FINISHING CONSTRUCTION WORK

Level-II

Learning Guide-08

Unit of Competence: Prepare surface for plastering

Module Title: Preparing surface for plastering

LG Code: EIS FCW2 M08 LO2 LG 33

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LO 2: prepare surface

Instruction Sheet	Learning Guide #1

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

2.1 Identifying plan and specification Preparation from the requirements.

2.2 removing, Hazards, obstructions and attachments.

2.3 selecting and set up Surface preparation tools.

2.4 using prepare surface Tools

2.5 removing Loose or protruding material

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**:

2.1 Identify plan and specification Preparation from the requirements.

2.2 remove Hazards obstructions and attachments.

2.3 select and set up Surface preparation tools.

2.4 use prepare surface Tools

2.5 remove Loose or protruding material

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below 3 to 6.
3. Read the information written in the information “Sheet 1, Sheet 2, Sheet 3 and Sheet 4 and 5”.
4. Accomplish the “Self-check 1, Self-check t 2, Self-check 3 and Self-check 4” and self check in **page -7, 13,23, 31 and 36** respectively.
5. If you earned a satisfactory evaluation from the “Self-check” proceed to “Operation Sheet 1, Operation Sheet 2 ” **in page -33.**

6. the “LAP test” **in page – 35** (if you are ready).

Information Sheet-1	Identifying plan and specification Preparation from the requirements

1.1 Preparation surface

A. Clean the surface and remove any dust, contaminated materials on plaster bases and substrates for direct application of plaster, removing loose material and substances that may impair the work. Form ties and other obstruction shall be removed or trimmed back even with the surface of the solid base.

B. Dissimilar Backgrounds: where rendering is to be continued without break across joints between dissimilar solid backgrounds which are in the same plane, cover joints with 200mm wide galvanized steel lathing as specified & approved fixed with corrosion resistant fasteners at not more than 600mm centers along both edges, apply mesh over electro-mechanical embedded conduits.

C. Apply forcefully dash coat on concrete and concrete masonry surfaces indicated for direct plaster application. Dash coat is to cover full surface to be plastered and is to provide rough surface of sharp protrusions ranging 3.0mm and 5.0mm. Dash-Coat Mix: 2 volume parts Portland cement to 3 volume parts fine sand, 1 part bonding agent to 3 part clean water mixed to a mushy-paste consistency shall be left untroweled, undisturbed and moist cured for at least 24 hours after application and before plastering.

D. Install temporary grounds and screeds to ensure accurate rodding of plaster to true surfaces. Check the straightness in each corner and add grout to hold the external corner beads in correct and internal position to be fixed using corrosion resistant fasteners.

E. Before plastering starts, dampen, by spraying water concrete dash coat surfaces that are to receive plaster with clean water.

1 .2 Specification of ‘Plastering’

Here is the specification of plastering.

- ‘Plastering’ is the finishing coat which provides a good look and improves hygienic conditions in the building.
- Plastering is done with cement and sand mortar. It consists of different thickness as per requirement of the site.
- Plastering is done by applying cement mortar with required ratio i. e. 1:3, 1:4, 1:6 on the walls and the plaster should be in straight line, level and plumb and the joint must be in right angle.
- The surface to be plastered should be racked out and cleaned with wire brush. It should be made wet 24 hours before starting the plaster.
- All the doors, window frames, electric fittings and water supply lines must be fitted before starting the plaster and they should be laid as per drawings.
- Care should be taken that unwanted cement mortar on the frames and electric fittings should be cleaned immediately after finishing the plaster.
- Proper curing should be done at least for 7 days after the plastering is complete as it is the most important factor for maintaining the strength of plaster.

We recommend that all specialist work be carried out by one contractor. However, if you are instructing your own plasterer the work must be done to this specification. The information contained in this sheet is for professional operators and is compiled accordingly. Further information is available on request.

1. Remove all skirting's, architraves and other joinery.
2. Remove radiators and any other fixtures or fittings within the work area.
3. Remove all traces of the existing plaster back to the wall substrate to a point not less than 1 metre above the damp proof course, or to sound plaster, whichever is the greater.

4. Rake out masonry joints and ensure all traces of gypsum, dust or other friable material are removed along with any timber noggins or fixings.

5. Use only clean potable water and clean uncontaminated washed sharp/rendering sand and fresh Portland cement.

6. An approved salt retarding additive must be mixed with the gauging water before use.

7. Apply a first scratch coat of 3 parts washed sharp/rendering sand to one part fresh OPC, incorporating an approved salt retarding additive in the gauging water.

8. Apply a full coat of the same mix, while the scratch coat is still "green", combed to provide a key for the second coat and giving an overall thickness of not less than 3/8th inch or 10mm. Ensure that this is stopped a minimum of ½" or 15mm above the floor.

