Carpentry NTQF Level II

Learning Guide #48

Unit of Competence: Install Lining, Paneling and Molding

Module Title: Installing Lining, Paneling And Molding

LG Code: EIS CRP2 M12 LO1-LG-48

TTLM Code: EIS CRP2 M12 TTLM 0919v1

LO: 1 Plan and prepare

Instruction Sheet	Learning Guide #48

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

- Obtaining and confirming work instructions,
- Following Safety requirements
- Identifying and Implementing Sign/barricade requirements
- Selecting Tools and equipment to the need of particular job
- Calculating Material quantity requirements
- Identifying, obtaining and preparing Materials appropriate to the work application
- Identifying environmental protection requirement

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 –

- Obtain and confirming work instructions,
- Follow Safety requirements
- Identify and Implementing Sign/barricade requirements
- Select Tools and equipment to the need of particular job
- Calculate Material quantity requirements
- Identify, obtain and prepare Materials appropriate to the work application
- Identifying environmental protection requirement

Learning instruction

- ✓ Read the specific objectives of this Learning Guide.
- ✓ Read the information written in the “Information Sheets 1”. Try to understand and familiarize what are being shown and discussed. Ask your teacher for assistance if you have hard time understanding them.
- ✓ Accomplished and submit “Self-checks 1” for evaluation.
- ✓ If you earned a satisfactory evaluation for "self-check 1" then proceed to “Operation Sheet 1”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Information Sheet 1.
- ✓ Read the “Operation Sheet 1” and try to understand the procedures discussed.
- ✓ Accomplish and submit “Operation Sheet 1” for evaluation.
- ✓ If you earned a satisfactory evaluation for one "Operation Sheet 1" then proceed to the next “Information Sheet”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Operation Sheet where you get unsatisfactory evaluation.
- ✓ Continue to the next “Information Sheet” and follow instruction for learning activities
- ✓ After all “Self Check” and “Operation Sheet” is accomplished and evaluated proceed to “LAP Test”.
- ✓ Your teacher will evaluate your output either satisfactory or unsatisfactory. If unsatisfactory, your teacher shall advice you on additional work. But if satisfactory you can proceed to the next topic.

Information Sheet 1	Obtaining and confirming work instructions,

1.1 Work Instruction

Is a document that provides specific instructions to carry out an Activity

It is a step by step guide to perform a single instruction. A Work Instruction contains more detail than a Procedure and is only created if detailed step-by-step instructions are needed.

A work instruction is a tool provided to help someone to do a job correctly. This simple statement implies that the purpose of the work instruction is quality and that the target user is the worker. Unfortunately, in many workplaces, today's work instructions have little connection with this fundamental focus.

- ✓ Plans and preparation is includes

- worksite inspection,
- equipment defect identification,
- assessment of conditions,
- hazards and determination of work requirements

- ✓ What is a workplace inspection?

A **workplace inspection** is a planned event in which the **workplace** is **inspected** to identify potential hazards. It is the best way of proactively identifying hazards before they have the ability to cause an injury.

✓ How often should a construction worksite be inspected?

Provide the rationale for your recommendation. Your response should be at least 75 words in length. Selected Answer: When it comes to inspection of construction work sites, everyone one should be a safety officer.

✓ What is a site safety inspection?

Workplace safety inspection checklists are tools used by safety officers to perform critical safety examinations of a given workplace. It helps to identify potential hazards which may cause injury and harm to employees and people onsite. ... Office Environment: focus on fire safety, emergency evacuation and ergonomics.

- equipment defect identification,

✓ What are the types of defect?

Following are the common types of defects that occur during development:

- Arithmetic Defects.
- Logical Defects.
- Syntax Defects.
- Multithreading Defects.
- Interface Defects.
- Performance Defects.

✓ What is considered a defect?

A material **defect** is a specific issue with a system or component of a residential property that may have a significant, adverse impact on the value of the property, or that poses an unreasonable risk to people.

✓ What is defect elimination?

“Defect elimination” analyzes the defect, and then implements corrective actions to prevent future similar defects. A “Defect Elimination program” is a structured process companies adopt to become more consistent and reliable in eliminating defects.

What causes product defects?

- Design defects.
- Improper labeling or failure to warn.
- Manufacturing defects.
- Strict liability.

- Warranty breach.
- General negligence.

"**Defect elimination**" analyzes the **defect**, and then implements corrective actions to prevent future similar **defects**. A "**Defect Elimination** program" is a structured process companies adopt to become more consistent and reliable in **eliminating defects**. It forms part of a broader Quality Improvement program

✓ Assessment of conditions

- **Assessment Conditions**

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced by individuals using interpersonal communication skills in the workplace and include access to: office equipment.

There are **four Principles of Assessment** – Reliability, Fairness, Flexibility and Validity. In our previous Blogs we discussed the **Principles** of Reliability, Fairness and Flexibility.

Principles of Assessment

- Appropriateness. The method of assessment is suited to the performance being assessed.
- Fairness. The method of assessment does not present any barriers to achievements, which are not related to the evidence.
- Manageability. ...
- Integration into work or learning. ...
- Validity. ...
- Direct. ...
- Authenticity. ...
- Sufficient.

The primary **purpose of assessment** is to improve students' learning and teachers' teaching as both respond to the information it provides. **Assessment** for learning is an ongoing process that arises out of the interaction between teaching and learning.

✓ What are the types of inspection?

Other types of inspections

- Manufacturing. Inspections include measuring, testing, examining, or gauging the features of a process or product. ...
- Fire equipment. In most countries, regular inspections of fire equipment are compulsory. ...
- Business. ...
- Government. ...
- Road vehicles. ...
- Engineering, mechanics. ...
- Medical. ...
- Nuclear Power Plants.

✓ What is the hazard?

A hazard is any agent that can cause harm or damage to humans, property, or the environment. Risk is defined as the probability that exposure to a hazard will lead to a negative consequence, or more simply, a hazard poses no risk if there is no exposure to that hazard.

The meaning of the word hazard can be confusing. ... Hazard - a potential source of harm to a worker. Basically, a hazard is the potential for harm or an adverse effect (for example, to people as health effects, to organizations as property or equipment losses, or to the environment).
There are many definitions for hazard but the most common definition when talking about workplace health and safety is “A hazard is any source of potential damage, harm or adverse health effects on something or someone.” ... Harm – physical injury or damage to health. Hazard – a potential source of harm to a worker.

✓ What are hazards in the workplace?

Look for these common hazards in your office:

- poor or inadequate lighting;
- ergonomic hazards;
- extremes of temperature;
- manual handling hazards;
- slip, trip and fall hazards;
- Electrical hazards (e.g. appliances, power sockets, etc.);
- contagious illnesses spread by sick workers;
- fire hazards

✓ Types of Hazards

Hazards exist in every workplace, but how do you know which ones have the most potential to harm workers? By identifying hazards at your workplace, you will be better prepared to control or eliminate them and prevent accidents, injuries, property damage and downtime.

Firstly, a key step in any safety protocol is to conduct a thorough hazard assessment of all work environments and equipment.

In a hazard assessment, it is important to be as thorough as possible because after all, you can't protect your workers against hazards you are unaware of. Avoid blind spots in your workplace safety procedures by taking into consideration these six main categories of workplace hazards.

The meaning of the word hazard can be confusing. Often dictionaries do not give specific definitions or combine it with the term "risk". For example, one dictionary defines hazard as "a danger or risk" which helps explain why many people use the terms interchangeably.

There are many definitions for hazard but the most common definition when talking about workplace health and safety is:

A hazard is any source of potential damage, harm or adverse health effects on something or someone.

Harm – physical injury or damage to health.
Hazard – a potential source of harm to a worker.

Basically, a hazard is the potential for harm or an adverse effect (for example, to people as health effects, to organizations as property or equipment losses, or to the environment).

Sometimes the resulting harm is referred to as the hazard instead of the actual source of the hazard. For example, the disease tuberculosis (TB) might be called a “hazard” by some but, in general, the TB-causing bacteria (Mycobacterium tuberculosis) would be considered the “hazard” or “hazardous biological agent”.

TYPES OF HAZARDS:
A common way to classify hazards is by category:

- **Biological** – bacteria, viruses, insects, plants, birds, animals, and humans, etc.,
- **Chemical** – depends on the physical, chemical and toxic properties of the chemical,
- **Ergonomic** – repetitive movements, improper set up of workstation, poor design of equipment, workstation design, (postural) or workflow, manual handling, repetitive movement.etc.
- **Physical** – Slippery floors, objects in walkways, unsafe or misused machinery, excessive noise, poor lighting, fire. radiation, magnetic fields, pressure extremes (high pressure or vacuum), noise, etc.,
- **Psychological** – Shift work, workload, dealing with the public, harassment, discrimination, threat of danger, constant low-level noise, and stress. Stress, violence, etc.,
- **Safety** – slipping/tripping hazards, inappropriate machine guarding, equipment malfunctions or breakdowns.

BIOLOGICAL HAZARD:

Wastes from hospitals and research facilities may contain disease-causing organisms that could infect site personnel. Like chemical hazards, etiologic agents may be dispersed in the environment via water and wind. Other biologic hazards that may be present at a hazardous waste site include poisonous plants, insects, animals, and indigenous pathogens. Protective clothing and respiratory equipment can help reduce the chances of exposure. Thorough washing of any exposed body parts and equipment will help protect against infection.

Types of things you may be exposed to include:

- Blood and other body fluids
- Fungi/mold
- Bacteria and viruses
- Plants
- Insect bites
- Animal and bird droppings

✓ **PHYSICAL HAZARD:**

Are factors within the environment that can harm the body without necessarily touching it?

Physical Hazards Include:

- Radiation: including ionizing, nonionizing (EMF's, microwaves, radio waves, etc.)
- High exposure to sunlight/ultraviolet rays
- Temperature extremes – hot and cold
- Constant loud noise

ERGONOMICS HAZARDS:

Occur when the type of work, body positions and working conditions put strain on your body. They are the hardest to spot since you don't always immediately notice the strain

on your body or the harm that these hazards pose. Short term exposure may result in "sore muscles" the next day or in the days following exposure, but long-term exposure can result in serious long-term illnesses.

