MASONRY

NTQF Level -II

Learning Guide #65

Unit of Competence: - Erect Brick and Block Structures

Module Title: - Erecting Brick and Block Structures

LG Code: **EIS MAS2 M07 LO4 LG-65**

TTLM Code: **EIS MAS2 M07 TTLM 0919v1**

LO4:- Positioning door and window frames

Instruction Sheet 4	Learning Guide #-65

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

- Locating and fixing window frames to cavity walls
- Locating and fixing door jambs≠frames to cavity walls

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 –**

- Locate and fix window frames to cavity walls
- Locate and fix door jambs≠frames to cavity walls

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 and Sheet 2” **in page 3 and 8** respectively.
4. Accomplish the “Self-check 1 and Self-check 2 **in page 6 and 13** respectively
5. If you earned a satisfactory evaluation from the “Self-check” proceed to “Operation Sheet 1and Operation Sheet 2 ” **in page 15 and 16**
6. Do the “LAP test” **in page 17**

Information Sheet-1	Locating and fixing window frames to cavity walls

1.1 window frames to cavity walls

Window can be provide the weak link in those performance requirement for an external wall concerned with weather exclusion ,sound control, thermal.

- Frame for window can be built in opening left in brick/block cavity wall construction or can be positioned earlier so that the wall is constructed around them.
- It is important that the designer has ensured that the horizontal length and vertical height of wall construction conform with the over all dimensions and the distance between the individual door and window frame.
- Before any wall construction is build around the frame they should be checked with a level to ensure perfect vertically and then they can be security propped.
- as the wall is constructed around the frame, they will become permanently fixed by building-in-right angle galvanized mild steel lugs screwed to their side edges as the work proceed.

- **The cavity of the wall** construction is closed by cutting the block work and making a 90% return to the inside face of the brick outer leaf.
- Ounces the wall construction has reached the top of the door or window frame a lintel construction must be formed to Carry the walling above the opening, a lintel ca n be formed with reinforced concre
- Window is to provide natural light and ventilation to the interior of a building while excluding rain and insect. The arrangement provide to allow for entry of air and light inside the room of building.They are essentially to provided fresh air and natural light inmates of the building.
- Window frame:- is the frame that holds the glass. It may be installed in a fixed position, may move vertically , horizontally or swing out ward or in ward.

- The timber to be used for structural construction. such as: door frame & window frame etc is to be dressed, planed, framed & placed in proper position.
- *The procedures for window frame are :-*
    - *select the size ,*
    - *select the shape ,*
    - *select the location*
    - *select hand tools and equipment*
    - *the studies of strong and stability to resist dampens*

Walls

Walls are the vertical elements on which the roof finally rests. They can be made of different

materials like bricks, stones, mud, concrete blocks, etc.

If the walls are very long, columns can be provided to carry the roof.

Walls provide privacy and enclosure. Walls also provide security and protectio n against natural

elements such as wind, rain and sunshine.

Openings are to be provided in wall for access and ventilation

Building with many windows providing desired ventilation and light

Lintels are constructed just above the openings. It is normally a stone slab or a concr ete slab.

Sill is the part of the wall that is just below the window.

Lintels are constructed to hold up the walls above the openings.

In earthquake prone areas a continuous lintel beam is provided all over the walls.

Self-Check 1	Written Test

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

Write the answer for the following page

1. Window frame is the frame that holds the glass
2. Openings are to be provided in wall for access and ventilation
3. Walls are provide security and protection against natural elements such as wind, rain and sunshine
4. Window is to provide natural light and ventilation to the interior of a building

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

Answer Sheet

Score = _____
Rating: _____

Name: _____ Date: _____

Multiple choice

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

Information Sheet-2	Locating and fixing door jambs/frames to cavity walls

2.1 door jambs/frames to cavity walls

Doors are more complex and deserve more care than you might think. A good door has to be leveled according to the flooring and ground slope. This is where your jamb comes into play. To install the jamb the right way, nail measured pieces of wood together to form the jamb's frame. Level it out against the door frame by placing shims behind it. Add door stops to the inside of the jamb to keep the door from swinging through it.