9. Once this coat has cured, apply a full second coat ½" (12mm) thick to a mix of four parts sharp/rendering sand to one part OPC, using a minimum of the gauging solution to give a dense coat. Ensure that this coat is stopped at least 1" or 25mm above the floor.
10. Leave for at least twenty-four hours to cure before finishing with a 1/8" (3mm) of multi-finish or similar. This must not be over trowelled and must be stopped at least 1" (25mm) above the floor.
11. Skirting's must be treated with an approved preservative and primed on the back before being re-fixed.
12. Redecoration should be regarded as being temporary until the wall has dried out. Initial redecoration can be carried out using a water based emulsion paint after the new plaster has visibly dried out. Permanent redecoration should be delayed for at six to twelve months.

1.3 IDENTIFYING PLAN

The sequence of work to be followed in the construction of a building is the at most important procedures of construction. The major sequences of construction are marking, excavation, concreting, brick masonry, roof laying, flooring and finishing.

- **Paper Work**

Construction of residential building required paper work before the start of actual construction. The paper works are preparation of drawings, estimation of material cost, labor cost & contingencies, approval of drawings from City Development Authority.

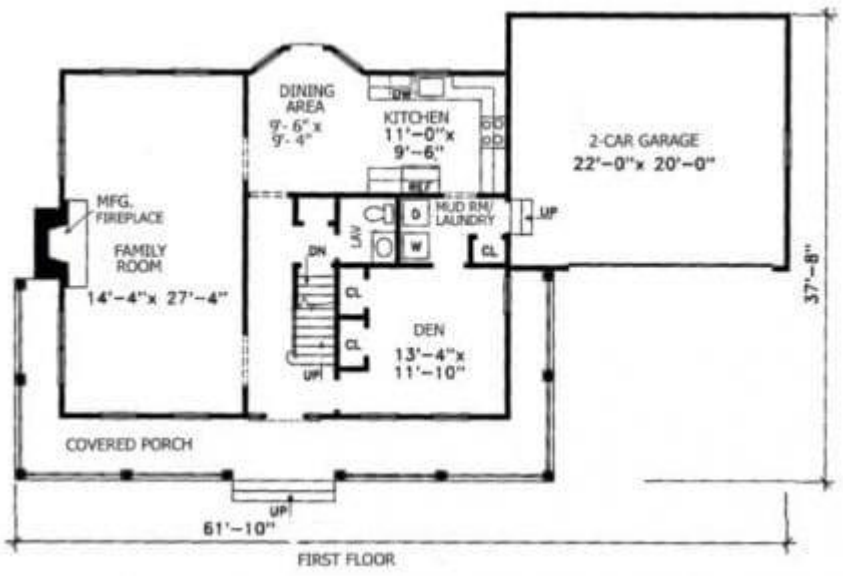

Fig 1:1 floor plan

- **Plastering Work**

Generally, internal walls of buildings are covered with plastered layer and external walls with pointing. It is better plaster the external walls rather than pointing

Form work is removed after 14 days of slab pouring. Now plaster work begins. Mortar for plaster work is generally of 1:3 or 1:4 is used. Thickness of plaster layer should not be more than 0.75inch. Cure the surface about 7 days. So that, plaster gain proper strength.

Generally, internal walls of buildings are covered with plastered layer and external walls with pointing. It is better plaster the external walls rather than pointing.

Fig 1.2: Plastering Work

- .**Refer: https://www.youtube.com/watch?v=XOdPJDSTvjM**

Self-Check -1	Written Test

Directions: I Multiple choice

Choose the correct answer from the questions listed below. Use the Answer sheet provided in the next page:

1. Clean the surface for construction means? .(3 points)

A Remove any dust C .remove loose materials

B Remove contaminated materials D. all

2 The proportion mix ratio of plastering work is ?.(3points)

A 1; 3 B .1;4 C 1;6 D all

3 the proper curing of plaster should be done for ----------days.(3points)

A, 7 days B. 10 days C 4 days D 9 days

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

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

a. ----------

b. ----------

c. ----------

Information Sheet- 2	Removing Hazards, obstructions and attachments

How to minimize plastering work hazards

All jobs in the construction industry have some level of risk exposure.

Fig 2.1 safety shoes

Depending on the nature of the profession, some workers in the construction trade are prone to little or extreme levels of risk. Plasterers are no exception when it comes to job safety and protection. The everyday work of a plasterer entails some dangers that need mitigation.

Contractors of commercial construction projects comply with strict standards of safety. Fortunately, the safety standards required in construction sites guarantee workers protection. Here are some sources of work-related risks for plasterers:

- Improper use of tools and equipment may cause accidents.
- Proximity to loose debris and falling objects.
- Exposure to hazardous chemicals and airborne particles.
- Airborne irritants may get inhaled or enter the eyes.
- Working at heights increase the risk of falling.

Even if professional plasterers already know the necessary safety measures on construction sites, reminders are still required from time to time. Here are the safety measures each professional plasterer should adhere to surface

1 Workers should wear proper plastering work wear at all times. Contractors may prescribe uniform outfits for plasterers to distinguish them from other workers. A plasterer's uniform may include **plastering overalls**, trousers, or polo shirt. If a contractor does not provide a uniform, plasterers may wear DIY overalls, decorator's overalls,

2 Aside from proper work wear, plasterers should have protective accessories for the face, eyes, head, and hands. Lastly, sturdy work boots are also essential to protect the feet from falling objects and ensure good floor traction.