Ergonomic Hazards Include:

- Improperly adjusted workstations and chairs
- Frequent lifting
- Poor posture
- Awkward movements, especially if they are repetitive
- Repeating the same movements over and over
- Having to use too much force, especially if you have to do it frequently
- Vibration

CHEMICAL HAZARDS:

Are present when a worker is exposed to any chemical preparation in the workplace in any form (solid, liquid or gas). Some are safer than others, but to some workers who are more sensitive to chemicals, even common solutions can cause illness, skin irritation, or breathing problems.

Beware of:

- Liquids like cleaning products, paints, acids, solvents – ESPECIALLY if chemicals are in an unlabeled container!
- Vapors and fumes that come from welding or exposure to solvents
- Gases like acetylene, propane, carbon monoxide and helium
- Flammable materials like gasoline, solvents, and explosive chemicals.
- Pesticides

✓ **SAFETY HAZARDS:**

These are the most common and will be present in most workplaces at one time or another. They include unsafe conditions that can cause injury, illness and death.

Safety Hazards Include:

- Spills on floors or tripping hazards, such as blocked aisles or cords running across the floor
- Working from heights, including ladders, scaffolds, roofs, or any raised work area
- Unguarded machinery and moving machinery parts; guards removed or moving parts that a worker can accidentally touch
- Electrical hazards like frayed cords, missing ground pins, improper wiring
- Confined spaces
- Machinery-related hazards (lockout/tag out, boiler safety, forklifts, etc

Some safety hazards are a function of the work itself. For example, heavy equipment creates an additional hazard for workers in the vicinity of the operating equipment. Protective equipment can impair a worker's agility, hearing, and vision, which can result in an increased risk of an accident. Accidents involving physical hazards can directly injure workers and can create additional hazards, for example, increased chemical exposure due to damaged protective equipment, or danger of explosion caused by the mixing of chemicals. Site personnel should constantly look out for potential safety hazards, and should immediately inform their supervisors of any new hazards so that mitigate action can be taken

Self-Check -1	Written Test

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

Multiple choices

1. ---------- is a document that provides specific instructions to carry out an Activity
   A. Safety
   B. Kaizen
   C. Work instruction
   D. None

Write short answer

1. What is a workplace inspection?
2. What is the hazard?

Note: **Satisfactory above – 4 out of 8 points Unsatisfactory - below 4 out of 8 point**

Information Sheet 2	Following Safety requirements

2.1Safety Requirement

Specification, SRS, is documentation for requirements stated in the safety standards e.g. the standard IEC61511 “Functional safety – Safety instrumented systems for the process industry sector”. A SRS must be developed during a project that involves Safety Instrumented Systems, SIS.

General Precautions

- Your safety is your personal responsibility.
- Always follow the correct procedures.
- Never take shortcuts.
- Take responsibility and clean up if you made a mess.
- Clean and organize your workspace.
- Ensure a clear and easy route to emergency exits and equipment.
- Be alert and awake on the job.

Basic Safety Rules

1. Stay alert - and stay alive. ...

2. Wear the right clothes - work clothes should fit properly. ...
3. Use the right tools - if you need a hammer, get a hammer. ...
4. Learn how to lift - lifting takes more than muscle; it is an art. ...
5. Don’t be a prankster - practical jokes and horseplay can be dangerous, especially around heavy machinery.

✓ Tools and Equipment

- measuring tapes/rules
- hammers, spirit levels and squares (combination/tri),
- chisels, hand saws, coping saws, saw stools,
- marking equipment, power saws and power leads, power drills, power planers, hand planes, string lines
- straight edges and may include but not be limited to nail guns, air compressors and hoses
- routers, bevels, rebate planes, molding planes, corking guns and cramps

✓ How do you measure with a measuring tape?

How to Read a Tape Measure

1. Find/read the markings. On a standard tape measure, the biggest marking is the inch mark (which generally has the biggest number, if it has them).
2. As the increments decrease, so does the length of the mark. ...
3. Read 1 inch. ...
4. Read one-half inch. ...
5. The remaining markings follow a similar pattern.

✓ What is the use of tape rule?

A **tape measure** or measuring **tape** is a flexible ruler and used to **measure** distance. It consists of a ribbon of cloth, plastic, fiber glass, or metal strip with linear-measurement markings. It is a common measuring tool.

Figure 1 tape rule

- ✓ **How to Read a Tape Measure**

The humble tape measure is the world's most commonly used measuring tool, accompanying millions of tradesmen and contractors to work every single day.

Whilst the seasoned professionals amongst you will no doubt be fully aware how to read the various markings on your tape, there will be amateurs, enthusiasts or those just starting off in their careers who aren't yet so knowledgeable. We regularly get asked the question "how do you read a tape measure". In response to our customers, therefore, we've put together this simple guide that explains just that!

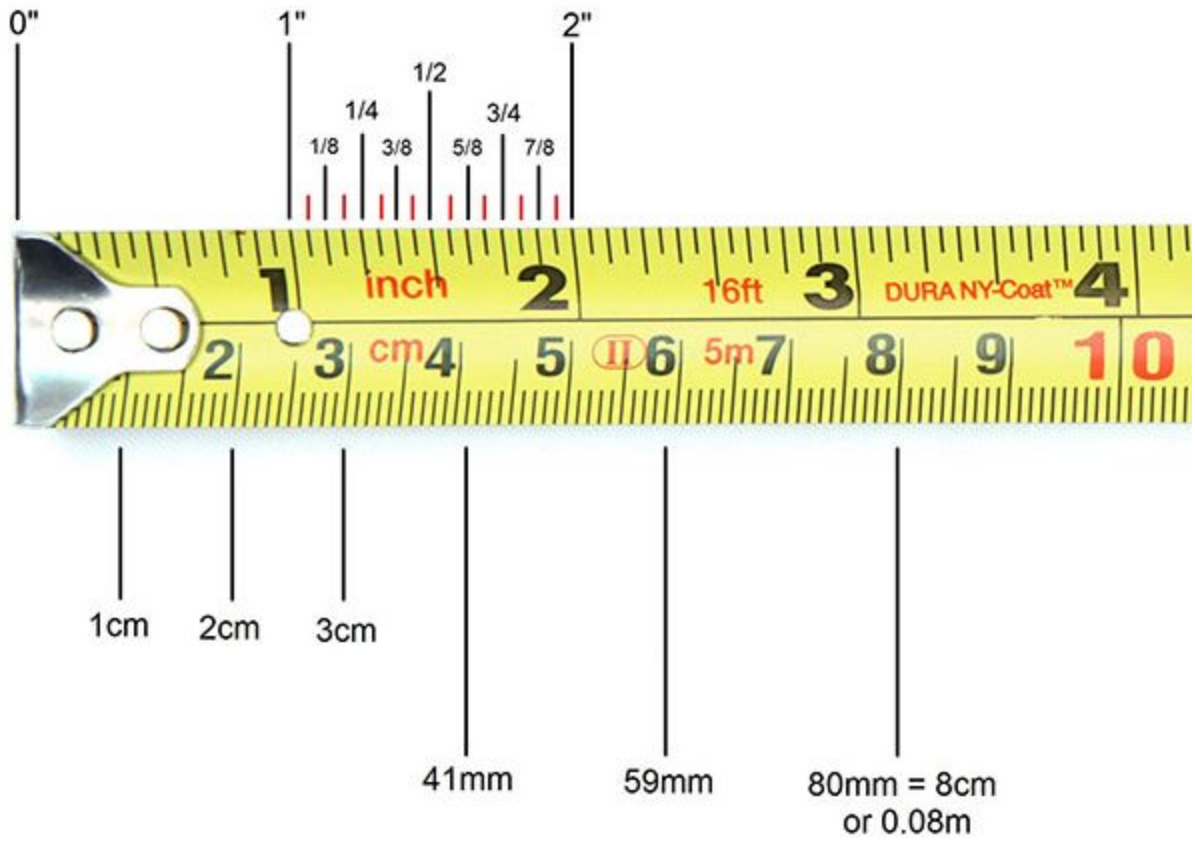


Figure 2 tape measure

✓ How to Read a Metric Tape Measure

Above you'll see a picture of a metric/imperial pocket tape measure. The measurements towards the bottom of the image are metric. In other words they're in centimeters and millimeters. There are 10mm in each centimeter (shown by the ten spaces between each cm) and 100cm in each meter. Whilst the centimeters are clearly numbered, to make the blade easier to read the millimeters are not numbered. Also, whilst a few tapes show '1m' to display the 1 meter mark, the majority will show '100cm'.
When looking at the image above, the 1st small mark after the 4cm point denotes a measurement of 41mm. The next small mark in line would be 42mm, the next would be

43mm and so on. 41mm can also be referred to as 4.1cm (0.041m) but the majority of trades in the UK do tend to quote measurements in millimeters.

✓ How to Read an Imperial Tape Measure

Whilst Britain now officially operates a metric system of measurement, our nation still sees a curious mix of both metric and imperial measurements being used on a day to day basis. We measure our height in feet and inches, our weight in stones and pounds and our speed in miles per hour. Despite this almost all 21st Century technical, engineering or construction measurements are quoted in millimeters. Most manufacturers have, therefore, opted to produce UK-spec tape measures with both metric and imperial graduations.
When referring to the diagram above you'll see a series of large numbers marked 1, 2, 3, and 4. These numbers sit next to long vertical marks which represent whole inches. Put simply 1 = 1", 2 = 2" and so on. Between those numbers are a series of shorter marks which represent fractions of an inch. The mark directly in the middle of the inch denotes a measurement of 1/2" whilst the markings either side of it represent measurements of 1/4" and 3/4" respectively. Even smaller marks then denote 1/8ths and 1/16ths (marked in red) of an inch.