- Door is a movable barrier that separate internal & external space.
- It is usually attached to a frame on one side by hinges. The arrangements made to provide free access to in side and out side of the room of the building.
- Dooris usually attached to a frame on one side by hinges
- Jamb is a part of the door and the vertical part of the frame that is fixed to the wall. It is build the fastening in to the masonry joint to secure the frame for lining in position permanently.
- Jamb :- are the vertical side of a finished opening for the door , window or fire place

A door jamb is the vertical section of a door frame, which acts as a support for the remainder of the frame, as well as the door itself. Each frame has two jambs. The hinge jamb is the side where the hinges are installed, and the strike jamb is the side where the locking mechanism latches into the strike. The jambs are also used to mount the frame to the surrounding wall. The horizontal member that connects the two jambs is called the head.

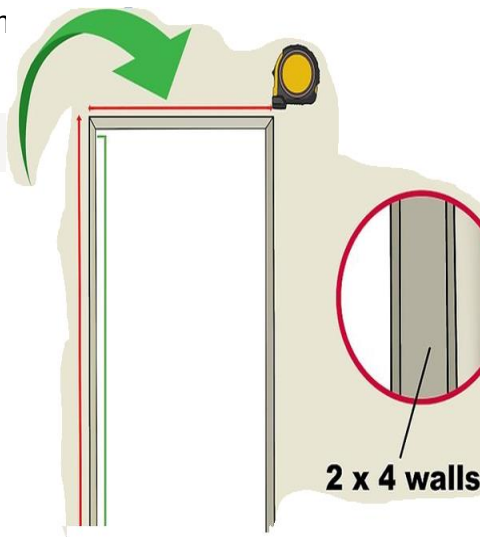
The material used to make a door jamb is largely determined by where it will be used. In most residential settings, the door frame is made of wood. It is typically hidden by casing or trim, so the type and finish of the wood is generally not important. For commercial uses, hollow metal door jambs are most common, and are made of cold-rolled steel for interior applications, or galvanized steel for exterior use. Some

architects may specify frames made of stainless steel or aluminum to provide a nicer finish, while fiberglass frames are used for their durability and weather-resistance.

There are a number of components that go into making up a door jamb. There is the face of the jamb, which is the surface that is parallel to the wall. The stop of the jamb is the bump-out that holds the door in place and keeps it from swinging straight through the frame. On either side of the stop is an area known as a rabbet. The majority of door jambs come equipped with one rabbet larger than the other, meaning that the stop is not centered, though equal-rabbet frames can be custom-made.

When ordering a door frame, several details about the jambs must be determined, starting with the throat size of the jamb. The throat is the back portion of the door jamb that wraps around a wall for installation. It should be equal to the thickness of the wall where it is being installed. Next, one must specify the types of hardware to be used. Each door jamb will then be prepped with cut-outs or reinforced with steel plates to accommodate and support the hardware installation.

A variety of fasteners are used to secure the door jambs to the adjacent walls. With wood frames, most types of nails and screws are acceptable. Metal frames require specialty anchors, and generally these anchors must be ordered with the frame. For masonry walls, a T-anchor or wire anchor is welded into the jamb, then set between the layers of brick or block. A compression anchor is welded into the jam drywall, and can be adjusted to fit the walls after they are erected.