4 Working with power tools and equipment require skills. A plasterer should not attempt to operate machinery with no experience or training. Another precaution is in using vibrating tools. As much as possible, workers should avoid using tools that vibrate for extended periods of time. Prolonged use of such equipment may cause muscle, nerve, and joint damage.
5 As much as possible, plasterers should avoid carrying heavy loads. Permanently debilitating accidents result from moving heavy objects. Plasterers should use equipment designed to help raise heavy objects from one location to another.
6 Ask for assistance when installing scaffolding. For every construction project, scaffolding should be inspected first before approved for use. Makeshift platforms and ladders are incredibly prone to accidents. There should be no shortcuts when creating raised working platforms for plasterers.

In spite of these safety standards enforced in construction sites, some plasterers still forget **to adhere** to them. For example, some plasterers forego **wearing gloves or face masks** thinking there is no harm in doing so. Similarly, plasterers may choose not to wear a helmet while working. These examples of negligent behavior are common reasons why work-related accidents are still rampant. While contractors are responsible for enforcing safety guidelines and regulations, it is every worker's responsibility to look after personal safety. As a mitigating measure, contractors may also employ a team of safety experts tasked to check daily compliance with safety regulations.

The constant vigilance of workers, safety experts, and contractors is the only way to minimize the occurrence of work-related disasters.

Fig 2.2 remove attachment of old house

How to Remove attachment from a Wall can be a time-consuming home improvement project. There are many homes, particularly older ones, that have a plaster covering on the walls rather than plaster. The job is simple to complete but it is also quite messy.

Step 1 - Take Safety Measures

Be sure to put on protective eyewear, work gloves, ear plugs, and a dust mask before you begin to remove the plaster. This project is messy and you will need to protect yourself from any flying plaster.

Step 2 - Prepare the Room

If possible, remove all the furniture from your room. Use old sheets to protect any items that are left in the room. Use the old sheets to protect the floor. Place a garbage can in the room. You will need it for all of the plaster you remove from the walls. Use a screwdriver to remove any outlet plate covers located on the walls in the room. Place the plates and screws in a safe place until you need to reinstall them.

Step 3 - Check the Walls

Check the walls that require the plaster removal for any wiring or plumbing lines. It is important to know the location of these items to prevent them from being damaged during the removal process. Turn off the power source to the room at the main fuse box to prevent any electrical damage.

Step 4 - Support the Wall

Use a drill and screws to attach one 1X2 inch boards around the perimeter of each wall to support the wall in position while you are tapping or hitting it with a hammer to loosen the plaster.

Step 5 - Remove the Plaster

Use your hammer to carefully break off the plaster from the wall. Either knock with force or tap the plaster lightly to loosen it from the wall, depending on your situation. Place the plaster pieces that fall off easily into the garbage can. Continuing breaking off the plaster until the entire room is complete. Use a **putty knife** or **scraper** to remove any plaster that remains stuck to the walls. Be careful not to damage the walls as you scrape off the plaster.

Step 6 - Remove the Plaster Base

Plaster is installed over thin wood strips which is referred to a lath. Newer plastered homes may have a metal mesh layer under the plaster material in place of the lath. Both the laths and the mesh will also have to be removed. The wood strips can be pulled off with a pry bar. In the case of the mesh underlay, it will need to be snipped from the walls with wire cutters.

Step 7 - Clean Up the Area

Be sure to take the plaster in the garbage can and dispose of it in a proper and safe manner. Use your shovel to pick up any plaster from the floor. Sweep up smaller debris and then finally use your shop faced to suction away any small particles left in the room.

How to Paint over Horsehair Plaster

2.3 old surfaced residential house

If you're living in a house with horsehair plaster, you know the general issues that come with it. One of these issues arises when you want to paint over your horsehair plaster Follow the guide below to make that task a bit easier.

fig 2.4 prepare surface for plaster

Step 1 - Prepare the Walls

If there are any cracks in the horsehair plaster (as there often are), make sure that you fix them prior to painting. Sand down any bumpy areas and wipe the walls down to ensure you get rid of any dust.

Step 2 - Prime the Walls

Once you have a smooth set of walls, use the roller and your primer to coat the walls thoroughly. This step will allow the paint to stay on more easily, and it will save you coats later on. Be sure to allow the primer to dry completely.

Step 3 - Paint the Walls

Using the same roller (washed out) or a new one, apply the paint to the walls. Move in a "V" formation so you don't leave lines on the walls. Allow each coat of paint to dry thoroughly before you apply the next.

Cleaning Plaster off the Floor

Figure **2.5 floating surface**

If plaster drips on the floor during your work, don't fret. Plaster is water soluble and can be easily cleaned. However, the best way to prevent accidents is to do a good cover-up. Before you begin, cover the floors with heavy plastic. The plastic should be loosely taped together. If you are doing a repair, tape the plastic up the wall a bit for an even better floor covering. If plaster still managed to get on your floor, following a few easy techniques will return your floors to their original beauty.