A 16ft tape measure, for example, will have sixteen one-foot marks along its length and 192 one-inch marks (12 inches per foot). Each inch will then have eight 1/8th of an inch and sixteen 1/16th of an inch marks.

- 1 foot = 12 inches
- 1 inch = 16 x 1/16th of an inch, 8 x 1/8th of an inch, 4 x 1/4 of an inch or 2 x 1/2 of an inch.

✓ General Tips

The hook or 'tang' of the tape measure is the small, usually metallic component at the end of the blade. In pocket tapes (as seen in the image below), this is usually a straight piece of metal attached to the blade by a number of rivets. You will normally find (on any pocket tape of quality) that the hook 'floats'. In other words it moves in and out ever so slightly. Some people mistakenly think of this as a manufacturing defect but this is not the case.

When taking internal measurements (i.e. from the inside edge of an object such as between one internal wall and another) the hook can be pushed against the object (e.g. skirting board) providing an accurate measurement.

When taking external measurements, however, the hook can be placed around/behind the object and pulled gently towards the measurer. Not only does this keep the blade in place whilst measuring, it also guarantees an accurate measurement by compensating for the thickness of the metal hook in the measurement. Be sure to use the hook properly when using your tape measure!

Some pocket tape measures feature a case with a known length (e.g. 7cm) and some more innovative ones even take the length of the tape into account by compensating for the case length on the blade or by using a viewing window. Most tapes, however, leave it up to the user to take the length of the case into account. When taking an internal measurement, therefore, it is important to bend the blade at the point at which it touches the object you're measuring to. Do not assume that the tape has taking the case length into account unless you are using one of the more advanced tapes mentioned above.

- ✓ **Safety Tips**

Whatever you do, never allow the blade and hook to return uncontrolled at full speed when rewinding. Whilst the ability to return the blade quickly into the case can seem like a useful function, it can be very dangerous with a number of people each year being injured by wildly flailing hooks. All manufacturers recommend that users make use of safety glasses/goggles when doing any work that requires a tape measure for exactly this reason.

- ✓ What is meter rule?

A meter rule is a device which is used to measure length of different objects. A meter rule of length 1m is equal to 100 centimeters (cm). On meter rule each cm is divided further in to 10 divisions which are called millimeters (mm). So, a meter rule can measure up to 1mm as smallest reading.

What are hammers used for?

Hammers are used for a wide range of driving, shaping, and breaking applications. The modern hammer head is typically made of steel which has been heat treated for hardness, and the handle (also called a haft or helve) is typically made of wood or plastic.

Hammer is widely used in mechanical industries to drive any thin metal part like nails etc. by an impact force. It is a tool which is used to create a sudden pointed force, which is further used to drive nails, remove unwanted metal parts form work piece and also in forging to create flat surfaces. Hammers are also used in our daily routine to drive nail in a wall or in wooden work piece etc.

- ✓ Types of Hammers

A hammer consist two main parts. The first one is handle and the other one is head which is a heavy metal piece mounted at perpendicular to the axis of the handle. There are many different types of hammers used in mechanical industries for different uses. Now we will discuss about it.

- ✓ Types of Hammers

A hammer is a hand tool which is used to create sudden impact force. The impact of hammer depends on the size and shape of hammers and the power given to drive it. The hammer can be classified into many types according to its shapes and size but mainly there are only two hammers types.

A. Hand Powered Hammers:

As the name implies hand hammer are powered by manually human hands. According to shape and size of heads and its different uses it has following types.

1. Ball peen hammer:

As shown in figure, one side of head is shaped as ball and other is flat. It is mostly used to shaping rivets and metal work pieces. It may available in different sizes.

Figure 3 ball peen hammer

2. Claw hammer:

It is a tradition hammer which one side is a flat other side of head has a nails removing shape from wooden and other work piece. It is also known as carpenter's hammer.

Figure 4 claw hammer

3. Cross peen hammer:

This hammer have one face is like ball and other face of head is like wedge. It is mostly used in domestic work where the peen is used to straight the nails.

Figure 5 cross peen hammer

4. Dead blow hammer:

As a name implies it deliver very large impact force.

Figure 6 dead blow hammer

5. Engineer hammer:

this type of hammer is upgrade version of drilling hammer with bigger handle. The handle size is about 14 inch and mostly used in locomotive and steam engine work.

Figure 7 engineer hammer

6. Geologist hammer or rock pick hammer:

It is specially used to break or split rocks and mostly used by a geologist.

Figure 8 geologist hammer

7. Knife edged hammer:

One end of this hammer is knife edge and other one is flat surface. It is mostly used to cut or split wood.

Figure 9 knife edge hammer

8. Sledge hammer:

It has a large flat metal head joint with a large handle. It is used to drive wedges.

Figure 10 sledge hammer

✓ Rock climbing hammer:

It is a special type of hammer used to climb the rocks.

Figure 11 rock climbing hammer

✓ Rounding hammer:

It is also known as blacksmith hammer. It has round face which is used to design or shapes a forged bar or sheet in blacksmith.

Figure 12 rounding hammer

11 Soft faced hammer:

It has a soft face of rubber plastic or copper. It is used where steel face may damage work piece.

Figure 13 soft faced hammer

12. Stonemason's hammer:

This hammer is also known as brick hammer. One end of the head is flat and other end has a chisel like shape. It is used to split bricks or concrete wall.

Figure 14 stonemasons hammer

13. Welder chipping hammer:

This hammer is used to remove unwanted welded area form the work piece. It is also dissipates heat.

Figure 15 welder chipping hammer

14. Lump hammer:

It is a double face hammer and used to driving steel chisel in work piece. It is one of the types of sledge hammer which has smaller handle with light weight. It is mostly used in domestic work.

Figure 16 lump hammer

15. Mechanic's hammer:

It is used to remove dents form the sheets. It has a small curve anvil at one side of head and a sharp chisel type face at other side.

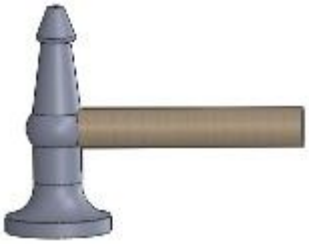


Figure 17 mechanics hammer

16. Drilling hammer:

It is mostly used in drilling in rocks with a chisel. It has a head weight almost 2 kg attached with a handle of 10 inch which is mostly drive by one hand. Other hand is used to hold the chisel.

17. Lathe hammer:

One end of this hammer head has a hatchback blade and other end a round head at other side. It is using at lathe machine is workshop.

18. Brass hammer:

It is made by brass. It is used in flammable area to like oil or fuel fields. It prevents to spark generation during hamming.

B. Mechanically Powered Hammers:

These types of hammers are driven by some of mechanical power like hydraulic power or by Gear drives.

2. **Hammer drill:**

It is a rotary hammer which has a drill at one side which provides hammering action. It is used to drill in brittle material.

Figure 18 hammer drill

3. Steam hammer:

It is steam driven hammer and used to shaping the forged material. In this hammer the hammer head is attached to a piston which driven by the steam pressure. At the piston moves down it provide impact force which used to shape the material.

Figure 19 steam hammer

4. Jack hammer:

It is driven by the pneumatic pressure of electro mechanical. It is used to dig out roads.

Figure 20 jack hammer

- ✓ Spirit Level

A spirit level is used for determining horizontal and vertical levels and can be used on a variety of DIY projects in and around the home. A spirit level is used to designed to indicate whether a surface is level on the horizontal or vertical planes, and there are a variety of sizes and designs for every project.

Figure 21 spirit level

- ✓ What is the best Spirit Level?

The Best Spirit Level

1. Stanley 43-511 Magnetic Shock Resistant Spirit Level. ...
2. Black & Decker BDSL10 Gecko Grip Spirit Level. ...
3. Kapro 227-08 Toolbox Spirit Level. ...
4. Workpro 3-piece Spirit Level Set. ...
5. Stanley FatMax 43-524 Non-Magnetic Level. ...
6. OX Tools Heavy-Duty Box Level. ...
7. TACKLIFE Aluminum Alloy Magnetic Torpedo Level.

- ✓ How do you measure your spirit level?

How to Check a Spirit Level for Accuracy

1. Place the level on a flat surface.
2. Make one mark at the end of the level.
3. Make another mark along the side of the level, under the vial in the center.
4. Take a reading of the bubble's position.
5. Rotate the level 180° end-to-end and align the level with your marks.

- ✓ **marking equipment, power saws and power leads, power drills, power planers, hand planes, string lines**

Marking tools

- Tracing wheel and dressmaker's paper: Dressmaker's paper is something like carbon paper, in that it transfers markings with applied pressure. ...
- Water soluble pencils: These look like colored pencils, and come in a range of colors which are suitable for different fabrics. ...
- Markers and pens: ...
- Tailor's chalk: ...
- Chalk pen: ...
- Pins:

- ✓ **woodworking marking tools**

Marking is a vital point in woodworking project. The most common woodworking marking tools are pencil, gauge, scriber, marking knives, awl etc. They are used for doing anything such as cutting, shaping, drilling to a piece of wood. You can draw a parallel line to the edges, jig jag line or rounds of a work piece with them.

Pencils

Pencils are essential marking tool to woodworkers. They have some limitations; for example they cannot mark a sharp line and the mark may be rubbed out. But they have some benefits such as you can easily mark a line. The pencils are great for those cases where accuracy is not important. Most of the cabinet makers use pencil for marking.

Scriber marking tool

In woodworking project a scriber which is a hand tool is used to mark lines on work pieces. This tool is used for marking wood by scratching on the surface to cutting with precision. The lines with the scriber marking tool is more accurate and sharp then the pencils or ink. Often they are used for making mortise, tenon joints, door casings etc. They are made of steel and have a sharpened point which is angle of 30 or 40 degrees. Some scribers may contain a point at both ends.

