

A brick cut to a quarter of its length.

Three-quarter queen closer

A queen closer cut to three-quarters of its length.

King closer

A brick with one corner cut away, leaving one header face at half its standard width.

Bonding

A nearly universal rule in brickwork is that perpends should not be contiguous across courses.

Walls, running linearly and extending upwards, can be of varying depth or thickness. Typically, the bricks are laid also running linearly and extending upwards, forming wythes or *leafs*. It is as important as with the perpends to bond these leaves together. Historically, the dominant method for consolidating the leaves together was to lay bricks across them, rather than running linearly.

Brickwork observing either or both of these two conventions is described as being laid in one or another *bond*.

Thickness (and leaves)

A leaf is as thick as the width of one brick, but a wall is said to be one brick thick if it as wide as the length of a brick. Accordingly, a single-leaf wall is a half brick thickness; a wall with the simplest possible masonry transverse bond is said to be one brick thick, and so on.

The thickness specified for a wall is determined by such factors as damp proofing considerations, whether or not the wall has a cavity, load-bearing requirements, expense, and the era during which the architect was or is working. Wall thickness specification has proven considerably various, and while some non-load-bearing brick walls may be as little as half a brick thick, or even less when shiners are laid stretcher bond in partition walls, others brick walls are much thicker. The Monadnock Building in Chicago, for example, is a very tall masonry building, and has load-bearing brick walls nearly two metres thick at the base. The majority of brick walls are however usually between one and three bricks thick. At these more modest wall thicknesses, distinct patterns have emerged allowing for a structurally sound layout of bricks internal to each particular specified thickness of wall.

Despite there being no masonry connection between the leaves, their transverse rigidity still needs to be guaranteed. The device used to satisfy this need is the insertion at regular intervals of wall ties into the cavity wall's mortar beds.

Self-Check 4	Written Test

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

Write true if the statement is correct or false if the statement is wrong (2point each)

1. Bricks may be differentiated from blocks by size only
2. A brick made with just rectilinear dimensions is called a solid brick.
3. The majority of brick walls are however usually between one and three bricks thick
4. A queen closer cut to three-quarters of its length
5. A brick cut in across its length its length is half bat

Note: **Satisfactory rating - 5 & above points** **Unsatisfactory - below 5 points**

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Answer Questions

1. _____
2. _____
3. _____
4. _____
5. _____

Operation Sheet 1	techniques of Preparing and checking mortar mix

Follow the techniques of Prepare and check mortar mix

Procedures:

Step 1- wear personal protective clothes

Step 2- choose the place selected the ingradients are storing

Step 3- check the equipment weather it is functional or not

Step 4-select the materials which are conformity

Step 5 based on these Procedures do the following lap test

Operation Sheet 2	techniques of Lay bricks/blocks

Follow the techniques of Lay bricks/blocks

Procedures:

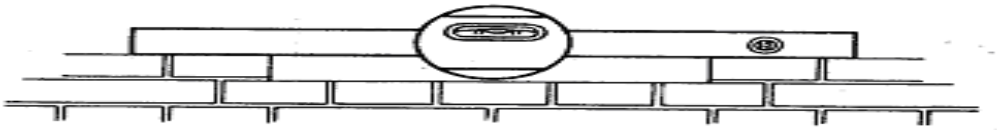
Step 1- wear personal protective clothes

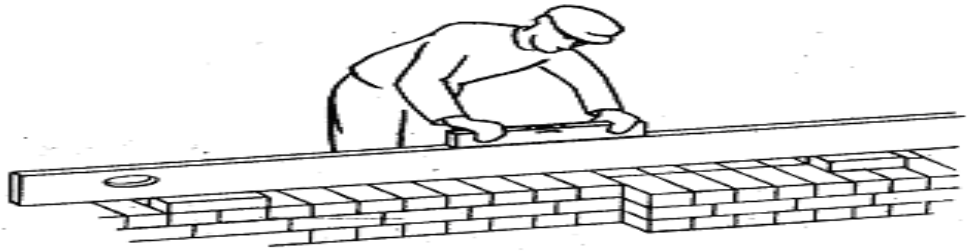
Step 2- choose the place selected **bricks/blocks** are storing

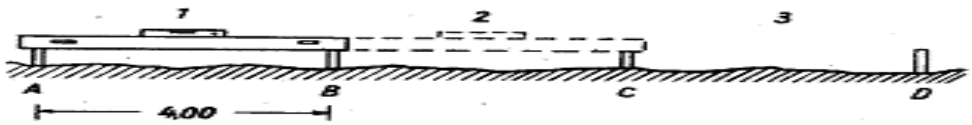
Step 3- check the equipment weather it is functional or not

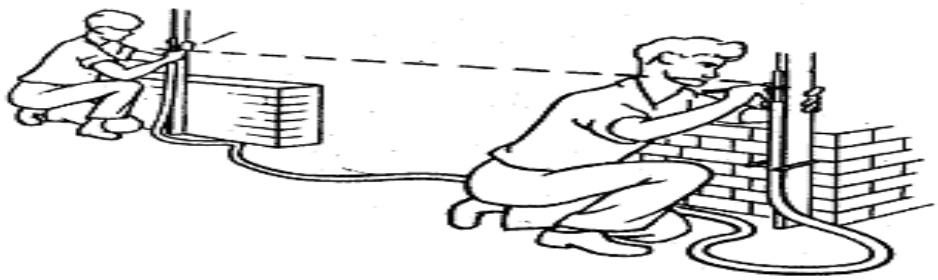
Step 4-select the materials which are conformity

Step 5 based on these Procedures do the following lap test









Operation Sheet 3	**techniques of Determining and setting out brick/ block work gauge**

Follow the techniques of Determine and setting out brick/ block work gauge

Procedures:

Step 1- wear personal protective clothes

Step 2- choose the place selected **bricks/blocks** are storing

Step 3- check the equipment weather it is functional or not

Step 4-select the materials which are conformity

Step 5 based on these Procedures do the following lap test

Operation Sheet 3	**techniques of Constructing base brickwork/ block work**

Follow the techniques Constructing base brickwork/ block work

Procedures:

Step 1- wear personal protective clothes

Step 2- choose the place selected **bricks/blocks** are storing

Step 3- check the equipment weather it is functional or not

Step 4-select the materials which are conformity

Step 5 based on these Procedures do the following lap test

LAP Test 3	Practical Demonstration

LAP Test -3

Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: **Given necessary templates /guide , workshop, tools and materials you are required to perform the following tasks within 4:00 hours**

Task 1. Prepare and check mortar mix

Task 2. Lay bricks/blocks

Taske 3 Determine and setting out brick/ block work gauge

Taske 4 . Construct base brickwork/ block work

Taske 5. Clean worked area

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