- **Carpet**

Because plaster is water soluble, you can clean plaster out of carpet while it is wet or dry. If your carpet has a longer nap, it is best to clean it once it has dried. On other carpets, wipe up large amounts of plaster and then scrub the remainder out of the carpet. On long nap carpets, let the plaster dry and use your hands to crumble it out of the carpet. Once the excess is gone, use a small wet rag to remove the remaining plaster.

Self-Check -2	Written Test

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

1, The order of removes attachment old house is…? . (3 points)

A Safety measures C. check the walls

B Prepare the rooms D.all

2, The removal tools attachments of old house is …..?(3point)

A Hammer B Scraper C putty Knife D all

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

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-3	selecting and set up Surface preparation tools

3.1 Selecting Surface Preparation

To ensure adhesion of the coating to the substrate and prolong the coating's service life , it is important to properly prepare the surface.

- The surface must be dry and in sound condition.
- All oils, dust, dirt, loose rust, peeling paint and other contaminants must be removed. Failure to do so can lead to loss of adhesion and coating failures.
- For optimum coating performance product, substrate and ambient temperature should be between 20°C-25°C* (68°F-77°F). To prevent condensation during application the surface temperature must be 3°C (5°F) or more above the dew point at all times.

- **What is the Contamination surface**?

One of the most important principles to recognize to understand wiping in clean rooms is that the contamination is typically of the invisible kind. While some macro residues may be visible to the naked eye, clean room contamination is typically concerned with micro level residues,. Even with the superior air handling and filtration offered by proper clean room construction, surfaces can be contaminated with a variety of different residues and materials that differ physically and chemically. Small sub micrometer (micron) particles, larger visible filamentous fibers, acids, bases, salts, organic matter, a variety of materials both in solid and liquid form are used in the process, and nonvolatile residues (NVRs) are all examples of surface contaminants that may be commonly present and need to be removed.

The risk with these contaminants is not merely that they will exist in a clean room environment, potentially risking the product integrity, but that they may migrate to other locations in the room if they are not promptly, frequently, and periodically removed. In fact, using methods other than wiping for removal can increase the potential of such undesirable migration. Therefore, most clean room operations will document specific cleaning procedures, tools, and frequencies as part of their quality assurance systems to ensure that product integrity will not be compromised.

- **Surface Layout Guidelines:**

- Attempt to base the surface layout on the shape of features
- Features should define areas of equal curvature
- Areas of equal curvature (Features) should be represented by a single surface
- Feature definition should include where features begin/end & merge

Surfaces define the appearance of a building. Sto Group offers a wide range of different surface materials, including render, glass, stone or 3-dimensional façade elements, that allow a multitude of textures, patterns, shapes and sizes. Sto Group's goal is to give you creative control over the appearance of a building, achieving high quality, sustainable results.

- **Render**

Render offers an wide range of possibilities in surface character and appearance, and the perception of a building can be changed dramatically through the choice of render used.

By adding marble grain to the mix a render can be used to create a rolled texture, allowing the craftsperson to score the surface either vertically, horizontally or randomly in a worm-like pattern. Homogenous grain-free material gives the craftsperson almost unlimited freedom, allowing tool choice and technique to determine the pattern type, size and texture. The choice of binder within a render can also radically change its surface character. Cement-free renders provide surfaces with a uniformity of appearance, even when wet, while mineral renders increase the degree of patina through a mottled appearance that is further highlighted by water.When repointing masonry, preserve original mortar characteristics, including composition, profile, and color. In some cases, matching the composition of the historic mortar mix will be essential to the preservation of the bricks.

- Repair of the original material may be required after it is uncovered.

- Removal of other materials, such as stucco, should be tested in a small area to ensure that the original material will not be damaged.
  If masonry has a stucco finish, removing the covering may be difficult and may reveal
- extensive damage to the original material. For example, original brickwork was sometimes chipped to provide a 'key' for the stucco.
- If removing stucco is considered, first remove the material from a test patch to determine the condition of the underlying masonry.

3.2 Set up surface preparation tools

Trowel; A trowel is an important plastering tool that allows you to smooth the plaster after applying it to the wall. This tool is used to flatten the plaster down over the area intended for plastering. It's important to have a good, clean surface on the trowel to provide for a uniform finish.

figure 3,1 steel trowel

- **Hawk**

A hawk is used by the professionals to carry the plaster with them as they move down the wall. An advantage of this, over carrying plaster in a pan or working from the bucket directly, is the amount of drywall compound that that can be picked up by the trowel in each "scooping" action. As plaster sticks to the hawk after a few seconds the hawk can be tipped up at a 90 degree angle whilst scooping plaster off with the trowel.

- **Mud Pan**

A mud pan can be used instead of a hawk for the less experienced plasterer. While it can be more wasteful, time consuming and laborious scooping plaster material out of the pan, it is harder to spill material onto the floor with the pan than with a hawk.

- **Utility Knife/Scissors**

A utility knife or scissors will help cut plaster tape to size. The utility knife is employed to square out the edge of the hole to be plastered over if repairing damaged walls. Straight edged holes are easier to smooth over for an even surface.