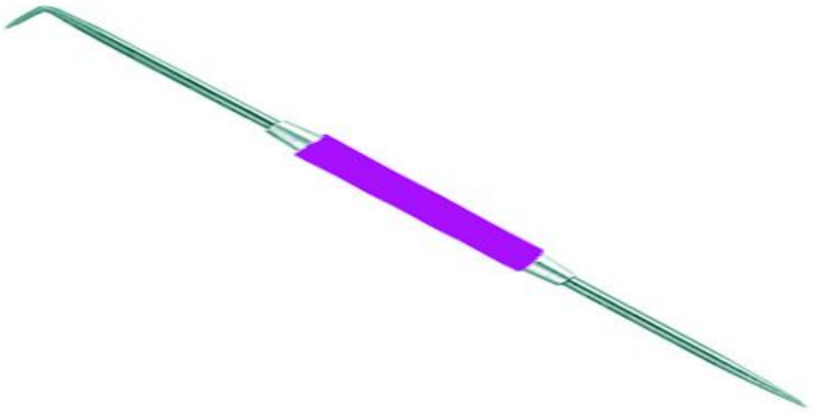


Figure 22 scriber

Scratch awl

The scratch awl looks like a spike which contains a tip. It is used as a point marking tool in woodworking project. It scribes a line across the timber so that a hand saw or chisel can be run properly

Gauge

The marking gauge is a significant tool among the woodworking marking tools. There are several types of gauge are used for cutting or other operations in woodworking project. Among them the marking gauge, mortise gauge and the cutting gauge are most popular gauges on the market. They scribe a parallel line to a reference edge or surface. The gauge contains a stem/beam, headstock, screw and a scribing point tool such as pin, knife or wheel. The headstock is adjustable and the distance between the

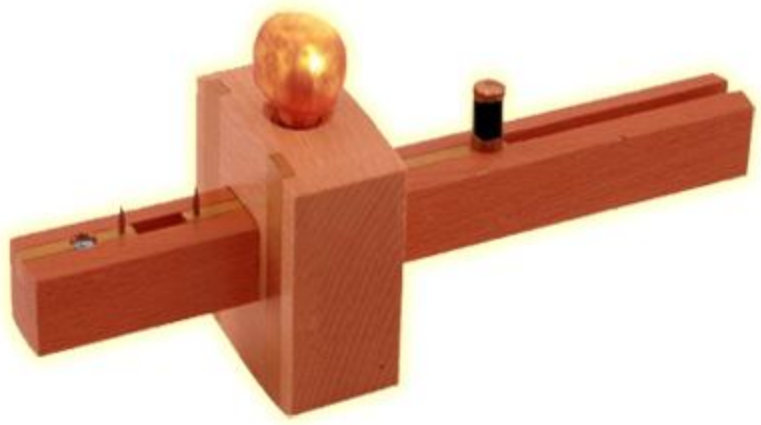
pin and headstock can increase or decrease by loosening the thumbscrew. They are more accurate marking tools than the pen or pencil.

Marking gauge

It is a most common type gauge as well as woodworking marking tools. It has a small pin which is also known as spur. The other parts of these tools are stem, stock and adjustable screw. During marking you should run the tools in line with the wood grain. If you run a line against the grain then it would possible to produce inaccurate jig jag line. Normally joiners use this tool for scribing tenons and dovetail shoulder lines. Moreover, sometimes it is also used for marking a rabbet. The stem lengths are available from 9 inches to 10.2 inches. Much larger marking gauges are known as panel gauges.

Mortise gauge

A mortise gauge has two pins where one of them is adjustable relative to each other. It is able to scribble two lines simultaneously including different widths. Normally it is used in mortise and tenon joinery project. Sometimes this gauge may contains a third pin on the opposite side so that it can be used a regular marking gauge. Therefore it is alsoknown as combination



gauge

Figure 23 mortise guage

.

These gauges are available in different stem length from 6 inches to 11.5 inches.

Cutting gauge

The marking gauge with a knife instead of a pin is known as cutting gauge. It is able to mark wood against the grain with accuracy. It can cut clean and precise deep lines in the timber. You can also use this gauge to cut through thin materials like veneer.

Wheel gauges

Wheel gauge contains a round blade instead of a pin to mark a surface. As like cutting gauge it can also mark across the wood grain. For mark out mortises the wheel gauge may also contains two round blades. Then it is known as wheel mortise gauge. The round blade contains in two separate stems. As a result they can be adjusted according to each other.

Panel gauges

The marking gauge which has a longer stem is called panel gauge. The carpenters use these tools to mark large boards to the correct width; even in center of a board. The stem length can be 12 inches to 26 inches.

Marking Knife

Joiners use marking knife to scribe a line so that they can accurately run a hand saw or chisel during making joints or other operations. It is constructed with steel blade and wood or plastic handle. They can able to mark across the grain and the line is accurate than pencils.

Others Woodworking marking tools

Some tools are not directly used as scribing but they are also known as woodworking marking tools. They are used as a guide of above marking tools. Try square, miter square, steel rule, t-bevel are such type of tools; actually they are known as measuring tools. Joiners use the try square to mark out a line at right angles to an edge. Steel rules can be used with marking knife or pencils. They are available in different lengths. Miter square is used to mark at any angles

- ✓ **power saw machine**

Power tool - a tool driven by a motor. jigsaw, reciprocating saw, saber saw - a portable power saw with a reciprocating blade; can be used with a variety of blades depending on the application and kind of cut; generally have a plate that rides on the surface that is being cut. Sawmill - a large sawing machine.

- ✓ **Power drill**

A power drill is an electrical motor that rotates a replaceable drill bit to make a hole in wood, plastic, or metal. Alternately, a screwdriver tip can be installed to turn screws.

The drill's mechanism is actually quite simple: A trigger switch activates an electric motor, which in turn drives a rotating chuck. Numerous accessories can fit into in the chuck, allowing the drill to bore holes, drive screws, and sand, polish, and grind a wide variety of materials.

Figure 24 power drill

✓ **What are different types of drills?**

Impact driver: A driving tool that uses quick change bits and more torque than a standard drill. Rotary hammer drill: Engineered specifically to drill holes in concrete and other masonry materials.

Power drills

- Corded and Cordless Drill Types.
- Power Drill Features.
- Power Drill Bits.
- Twist.
- Masonry.
- Hole Saw.
- Spade.
- Auger.

Figure 25 different types of power drill

✓ Power planer

Power planers are to jack planes as portable circular saws are to handsaws. ... The power planer is a hand-held tool, but it operates like an upside-down stationary jointer. There's a cutter-head with a pair of sharp knives that, like a plane iron, removes shavings of stock.

A power planer's primary function is to smooth the surface of wood, but it can also be used to smooth wood's rough end grain. It's also used for tapering wood. If a door is too wide, for instance, make passes with a power planer over the side of the door, adjusting the depth gauge to give a cut of the desired depth.

Planers used for simply put, a wood planer is a woodworking tool, which can be used for producing boards of even thickness that also happen to be totally flat on either side.

Figure 26 power planer

- *Power planers* are to jack planes as portable circular saws are to handsaws. Both the planer and the circular saw are powerful electric-powered tools; they do much the same work that the jack plane and handsaw do, or once did, but they do it more quickly, sometimes more efficiently and accurately, and always at a higher decibel level.

The power planer is a hand-held tool, but it operates like an upside-down stationary jointer. There's a cutter-head with a pair of sharp knives that, like a plane iron, removes shavings of stock. The cutter head is aligned with the rear portion of the tool's base; the front shoe of the plane adjusts to control the depth of cut.

The power planer cuts no more than a sixteenth of an inch at a pass. The depth of cut is adjusted on most models by a control knob mounted atop the front of the planer. Some power planers come equipped with an adjustable fence.

The size of the portable power planer is determined by the tool's maximum cutting width. Most models available on the market today plane a maximum width of between three and a quarter and six and a half inches.

Operating a power planer is similar to using a bench plane, but requires much less effort: You don't need to drive the plane, rather, you guide it along the path you wish planed. Clamp the work piece securely and make sure your stance is balanced. Although little force will be required, use both hands to control the tool, with your left hand guiding the plane at the front, the right balancing the rear.

Figure 27 power planner

✓String lines

Line levels (or "**string**" levels) are a special brand of spirit level used for leveling across longer distances. They can be attached to a tightly pulled **string** to find level between two stakes in the ground to find level ground.

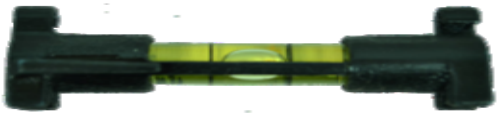


Figure 28 string levels

Figure 29 string lines

Self-Check -2	Written Test

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

Multiple choices

1. ----------is tape measure or measuring tape is a flexible ruler and used to measure distance
   A. Zigzag rule
   B. Miter gauge
   C. Tape rule
   D. All

Give short answer

2. Write general safety precautions?

Note: **Satisfactory above – 4 out of 8 points Unsatisfactory - below 4 out of 8 point**

List of Reference Materials

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- https://www.ccaa.com.au/imis_prod/documents/Library Documents/C
- https://www.houselogic.com/remodel/painting-lighting/concrete-painting/
- https://www.google.com/search?sxsrf=ACYBGNQHUi0Oo5VLVWER8HU5E4Hiyr5yWw:1569940933971&q=what+is+Applying+co

Information Sheet 3	identifying and implementing Sign/barricade requirements

3.1 “Signs “and barricade

- ✓ Signs are the warnings of hazard, temporarily or permanently affixed or placed, at locations where hazards exist. “**Signals**” are moving **signs**, provided by workers, such as flagmen, or by devices, such as flashing lights, to warn of possible or existing hazards.
- ✓ **Barricade**, from the French barrique (barrel), is any object or structure that creates a barrier or obstacle to control, block passage or force the flow of traffic in the desired direction. Adopted as a military term, a **barricade** denotes any improvised field fortification, such as on city streets during urban warfare.

It includes:-

3.1.1 Materials

- lining/ paneling/ molding materials
- nails, screws
- adhesives and gap fillers

- ✓ What is the molding on the wall called?