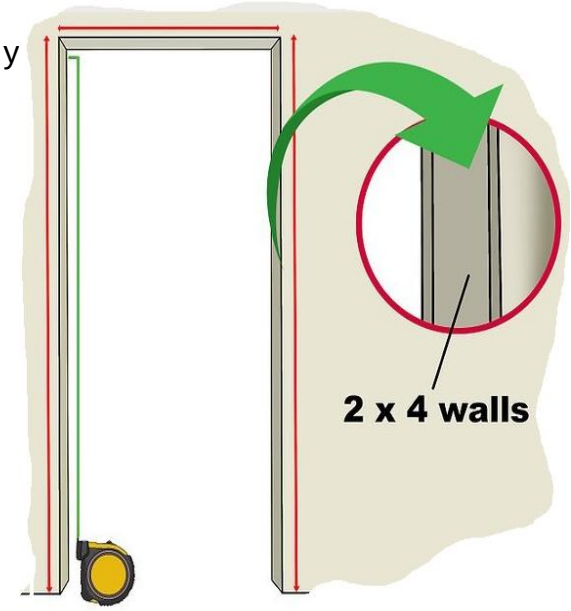


Cutting the Jamb Pieces

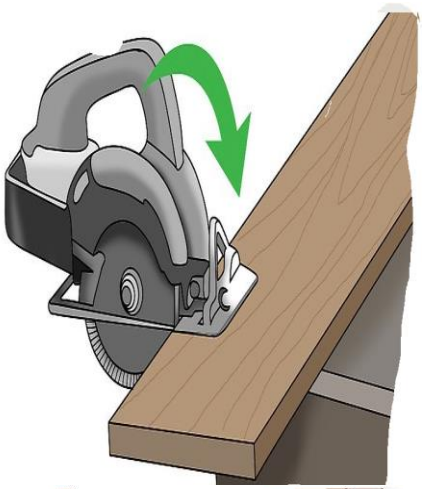
Measure the width of the door frame. Break out the tape measure. You'll need to know how wide your door frame is so the jamb fits in it. Hold the tape measure up to the top of the door frame. Note the Measurement and save it for later.

Keep in mind that if the door has 2x4 walls, then the frame will be 4-1/2" (11.4 cm). If the door has 2x6 walls, then the frame will always be 6-1/2" (16.5 cm).

Measure the sides of the door frame. Take y tape measure to one side of the door frame. Note the length and mark this on one piece of wood. If you have level ground, this measurement will be the same for the other side. Most likely they'll be different, so measure the other side of the frame and mark its length on another piece of wood. Don't forget to also measure the top part of the frame for the smaller piece of wood.

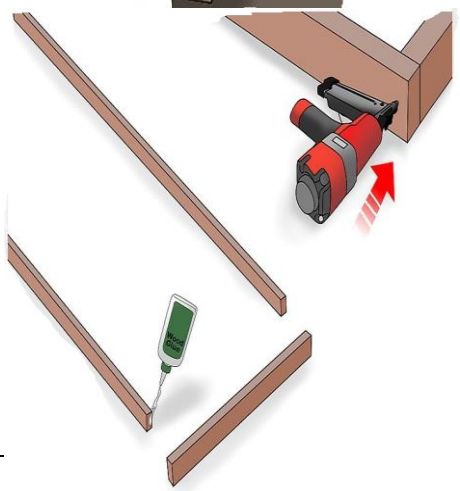


Cut the wood. Suit up with safety gear, including gloves, safety glasses, and a visor, before turning on your circular saw. Thin the pieces of wood so they fit within the frame. Follow up by cutting their length according to the measurements you took earlier.



Creating and Installing the Jamb

1. **Nail the wood together.** Lay one of the longer pieces of wood on its side and add a bit of wood glue to the end. Attach the shorter piece to one end of the longer piece. Get your nail gun and hold it square on the outside of the area where the wood meets. Add the nails to secure the pieces together. Align the other piece of wood on the opposite side and attach it the same way