- **Sponge/Sandpaper**

A wet sponge is used to smooth out unevenness that may occur after plastering the wall. Coarse grit sandpaper is used quickly to smooth out large areas of rough unevenness, and then the finer grit is used to finish up the area.

- **Jointing Knife**

A jointing knife is essential for defining a straight line and edging into tight spaces such as corners and those areas that are tight, such as between a window near the

wall and the wall that is perpendicular to it. They come in a variety of shapes and sizes as needed. Angled jointing knives help reach hard to reach angles.

figure 3.2 joint knife

- **Step Ladder**

A step ladder is an invaluable tool for reaching the holes in the walls at the higher areas. Try to get a ladder which includes a pan shelf at the top. You can carry the materials and tools you are using in the pan to reduce fatigue and time spent going up and down the ladder.

figure 3.3 internal steel ladder

- **Bucket**

Never discount the importance of a couple buckets of clear, fresh water for keeping tools clean and for wetting the sponge during the project.

3) Hawk/ Hand Board

The Hawk (or hand board) is the plastering tool that holds the plaster for your trowel to scoop from. Again there are loads of options but here's what we recommend.

- **Foam/ Plastic Hawks**

figure 3.3 plastic hawks

The plastic Hawks are perfect for beginners. There cheap, easy to use but more importantly, they are extremely light. This is going to be a big help when starting.

That's because when you're holding a hand full of plaster for hours on end your arms (especially your forearms), will start to get tired. Your muscles won't be used to the work.

That's why the plastic hawks are brilliant for beginners. It will save you a lot of strain and hard work.

However, they aren't that strong and they can often snap with time. There is another option if you want one that will last:

- **Aluminum Hawks**

These Hand Boards are a lot stronger. They will last longer but are still quite light due to the lightweight aluminums. They are a bit more expensive but will definitely last longer than the plastic types. You don't need to spend loads on a Hawk

- **Mixer**

Back in the day, all the old boys used to mix their plaster with a spade. However, we're a bit more advanced and I'd defiantly recommend you invest in a decent mixer.

Again there loads of different models to choose from but we'll narrow it down for

- **Finishing Trowel**

In a similar way to the pointing trowel, the finishing trowel is another crucial tool in any plasterer's kit. It utilizes a wider, flatter blade to smooth out the plaster more effectively and

provide that exceptionally smooth finish to all your surfaces. This is a tool you'll be using a lot so it makes sense to invest in a high quality tools .

- **Window Trowel**

When you can't use your other larger trowels around windows, most plasterers will reach for their window trowel. As its name suggests, this tool is specifically designed for use around windows thanks to its smaller blade face which gives you better man ability across the wall in tighter spaces. An important tool if you work on a lot of residential projects.

- **Inside and Outside Corner Trowels**

Yet another crucial tool in the professional plasterer's kit – the corner trowel. Instead of tackling the complexities of finishing your corners with a more traditional trowel, corner trowels allow you to smooth out your plaster with accuracy and simplicity. Save time on site by reaching for your **inside** and **outside** corner trowels instead of trying to get by with a traditional flat blade.

- **Mortar Stand**

This is one you might consider obvious, but again it's another simple accessory that can make life on site that little bit easier. A mortar stand is a small foldable table that you can use to hold your plastering material or grout, giving you that ease of access whilst working. Don't overlook the simple tools as they can make a big difference!

- **Bucket Trowel**

. This tool is commonly used to scoop plaster up out of your mixing bucket and on to your plastering hawk. Because of the weight involved when transferring the plaster, you'll need a strong and robust bucket trowel as part of your kit. This really is a must-have tool.

- **Mixing Bucket**

Similar to the mortar stand, a bucket will have multiple uses when working on a project. In most cases, you'll want a decent size bucket – at least 15 litres should be sufficient depending on your specific requirements. Before you start any plastering job, you'll need to keep your bucket clean and dry prior to mixing any plastering materials.

- **Snips**

Having a reliable pair of snips is always important in modern plastering, primarily because you'll likely need to trim and cut your beading. Make sure the snips you choose have the ability to cut both popular types of beading metal – cold steel and stainless steel. Also, having longer handles on your snips can give you better leverage and make the task of trimming up beading much easier. All plasterers should have a durable set of snips as part of their kit.

- **Plasterers Float**

When you've added the final layer of plaster to your wall or ceiling, you'll need to give it one final pass over with a plasterers float to give it that all-important smooth, high quality finish. This is another very important tool that should be carried by all plasterers as without it, you won't be able to smooth down the top layer of plaster and you could see your surface end up uneven.

- **Scarified**

The final tool on our list is the scarifies a large metal comb that allows you to scratch away at the render before applying your second coat. The scarifies is an important tool for any plasterer as it gives you the ability to comb lines directly into the render which will create a stronger bond when the next layer is applied. If you want a high quality finish on your walls and ceilings, we'd definitely recommend investing in one of these.