In architecture, a baseboard (also called skirting board, skirting, mopboard, floor molding, or base molding) is usually wooden or vinyl board covering the lowest part of an interior wall. Its purpose is to cover the joint between the wall surface and the floor.

Place the molding with adhesive up to the wall or area you are installing the molding to. Firmly press into place and hold tightly against the wall, and lift off for one to three minutes before pressing back into place. Work with the molding and adhesive for up to 10 minutes before it dries.

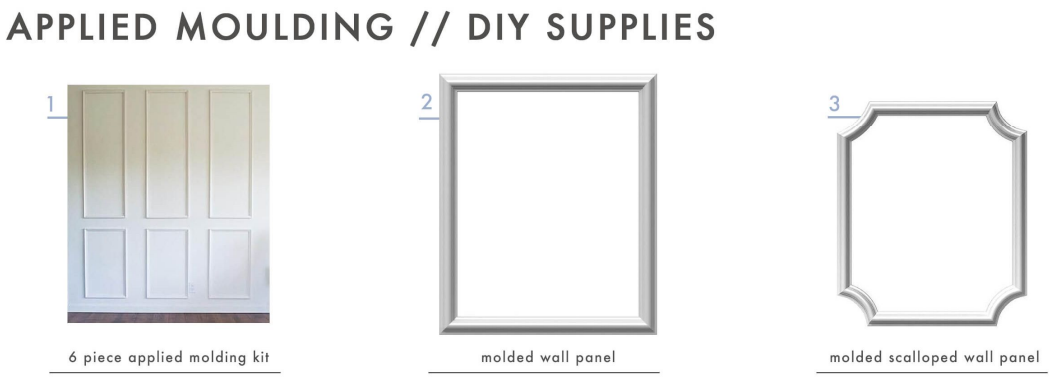


Figure 30 moulding

1. Piece Applied Molding Kit

2. Molded Wall Panel

3. Molded Scalloped Wall Panel

But if you want to go custom then head to a molding store (we love Imperial molding in the valley) and choose the profile or profiles you love. Bring in a photo and they can help lead you in the right direction. There are so many options – both modern and more traditional. We recently did this in a bathroom (that we have yet to reveal) and we taped it out on the wall, measured obsessively, did a meticulous drawing and our contractor installed it.

Vertical Paneling:

Figure 31 vertical paneling

When you hear the words vertical paneling uttered together in the same sentence it conjures up bad 70's shiny fake wood basement memories. But vertical paneling, when done the modern way, can bring a lot of character to a room, through texture. For this post we are focusing on the painted version, but will address a wood grain version in a follow up post.

With this one you can customize the size of the plank which drastically gives you a different look. You can see in the first example that the boards are fairly narrow (probably around 4″) where as in the last example they are much wider which gives it a more modern look. Traditionally you will see vertical paneling around 6″ – 8″ like you see in the second and third pictures which is a great width to add some character into your space.

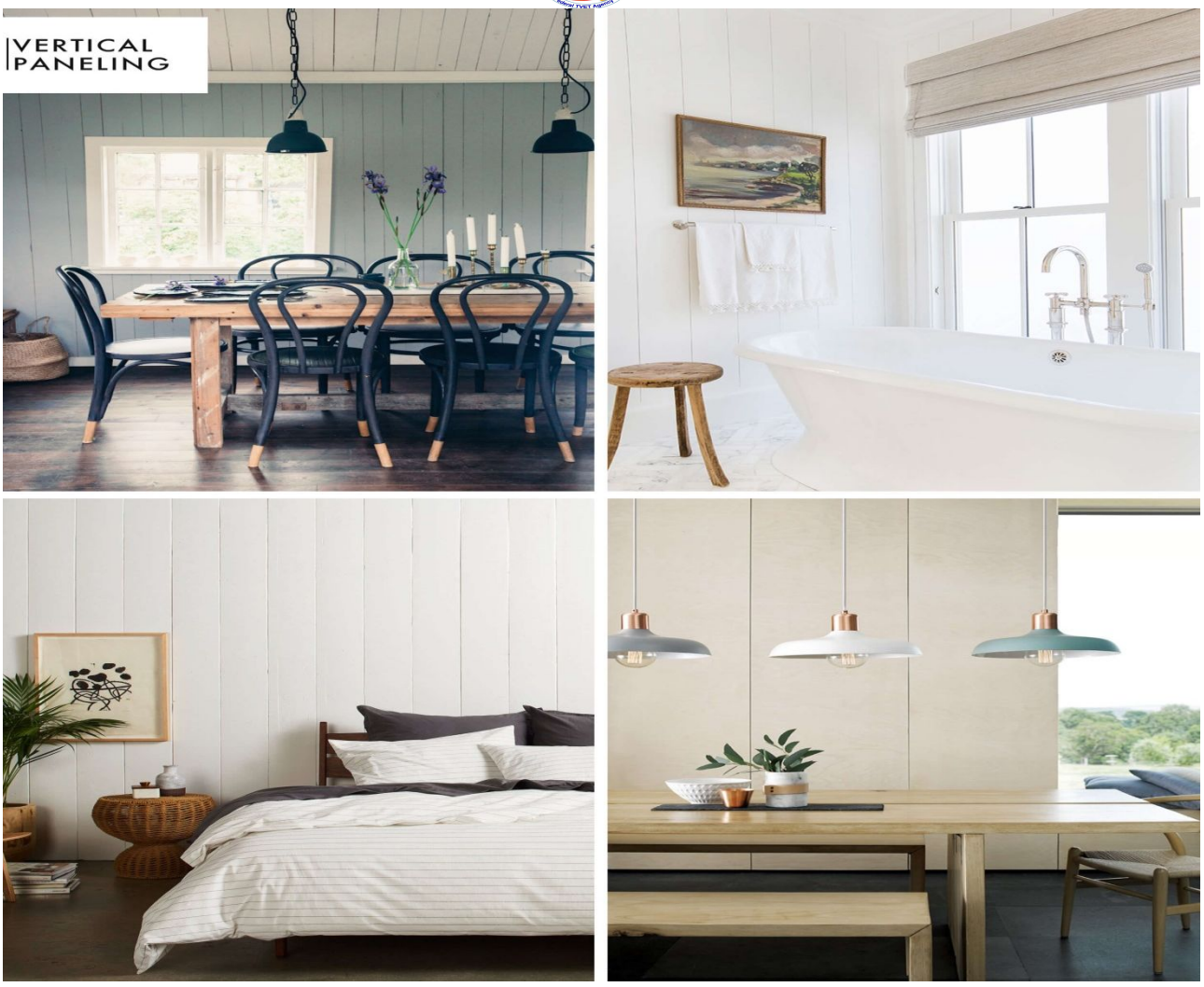


Figure 32 vertical paneling

1 | 2 | 3 | 4

In My Own Style used this type of paneling to cover up and refresh her fireplace wall (bye bye brick) and the results are pretty amazing. For her DIY she used 3 sheets of 4'x8′ 1/4″ plywood which brought the project supplies total to $60 for the lumber.

For the supplies you have a few options. You can buy large sheets of plywood or bender board (#1 and #2) and have them cut down to any size you want which works well if you plan to do wide strips of paneling or an irregular pattern. Or you can buy 6″ or 8″ common board (which basically is the cheapest type of board) at that width that you can then butt end to end on your wall and paint.

Figure 33 paneling

1. Plywood Underlayment | 2. Bender Board | 3. Vertical Panel Sheet | 4. 6″ x 12′ Common Board

We linked up #3 for the easiest/cheapest DIY option, but you will definitely need to paint it. Although, I personally think that you don't need to sweat it too much if you have that 70's paneling in your house – if you don't have the budget to remove it, I think that painting it will look great. Go for a modern color – a bright white, gray or something saturated or dark. AKA stay away from anything too 70's or 80's in color (beiges, browns, powder blues ….).