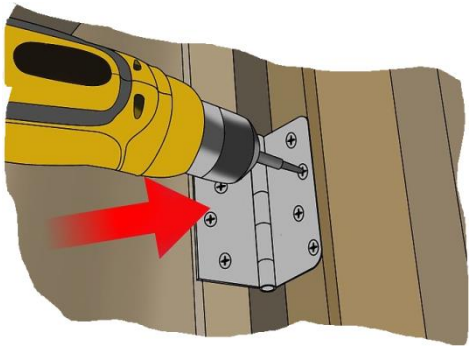


2. **Hold the jamb up to the door frame.** Carefully move your newly-cut wood up into the frame. Since you measured, it should fit in there well. Align the left side against the wall and see if it appears level.Double-check this with a level.
3. **Level out the jamb with wood strips.** After attaching the jamb to the frame, place wood strips (shims) under it. Make sure that you do not lift the jamb too much.Figure out where you need to place the shims to level the hinge side from top to bottom.Get these strips from the home improvement store. Slip them between the jamb and frame as needed.[4]
    - Always start with the side where the door will attach to the hinges.
    - Make sure to fasten the hinge side jambs directly to the stud. You can fasten theloosely in case you need to slide a jamb behind it, but it is best to keep it tight.
4. **Hold the door against the jamb to check for clearance.**You can hold the jamb in place by lightly hammering in afew nails. Place the door inside the jamb. The door needs to fit comfortably inside the jamb. Look for the gap between the door and jamb to be one-eighth of an inch (.32 cm) on all sides. Add or remove shimming so the door fits. When you're sure the measurements are correct, remove the door

5. **Nail the hinge side of the jamb to the frame.** Get your nail gun again. Make sure the jamb is even against the wall and frame. Begin securing it with nails from top to bottom. Be sure to put a nail through each shim to hold them in place. Weather strips are a good way of hiding screw marks. Screws make exterior doors stronger and more adjustable.Drill a hole in the jamb before adding the screws, then attach the weather strips over them.[

6. **Secure the other sides of the jamb to the frame.** Move onto the top side. First, hold your level up to the jamb. If it doesn't appear level, add some shims to even it out.

Finish by nailing the jamb to the frame. Repeat this with the side opposite the hinges



7. **Cut the shims to size with a utility knife.** The shims will have their ends sticking out of the jamb. Go ahead and take your utility knife or other woodcarving knife and score them, then use your hammer to break off the ends

final output of fixing door jambs

Self-Check 1	Written Test

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

Write the answer for the following page

1. Door is a movable barrier that separate internal & external space
2. A variety of fasteners are used to secure the door jambs to the adjacent walls. With wood frames.
3. A door jamb is the vertical section of a door frame.
4. The material used to make a door jamb is largely determined by where it will be used
5. The horizontal member that connects the two jambs is called the head.

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

Answer Sheet

Score = _____
Rating: _____

Name: _____ Date: _____

True / false

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

Operation Sheet 1	Techniques of Locating and fixing window frames to cavity walls

Follow the techniques for Locate and fix window frames to cavity walls Procedures

Steps 1-wear personal protective clothes

Step 2-clean the place where materials are positioning

Step 3-select the necessary materials and tools

Step 4-brearing the materials and tools to work area

Step5- measure the size of the window

Operation Sheet 2	Techniques of Locating and fixing door frames to cavity walls

Follow the techniques for Locate and fix door frames to cavity walls Procedures

Steps 1-wear personal protective clothes

Step 2-clean the place where materials are positioning

Step 3-select the necessary materials and tools

Step 4-brearing the materials and tools to work area

Step5- measure the size of the window

LAP Test	Practical Demonstration

Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within --- hour.

Task 1. fix window frames to cavity walls

Task 2. fix door frames to cavity walls

Reference

https://thorhelical.com/cavity-wall-ties/fixing-door-frames/
Bing.com/videos

https://thorhelical.com/cavity-wall-ties/
https://www.fischer.co.uk/en-gb/products/window-frame-fixings
https://**www.youtube.com**/watch?v=MjfN96QVOKs

This learning guide prepared by:

No	Name of trainer	Qualification	Region	E-mail
1	Dereje Teshome	Construction technology & management(MSC)	Dire dawa	Derat8@gmail.com
2	Haymanot Kefale	Construction technology (BSc)	Benishagul gumuz	Haymanot281@gmail.com
3	Jemal Abdulahi	Construction technology (BSc)	Harari	
4	Mohammed Hassen	Construction technology (BSc)	somali	mohammedhassen286@gmail.com
5	Muluken Solomon	Construction technology & management(MSC)	Oromia	Mulecot99@gmail.com
6	Solomon Eshetu	Construction technology (BSc)	Amhara	Natansolomon10@gmail.com
7	Zelallem Taye Gedifew	ANRST tvet office curriculum expert	Amhara	tayezelalem22@gmail.com
8	Addisu wodajo	Anrst tvet office curriculum expert	Amhara	Addalvy2010@gmail.com