Self-Check -3	Written Test

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

1 Selecting surface preparation done with..? . (**3 points**)

A remove peeling paint B. Dry surface and in sound

3 C Prevent condensation D. all

- ----------used to cut plaster tape to size(**4 points**)

A Mud pan B Utility knife C. sand paper D. joint knife

Note: **Satisfactory rating above 4 points** **Unsatisfactory - below 4 points**

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-4	use prepare surface Tools

4.1. Hand and power tool cleaning

Surface cleaning by hand tools such as scrapers and wire brushes is relatively ineffective in removing mill scale or adherent rust. Power tools offer a slight improvement over manual methods and these methods can be approximately 30% to 50% effective but are not usually utilized for new steelwork fabrications. Where it is not possible to clean by abrasive blasting, hand and power tool methods may be the only acceptable alternative methods.

Modern power tooling has been developed not only to achieve a good standard of surface cleanliness and profile but also to provide near total containment of all dust and debris generated. New equipment is now available to use percussive reciprocating needles, rotary abrasive coated flaps and right-angle grinders, all within a vacuum shroud to enable on-site surface preparation to be environmentally acceptable

- **WIRE BRUSH**

a handle of wood or plastic (for handheld use) or are formed into a wheel for use on angle grinders, bench grinders, pistol-grip drill motors, or other power tools. The wire brush is primarily an abrasive implement, used for cleaning rust and removing paint. It is also used to wire brush is a tool consisting of a brush whose bristles are made of wire, most often steel wire. The steel used is generally a medium- to high-carbon variety and very hard and springy. Other wire brushes feature bristles made from brass or stainless steel, depending on application. Wires in a wire brush can be held together by epoxy, staples, or other binding. Wire brushes usually either have clean surfaces and to create a better conductive area for attaching electrical connections, such as those between car battery posts and their connectors, should they accumulate a build-up of grime and dirt.

- **TROWEL ROLL**

Remove all existing hollow/porous surfaces from the property, using hand tools or hammer equipment, dependent on how solid the wall surface is (if the surface is strong and not hollow, the GRC render can be applied over the wall surface). Mask all doors windows, fascias, soffits boards; protect patios, shrubs, plants and other items where necessary. Clean down the wall substrate, either by wire brushing and power washing ., the removal of algae

or any contaminates on the wall surfaces. Trowel applied, either 2 or 3 coats of reinforced armored fires render to wall elevations are necessary. Trowel or roller apply top coat textured coating with chosen cooler required.

- Varieties of Putty Knives

A putty knife can come in a number of variations including:

- Flat edged blade and chiseled edged blade
- Straight edge and angled edge blade
- Stiff blade or flexible blade
- Plastic, carbon steel, stainless steel or brass blade
- Blade widths from 3/4" to 6" wide

Putty Knife for Spreading and Applying Compounds

Application of a compound is a common use of the generic putty knife. A compound can include any number of paste-like materials such as wood filler or wood putty, base application drywall compound (used in taping drywall joints), spackling paste or other filler materials or even adhesives.

The blade edge will typically be straight (versus chiseled) and will tend to be flexible (versus stiff). The most economical version of these knives is made from plastic like polypropylene. Plastic blades are often disposable and do not stand up well to continued use.

A better-constructed blade is made from ground and polished carbon steel. However, although the carbon steel is more durable, it may rust if not properly maintained. The premium version of a putty knife blade is made of stainless steel. A well made stainless steel blade knife with a durable nylon or wood handle can last a lifetime.

- **Putty Knife for Scraping**

Scraping and removing residue is another use of a putty knife. In this usage, however, you will be using a stiff blade (versus flexible) with a chiseled edge (versus flat). You will also want a steel blade instead of a plastic blade.

Scraping blades are stiffer than spreading blades so they will not be ground steel (promoting flex). These steel blades will be thicker and more rigid. The chiseled blade edge of the knife

should also be angled instead of flat to help get under the paint, dried putty, or other residues more easily.

For use in delicate applications and in areas that have volatile fumes, you will want to use a specialty scraper having a brass blade.

A well-made scraper will feature a full tang. The metal that makes the blade will run fully through the handle. That way the knife has metal from front to back and allow the knife to be struck lightly with a hammer on the handle to coax the paint or other debris/residue from the material being cleaned.

- **Specialty Putty Knives**

- The taping knife is a very wide spreading knife, 9 to 14 inches wide, used to apply wide swaths of drywall taping compound when feathering a drywall joint.
- **A** multi-tool is a rigid scraping tool with a chiseled edge and special cut outs/edges for cleaning paint rollers, scraping open cracks and scraping material.

- **Drywall Taping Knives**

Drywall taping knives are the tools of the trade for drywall contractors, who usually have at least half a dozen of these trowel-like knives for applying and smoothing joint compound. A 6-inch drywall knife is handy for scooping up wet joint compound and smoothing it into the seams between drywall panels. The larger knives are reserved for feathering the wet compound out over a wider area, which makes the seams less visible after finishing and painting the wall. Standard widths of drywall taping blades start at 6 inches and run up to 14 inches.

- **Scraping**

Both putty knives and drywall taping knives are valuable for scraping. Rigid putty knife blades, especially beveled blades, slip easily beneath loose and peeling paint, scraping it away from siding, porch rails and decking before repainting. Drywall blades are useful for scraping bits of dried joint compound from taped walls or for removing old wallpaper.