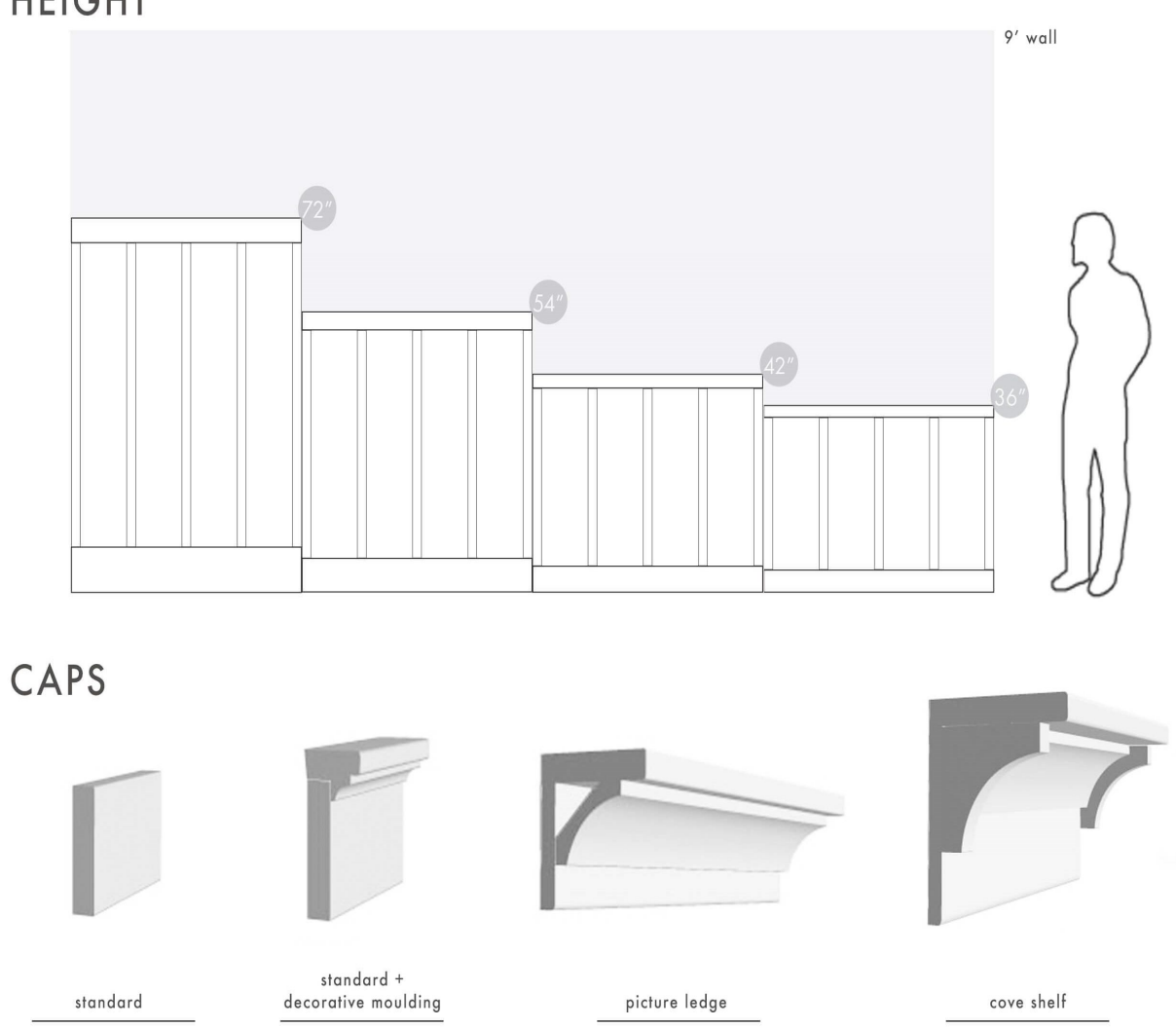


Figure 34 wainscot paneling

Figure 35 horizontal paneling

Figure 36 v-groove paneling

Figure 37 bead board paneling

✓ Nails

Nails are used to attach the joists to the deck framing, and screws are used to fasten the deck to the frame. The right fastener for the right job

Screws Nails - Requirements in Pallet Construction

Screw nails or screw shank nails are made of carbon steel or stainless steel. They are generally used in hardwoods or dense materials. They form their own thread in the wood fibers, which increase driving power in hardwoods.

*Note: Bolts are fasteners that require a nut or pre-tapped hole to be installed. Screws use their threads to provide their own holding power. The terms in the

industry are commonly mixed so sometimes you will see something that is called a screw or a bolt that is actually the opposite.

- Screws are one kind of simple machines. ... The head is specially shaped to allow a screwdriver or wrench to grip the screw when driving it in. The most common uses of screws are to hold objects together — such as wood — and to position objects. Often screws have a head on one end of the screw that allows it to be turned.

- There are two basic types of sheet metal screws, self-tapping screws and self-drilling screws.

Figure 38 screw

Figure 39 nail

✓ What is gap filling adhesive?

Common examples of structural adhesives include epoxies, cyanoacrylates, and certain urethanes and acrylic adhesives. Such adhesives can carry significant stresses, and lend themselves to structural applications.

Evo-Stik Grip fill is a solvent-borne, filled rubber resin adhesive, developed to bond virtually any rigid materials together, regardless of the evenness of the surface.
Grip fill is a high strength, one part, and gap filling adhesive specially formulated to bond a large variety of materials.

Silicone glue is an excellent sealant, surpassing the abilities of most other adhesives. Known to be flexible and durable, it has strong binding properties that can be applied to almost any surface, including plastic, metal, and glass. Silicone glue is often used in sealing glass on aquariums.

Adhesive, any substance that is capable of holding materials together in a functional manner by surface attachment that resists separation. “Adhesive” as a general term includes cement, mucilage, glue, and paste—terms that are often used interchangeably for any organic material that forms an adhesive bond.

✓ The most common types of industrial adhesives are:

1. Resins. Resins are a type of polymer of synthetic origin. ...
2. Hot Melt. Hot melt adhesives allow the user to harden and soften them whenever they want, using cold or heat. ...
3. Contact Spray. ...
4. Acrylic. ...
5. Anaerobic Adhesive. ...
6. Conductive: ...
7. Epoxy Adhesives. ...
8. Pressure Adhesives.

✓ What are 6 types of adhesives?

Different Types of Glues:

- White Craft Glue: This is the most common craft glue for porous lightweight materials such as paper, cardboard, cloth, and kids' crafts. ...
- Yellow Wood Glue: ...
- Super Glue (also known as cyanoacrylate adhesives): ...
- Hot glue: ...
- Spray adhesives: ...
- Fabric adhesives: ...
- Epoxy: ...
- Polyurethane:

- An **adhesive** is any substance applied to the surfaces of materials and its primary use it to bind them together. It can be in a form of paste, **glue**, mucilage, or cement. ... Most **natural adhesives** are made from organic sources such as **natural** resins and dextrin. They are commonly known as bio adhesives.

Self-Check -3	Written Test

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

Multiple choices

1. ----------are the warnings of hazard, temporarily or permanently affixed or placed, at locations where hazards exist

A. Barricade
B. Sign
C. Alarm
D. None

2. Write the types of paneling?

Note: **Satisfactory above – 4 out of 8 points Unsatisfactory - below 4 out of 8 point**

Information Sheet 4	Selecting Tools and equipment to the need of particular job

4.1 tools and equipment

A tool can be any item that is used to achieve a goal. Equipment usually denotes a set of tools that are used to achieve a specific objective. ... Tools are often seen to be used by animals as well. Equipment is only used by human beings

Equipment refers to tangible and durable assets that help in the production of other goods and services. Examples of equipment are things like machinery, tools, devices, etc. Materials, on the other hand, form the base of the product. This is the basic difference between equipment and materials.

- ✓ It includes:-

➢ Surfaces

- floors, walls, ceilings, windows, door frames/ jambs
- built-in cupboards, built-in robes, fitments and stairs

- ✓ What is floor and floor covering?

A finish **floor** or **floor covering** is the ultimate top layer of all of the **flooring** layers. A finish **floor** or **floor covering** is the layer that you walk on and it is the decorative layer. Usually, **floor covering** is a more precise term, since the **flooring** tends to **cover** another, structural layer of **flooring**.

Types of flooring

- Timber.
- Laminate.
- Vinyl.
- Bamboo.

- Cork.
- Tile (porcelain or ceramic)
- Tile (natural stone)
- 1.8 Carpet

What is the difference between floor and flooring?

- **Flooring**. ... **Floor** covering is a term to generically describe any finish material applied over a **floor** structure to provide a walking surface. Both terms are used interchangeably but **floor** covering refers more to loose-laid materials. Materials almost always classified as **flooring** include carpet, laminate, tile and vinyl.

Waterproof Vinyl **Flooring**

What are the best brands of **waterproof** or **water-resistant** vinyl **flooring** on the market? One is Mohawk SolidTech, which is 100 percent **waterproofs**, making it the perfect choice for kitchens, bathrooms and basements.

Types of Flooring Materials and Their Advantages

- Cork Flooring. Cork floors are made by peeling off the bark while saving the tree. ...
- Laminate Flooring. Laminate flooring presents itself as an option for those who want to capture the grandeur of wood or stone without breaking the bank. ...
- Linoleum Flooring. ...
- Stone Flooring. ...
- Tile Flooring. ...
- Vinyl Flooring. ...
- Wood Flooring.

Types of Flooring Materials and Their Advantages

Picking the flooring material is considered to be one of the most challenging tasks when designing the interiors of your home. The floor will act as the canvas upon which the colors, patterns, and design of your furniture and decorations will be based. To help you in your decision process, Kennedy Carpet has listed the types of flooring materials and the advantages that they can offer you:

- Cork Flooring

Cork floors are made by peeling off the bark while saving the tree. They are great at insulating the home and keeping it relatively sound-proof. It is anti-allergenic unlike most flooring types and resists against insects well. Since, cork is all natural, it is environmentally friendly and sustainable. Cork floors are resistant against abrasion and can be easily cleaned.

- Laminate Flooring

Laminate flooring presents itself as an option for those who want to capture the grandeur of wood or stone without breaking the bank. Laminate is hardy and will show no signs of fading or stains for a decade. It is not easily affected by moisture like wood and it will require less care than authentic wood or stone flooring. Clean-up consists only of booming away dust and dirt and mopping.

- Linoleum Flooring

Linoleum flooring is a composite of cork wood dust, limestone, recycled wood flour, and linseed oil. It is considered to be one of the more environmentally safe choices when it comes to flooring materials. Linoleum floors are tough against impacts or dents. Oils cannot also affect linoleum flooring nor damage it. A floor using this type of tile provides a smooth and comfortable feel.

- Stone Flooring

Since there are different kinds of stones, natural stone tiles also come in different types like limestone, clay, granite, pebble, sandstone, slate, travertine and onyx. They are generally durable and provide an unmatched elegance to your home's interiors. Stone floors can also withstand high temperatures and are suitable to be placed near sources of radiant heating like fireplaces, stoves, or furnaces.

- Tile Flooring

Tile flooring come in various types like ceramic, porcelain, quarry, and mosaic. Installers will need grout in order to properly lay them down on the floor. When tiles are glazed, they can be stain-resistant. It shares the same quality of heat resistance with stone floors and as such, they can be used near fireplaces, furnaces, and stoves as well.

- Vinyl Flooring

Although synthetic by origin, vinyl flooring achieves the rich, deep, and elegant look of wooden floors. This floor type also comes in different colors and patterns since vinyl manufacturing processes have been upgraded throughout the decades. Vinyl floors are durable and will ably resist impacts and scratches against their surfaces. Vinyl floors are cost effective and are the easiest ones to invest on at the outset.

- Wood Flooring

Wood flooring is the classic option and it comes in oak, maple, and bamboo. With proper care and maintenance, wood floors can last a long time. Cleaning wooden floors only require sweeping and the application of polishing shine solution while scrubbing from time to time.