- **On Walls**

Drywall taping knives are used almost exclusively on walls during the mudding process. When repairing and retaking small areas, however, such as a narrow strip of wall between a door frame and the corner of a room, a drywall-taping blade may be too wide. In limited spots like this, putty knives come to the rescue, smoothing compound, filling cracks and scraping away thin strips of wallpaper.

- **FIBER BRUSH**

A brush is a common tool with bristles, wire or other filaments. It generally consists of a handle or block to which filaments are affixed in either a parallel or perpendicular orientation, depending on the way the brush is to be gripped during use. The material of both the block and bristles or filaments is chosen to withstand hazards of its intended use, such as corrosive chemicals, heat or abrasion. It is used for cleaning, grooming hair, make up, painting, surface finishing and for many other purposes. It is one of the most basic and versatile tools in use today, and the average household may contain several dozen varieties.

Fig 4,1 Cleaning brushes

- **Combing**

The action of these brushes is more akin to combing than brushing, that is they are used to straighten and untangle filaments. Certain varieties of hairbrush are however designed to brush the scalp itself free of material such as dead skin (dandruff) and to invigorate the skin of the scalp.

- Hair brush
- Dog-grooming brush
- Cat fur brush

- **Construction Brushes**

Fiber built offers a variety of construction brushes for all areas of building and maintenance from push brooms, , masonry brushes, concrete finishing brushes and so much more, Fiber built has your industrial and residential construction needs covered. Whether finishing your concrete flatwork, splashing on the last coat of stucco or sweeping up drywall, saw dust or gravel, selecting the right brush style and material is essential for getting the job done right the first time. Let Fiber built help your construction company select the best brush to increase efficiency, profits and safety on the job site.

Fig 4,2 different types of brushes

- **Custom Brush Construction**

The purpose of a brush is to clean and/or score a contaminated surface, and the design/selection of the custom brush is vital to its performance.

- Length and diameter of the fill wire.
- Hardness and durability of the fill wire
- Strength and flexibility (length & diameter) of the stem wire

For example, Mill-Rose fitting brushes are designed to clean and score the fitting, allowing for a stronger solder joint. These brushes are manufactured with the highest quality fill wire, trimmed so the tip of the wire does the work (scoring).

- **Boaster**

- It is also used to cut soft stones and excessive mortar from the wall. It is a broad-faced or wide-edged masonry chisel. Boasted finish is done by boaster. This type of finish includes intermittent parallel lines which are horizontal or vertical or inclined. Boaster has an edge of width about 60 mm.

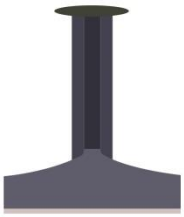

figure 4.4 boaster

Safety is always a consideration when using chisel which can be pushed into long joints such as housing joints. It is used for cleaning up the joint and to make it an accurate fit.

Self-Check -4	Written Test

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

1. ----------are used for cleaning rust and removing paints. (3 points)

A Wire brush Trowel roll C. putty knifes D scrape

a. Fiber brush is used to

A Cleaning B grooming hair C make up painting D all

Note: Satisfactory rating – 3 points Unsatisfactory - below 3 and 4 points

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

Answer Sheet

Name: _____ Date: _____

Short Answer Questions

Score = _____

Rating: _____

Information Sheet 5	removing Loose or protruding material

5.1 Checking for Loose Plaster

Traditional plaster is applied wet over strips of wood lath, pressed between the gaps so that the hardened segments of plaster (called *keys*) grip tightly. But over time the plaster can separate from the wood lath, creating a thin hollow space between the plaster layer and the lath. It is also possible that the wood lath itself may have loosened from the studs to which they are attached, which will require that the wall itself be reinforced with additional nails or screws. Newer plaster installations may use a type of porous gypsum backer board known as *rock lathe*, or the installation may use *metal lath*, a porous steel fabric into which the wet plaster is pressed during application. However, the principles for patching cracks or holes are the same no matter what type of lath was used in the original installation. The instructions given below assume you have wood lath behind your plaster but are easily adapted to other types of lath.

Therefore, it's a good idea to check for looseness that indicates a broken bond with the lath before making your repair. Carefully tap along the edges of the crack or hole with the handle of a tool, such as a drywall knife, or with a small hammer. If the tapping sounds or feels hollow and more so than when tapping in surrounding areas the plaster may be loose. You can also push along the edges of cracks to see if the plaster moves in and out.

There's a simple fix for loose plaster, assuming the problem isn't significant:

1. Drill holes spaced about 3 inches apart on both sides of the crack or around the perimeter of the hole,Drill just through the plaster, and stop when you hit the wood behind.
2. Squirt plaster adhesive (sold in tubes applied with caulk gun) into each hole, ignoring the circled holes.
3. Secure the plaster with evenly spaced drywall screws fitted with plaster washers.
4. Drive the screws through the plaster and into the wood; don't drive them in the drilled holes. You will cover the screws and washers with drywall mud (as well as the "miss" holes) after you make the repair.