✓wall

The purposes of the **walls** in buildings are to support roofs, floors and ceilings; to enclose a space as part of the building envelope along with a roof to give buildings form; and to provide shelter and security. In addition, the **wall** may house various types of utilities such as electrical wiring or plumbing.

- Wall is a structure defining an exact area and providing safety & shelter. There are various types of walls used in the construction of buildings given below.

Types of Walls

- Load Bearing Walls
  - Precast Concrete Wall
  - Retaining Wall
  - Masonry Wall
  - Pre Panelized Load Bearing Metal Stud Walls
  - Engineering Brick Wall
  - Stone Wall
- Non-Load Bearing Wall
  - Hollow Concrete Block
  - Facade Bricks
  - Hollow Bricks
  - Brick Walls
- Cavity Walls
- Shear Walls
- Partition Walls
- Panel Walls
- Veneered Walls
- Faced Walls

Brief descriptions of different types of walls are given below.

✓ Load Bearing Walls

Load bearing wall is a structural element. It carries the weight of a house from the roof and upper floors, all the way to the foundation. It supports structural members like beams(sturdy pieces of wood or metal), slab and walls on above floors above. A wall directly above the beam is called load bearing wall. It is designed to carry the vertical load. In another way, if a wall doesn't have any walls, posts or other supports directly above it, it is more likely to be a load-bearing wall. Load bearing walls also carry their own weight. This wall is typically over one another on each floor. Load bearing walls can be used as interior or exterior wall. This kind of wall will often be perpendicular to floor joists or ridge. Concrete is an ideal material to support these loads. The beams go directly into the concrete foundation. Load bearing walls inside the house tend to run the same direction as the ridge.

Figure 40 load bearing walls

Types of Load Bearing Walls:

- Precast Concrete Wall
- Retaining Wall
- Masonry Wall
- Pre Panelized Load Bearing Metal Stud Walls
- Engineering Brick Wall
- Stone Wall

✓ Non-Load Bearing Walls

A wall which doesn't help the structure to stand up and holds up only itself is known as a non-load bearing wall. It doesn't support floor roof loads above. It is a framed structure. Most of the time, They are interior walls whose purpose is to divide the structure into rooms. They are built lighter. One can remove any non-load bearing walls without endangering the safety of the building. Non-load bearing walls can be identified by the joists and rafters. They are not responsible for gravitational support for the property. It is cost effective. This wall is referred to as "curtain wall".

Figure 41 non load bearing loads

Types of Non-Load Bearing Wall:

- Hollow Concrete Block
- Facade Bricks
- Hollow Bricks
- Brick Walls

Cavity Walls

The cavity wall consists of two separate Wythe's. The Wythe's are made of masonry. Those two walls are known as internal leaf and external leaf. This wall is also known as a hollow wall. They reduce their weights on the foundation. They act as good as sound insulation. Cavity wall gives better thermal insulation than any other solid wall because space is full of air and reduces heat transmission. They have a heat flow rate that is 50 percent that of a solid wall. It is economically cheaper than other solid walls. It is fire resistant. Cavity wall helps to keep out from noise.

Shear Walls

It is a framed wall. It is designed to resist lateral forces. This lateral force comes from exterior walls, floor, and roofs to ground foundation. The usage of the shear wall is important, especially in large and high-rise buildings. It is Typically constructed from materials like concrete or masonry. It has an excellent structural system to resist earthquake. It provides stiffness in the direction. The construction and implementation are easy in shear walls. It is located symmetrically to reduce ill effects of a twist.

Partition Walls

It is used in separating spaces from buildings. It can be solid, constructed from brick or stone. It is a framed construction. The partition wall is secured to the floor, ceiling, and walls. It is enough strong to carry its own load. It resists impact. It is stable and strong to support wall fixtures. Partition wall works like a sound barrier and it is fire resistant.

Panel Walls

It is a non-bearing wall between columns or pillars that are supported. The panel is installed with both nails and adhesive. The paneling design choices include rustic, boards, frame. Paneling can be from hardwoods or inexpensive pine. One should paint the space before installing panel walls.

Veneered Walls

With a veneered wall, we are holding up the material. It can be made of brick or stone. The most famous veneered wall is made of brick. The wall is only one wythe thick. It became the norm when building codes began to require insulation in the interior walls. It is light weighted. The construction takes less time to complete in veneered walls.

Faced Walls

It is a wall which masonry facing and backing are so bonded as to exert common action under load. It creates a streamlined look. The faced wall is easy to install.

✓ ceiling

A **ceiling** is an overhead interior surface that covers the upper limits of a room. It is not generally considered a structural element, but a finished surface concealing the underside of the roof structure or the floor of a story above. Ceilings can be decorated to taste, and there are many fine examples of frescoes and artwork on ceilings especially in religious buildings.

The most common type of ceiling is the dropped ceiling, which is suspended from structural elements above. Panels of drywall are fastened either directly to the ceiling joists or to a few layers of moisture-proof plywood which are then attached to the joists. Pipework or ducts can be run in the gap above the ceiling, and insulation and fireproofing material can be placed here.

A subset of the dropped ceiling is the suspended ceiling, wherein a network of aluminum struts, as opposed to drywall, are attached to the joists, forming a series of rectangular spaces. Individual pieces of cardboard are then placed inside the bottom of those spaces so that the outer side of the cardboard, interspersed with aluminum rails, is seen as the ceiling from below. This makes it relatively easy to repair the pipes and

insulation behind the ceiling, since all that is necessary is to lift off the cardboard, rather than digging through the drywall and then replacing it.

Other types of ceiling include the cathedral ceiling, the concave or barrel-shaped ceiling, the stretched ceiling and the coffered ceiling. Coving often links the ceiling to the surrounding walls. Ceilings can play a part in reducing fire hazard, and a system is available for rating the fire resistance of dropped ceilings.

Different Types of Ceilings for Your Home Explained

- Vaulted Ceiling.
- Cathedral Ceiling.
- Shed Ceiling.
- Cove Ceiling.
- Beamed Ceiling.
- Barrel Vault Ceiling.
- Tall Ceiling.
- Tray Ceiling.

The **material used for a ceiling** should be appropriate for the room's purpose, and there is no shortage of **ceiling materials** to choose from. Some common choices are drywall, plaster, wood, tile and metal

Top 10 Best Ceiling Fans in India 2019

- Havells Nicola 1200mm Ceiling Fan. ...
- Gorilla Energy Saving Ceiling Fan. ...
- Crompton HS Plus Ceiling Fan. ...
- Orient Electric Aeroquiet 1200 Ceiling Fan. ...
- Havells ES-50 Five Star Ceiling Fan. ...
- Usha Technix Star Ceiling Fan. ...
- Superfan Super A1 Ceiling Fan.

✓ What is a Jamb?

Jambs are the main vertical components that form the sides of a window. A head or head jamb is the vertical component that sits at the very top of the window frame.

A jamb (from French jambe, "leg"), in architecture, is the side-post or lining of a doorway or other aperture. The jambs of a window outside the frame are called “reveals.” ... A doorjamb, door jamb (also sometimes doorpost) is the vertical portion of the door frame onto which a door is secured.

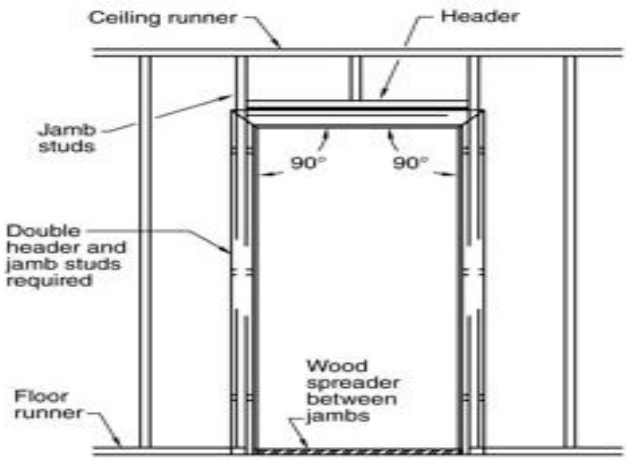


Figure 18 – Wood stud wall construction

Door part names

- Door frame. The door frame is the entire framework supporting the door, including the sill, jamb and head. ...
- Sill. The door sill is the very bottom part of the door frame that rests on the floor.
- Jamb/door jam. ...
- Head. ...
- Panel. ...
- Astragal. ...
- Fixed panel. ...
- Door sweep

- built-in cupboards, built-in robes, fitments and stairs

The term cupboard was originally used to describe an open-shelved side table for displaying dishware, more specifically plates, cups and saucers. These open cupboards typically had between one and three display tiers, and at the time, a drawer or multiple drawers fitted to them.

A cupboard, also known as a cabinet, is a piece of furniture used for storage. Usually, a cupboard will be in the kitchen or bathroom of a house. It usually has one or more shelves to put items on. It can also have a door to close off the open shelves.

Figure 42 cup board

Self-Check -4	Written Test

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

1. write and explain the difference between tools and equipment

Note: **Satisfactory above – 4 out of 8 points Unsatisfactory - below 4 out of 8 point**

Operation sheet 1

(Information sheet 4)

- ✓ Techniques and procedure for installation of sheet lining to timber framed ceiling

1. Select and use correctly the appropriate personal protective equipment.
2. Select appropriate tools and equipment.
3. Identify ceiling to be line.
4. Determine fixing method from specifications.
5. Nominate specified thermal insulation.
6. Determine lining material requirements from job drawings and specifications.
7. Calculate working height and determine the need for scaffold. Scaffold type and erection to comply with AS 1576.1 requirements.
8. Check spacing of ceiling frame members to determine batten requirements (batten spacing to be within the specified maximum span for nominated sheet

lining.