5.2 Loose Plaster Ceiling & Wall Hazards: Falling Plaster Injury Risk

Loose or collapsing plaster ceiling hazards:

Here we provide a photo guide to identifying types of plaster installed in buildings.We illustrate plaster coatings, cracks, bulges, hazards. Plaster ceiling collapse hazards & photographs.

In this article series we describe and discuss the identification and history of older interior building surface materials such plaster, plaster board, split wood lath, sawn lath, and expanded metal lath, Beaverboard, and Drywall - materials that were used to form the non-structural surface of building interior ceilings and walls.

We also provide a, or you can try the page top or bottom. Loose Plaster is Unsafe, Especially Loose, Falling Plaster Ceilings

Figure 5.1 peeling old material wall

Watch out: for loose plaster that can fall and injure building occupants.

If ceiling plaster is bulged and moves when you apply *gentle* pressure to it, chances are that the plaster keys, the protruding plaster that oozed between the plaster lath strips to mechanically secure the plaster surface in place, have broken off. On the other hand, some "bulged"-looking plaster may be soundly secured, as we describe at plaster bulges & pillows.

5.3 Wood Lath Ceiling Collapse Photographs

Our loose plaster photo at below left shows wall plaster that was quite loose and whose plaster ears had broken away. Some renovators use the term "rotted plaster" or "rotten plaster" but of course since we're talking about a cementious material, not organic wood, "rot" is a euphemism for deteriorated.

Our loose plaster ceiling photo (below right) shows an unsafe building ceiling at risk of falling.

Plaster in this condition can easily fall away. While small areas of loose plaster can be successfully re-adhered using plaster washers and screws, a better (but more costly) repair is to remove the loose plaster entirely and re-plaster the section properly.

At below are two photographs of plaster ceilings in the attic that has already fallen away in two older homes. You may also enjoy noticing the pit-sawn marks on some of the plaster lath of this older home in the photo at below left, and the hand-wrought iron hook in the photo at right. .

Figure 5.2 old surface wall

Watch out: often the framing supporting plaster ceilings in homes built before 1900 was sized to be just strong enough to support the weight of the plaster itself. Such ceiling structures were not intended to support the weight of a curious home owner or home inspector.

5.4 Expanded Metal Lath Plaster Ceiling Collapse Cause

Plaster ceilings in newer buildings are not immune from collapse either, as you'll see by the catastrophic c eiling collapse shown just below. This plaster ceiling was applied on expanded metal lath. The lath was wired to steel pipes or bars that in turn were hung from a smaller number of steel supports.

The final steel supports were hung from wire ties connected to fasteners that had been "pin-shot fasteners" shot into the sides of concrete ceiling joists.

The combination of several factors led to this ceiling collapse:

Figure 5.3 Metal Lath Plaster Ceiling Collapse Cause

- An insufficient number of fasteners was used to secure the whole suspended ceiling structure to the concrete beams above - considerably less than called for the industry standards . This was the most apparent and most significant cause of this ceiling collapse in our opinion.

- The pin shot fasteners used as ceiling hangers may have been of the wrong type for this application and may have been improperly loaded.
- It is possible that the shot fasteners used to provide fasteners for the wire hangers supporting the ceiling were not properly installed, allowing some of them to separate from the concrete.

  For example if pins were shot directly "up" into the underside of joists or beams when they were intended to be shot into beam or joist sides, they may have lacked sufficient friction to remain in place, being later pulled out from the downward force of the weight of the ceiling.
- There was no perimeter support for the ceiling.
- We considered the possibility that damp conditions in the building may have contributed to fastener loosening or deterioration, but the absence of rust in the field photos argues against that factor.
- Nearby demolition for building renovation work created vibrations sped or precipitated this collapse that could have occurred at any time.

- **Typical Design & Construction of Suspended Plaster Ceilings**

a typical suspended wire-mesh based plaster ceilings using hangers, carriers, and furring channels typically used No. 8 galvanized wire, though other wire sizes, rods, and flat iron were also used:

- Hangers attached to concrete slabs (overhead ceilings) by looping and embedding wire in the concrete (obviously installed during original construction)
- Securing suspended ceiling hangers to inserts cast into the concrete
- Suspended from wood joists by drilling holes 3" or more above the joist bottom
- Suspended from wood joists by nailing through the joist [center].

Self-Check -5	Written Test

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

1. The identification and history of old interior building surface materials includes.(5 points)

A Plaster board B. expanded metal lath C Split wood lath D. All

2 . An sufficient number of fastener used to secure the whole suspended (5 points)

A. Ceiling structure B. Concrete beams C ceiling D All

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

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

choice Answer

1…….. 2……..

ANSWER KEY OF SELF CHECK LEARNING OUT COME(LO) 4

Unit competence name	**Prepare surface for plastering**	**MO 08**
Learning out come	**Prepare surface**	**LO3**
	Choice	**Matching**
Self- check 1	**1 D ,2 D 3A**	
Self -check 2	**1 D , 2 D**	
Self- check 3	**1 D 2,A**	
Self -check 4	**1 A 2 D**	
Self-check 5	**1 D ,2 D**	

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