9. Determine flatness of ceiling frame and rectify where required by machining, packing or installing battens.
10. Check roof cavity for access and determine the stage of installation for thermal insulation.
11. Set out ceiling to ensure balance of panels and nominated starting point.
12. Where required, cut first sheet to size and install to specification.
13. Install integrated cover strip where specified.
14. Install remaining sheet paneling, ensuring joints are tight and sheet alignment is accurate. Joint between perimeter sheets and adjoining wall to be neat and within the specified tolerance.
15. Cut and install perimeter bead/scotia. Scribe and miter joints to be tight fitting with nails punched below surface.

16. Cut and install intermediate cover strip where specified. Joints to be tight fitting and nails punched below surface.
17. Dismantle scaffold and store in specified area.
18. Store reusable materials safely.
19. Maintain and store tools and equipment.
20. Clean work area and dispose of waste materials safely.

Information Sheet 5	Calculating Material quantity requirements

5.1 bill of quantities

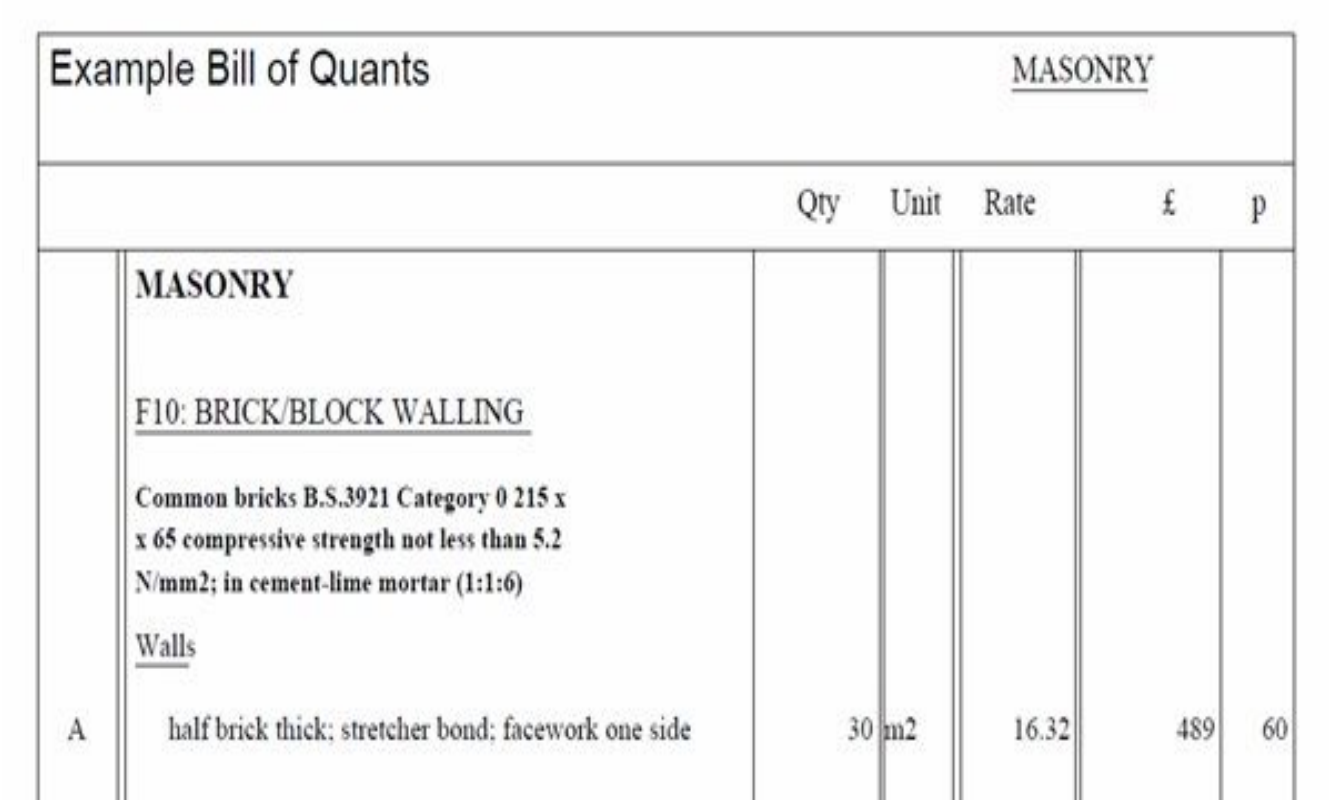
How do you calculate quantity estimation?

The total cost per unit quantity of each item is analyzed and worked out. Then the total cost for the item is found by multiplying the cost per unit quantity by the number of units. For example, while estimating the cost of a building work, the quantity of brickwork in the building would be measured in cubic meters.

Bills of Quantities comprise a list of items of work which are briefly described. The Bills also provide a measure of the extent of work and this allows the work to be priced. ... Arrive at a revised contract price once the actual quantities of work carried out are measured. This is the re measure form of contract.

The bill of quantities (sometimes referred to as 'BoQ' or 'BQ') is a document prepared by the cost consultant (often a quantity surveyor) that provides project specific measured quantities of the items of work identified by the drawings and specifications in the tender documentation.

A bill of quantities (BOQ) is a document used in tendering in the construction industry in which materials, parts, and labor (and their costs) are itemized. ... Preparing a bill of quantities requires that the design is complete and a specification has been prepared.



Example Bill of Quants — MASONRY

		Qty	Unit	Rate	£	p
	MASONRY					
	F10: BRICK/BLOCK WALLING					
	Common bricks B.S.3921 Category 0 215 x x 65 compressive strength not less than 5.2 N/mm2; in cement-lime mortar (1:1:6)					
	Walls					
A	half brick thick; stretcher bond; facework one side	30	m2	16.32	489	60

Figure 43 sample for bill of quantity

Self-Check -5	Written Test

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

1. What is bill of quantity?

Note: **Satisfactory above – 4 out of 8 points Unsatisfactory - below 4 out of 8 point**

Information Sheet 6	Identifying, obtaining and preparing Materials appropriate to the work application

6.1 preparing Materials appropriate to the work application

- ✓ It includes:-

Lining/paneling sheet materials

- lining boards, veneer paneling
- plywood, hardboard, MDF board
- particle board and fiber cement board

- ✓ Wall lining is a wall built in front of another wall leaving a space between the two. This space may or may not be filled with an insulating material.

Boral's Australian hardwood Lining Board provides an attractive and economical way to line the interior of both new and old buildings. It offers design freedom, ease of handling, a range of products and the natural beauty of Australian timber species.

- ✓ Veneer paneling

In woodworking, veneer refers to thin slices of wood and sometimes bark, usually thinner than 3 mm (1/8 inch), that typically are glued onto core panels (typically, wood, particle board or medium-density fiberboard) to produce flat panels such as doors, tops and panels for cabinets, parquet floors and parts

Veneer is obtained either by "peeling" the trunk of a tree or by slicing large rectangular blocks of wood known as flitches. The appearance of the grain and figure in wood

comes from slicing through the growth rings of a tree and depends upon the angle at which the wood is sliced. There are three main types of veneer-making equipment used commercially:

- A rotary lathe in which the wood is turned against a very sharp blade and peeled off in one continuous or semi-continuous roll. Rotary-cut veneer is mainly used for plywood, as the appearance is not desirable because the veneer is cut concentric to the growth rings.
- A slicing machine in which the flitch or piece of log is raised and lowered against the blade and slices of the log are made. This yields veneer that looks like sawn pieces of wood, cut across the growth rings; such veneer is referred to as "crown cut".
- A half-round lathe in which the log or piece of log can be turned and moved in such a way as to expose the most interesting parts of the grain, creating a more textured feel and appearance; such veneer is commonly referred to as "rift cut."

Each slicing processes gives a very distinctive type of grain, depending upon the tree species. In any of the veneer-slicing methods, when the veneer is sliced, a distortion of the grain occurs. As it hits the wood, the knife blade creates a "loose" side where the cells have been opened up by the blade, and a "tight" side.

Historically veneers were also sawn, but this is more wasteful of wood. Veneering is an ancient art, dating back to at least the ancient Egyptians who used expensive and rare wood veneers over cheaper timbers to produce their furniture and sarcophagi. During the Roman Empire, Romans also used veneered work in mass quantities.

Producing wood veneers

The finest and rarest logs are sent to companies that produce veneer. The advantage to this practice is twofold. First, it provides the most financial gain to the owner of the log. Secondly, and of more importance to the woodworker, it greatly expands the amount of

usable wood. While a log used for solid lumber is cut into thick pieces, usually no thinner than 1/8 of an inch (3 mm), veneers are cut as thin as 1/40 of an inch (0.6 mm). Depending on the cutting process used by the veneer manufacturer, very little wood is wasted by the saw blade thickness, known as the saw kerf. Accordingly, the yield of a rare grain pattern or wood type is greatly increased, in turn placing less stress on the resource. Some manufacturers even use a very wide knife to "slice off" the thin veneer pieces. In this way, none of the wood is wasted. The slices of veneer are always kept in the order in which they are cut from the log and are often sold this way.

Types of veneers

There are a few types of veneers available, each serving a particular purpose.

- Raw veneer has no backing on it and can be used with either side facing up. It is important to note that the two sides will appear different when a finish has been applied, due to the cell structure of the wood.
- Paper backed veneer is as the name suggests veneers that are backed with paper. The advantage to this is it is available in large sizes, or sheets, as smaller pieces are joined together prior to adding the backing. This is helpful for users that do not wish to join smaller pieces of raw veneers together. This is also helpful when veneering curves and columns as the veneer is less likely to crack.
- Phenolic backed veneer is less common and is used for composite or artificial wood veneers. Due to concern for the natural resource, this is becoming more popular. It too has the advantage of being available in sheets, and is also less likely to crack when being used on curves.
- Laid up veneer is raw veneer that has been joined together to make larger pieces. The process is time-consuming and requires great care, but is not difficult and requires no expensive tools or machinery. Veneers can be ordered through some companies already laid up to any size, shape or design.
- Reconstituted veneer is made from fast-growing tropical species. Raw veneer is cut from a log, and dyed if necessary. Once dyed, the sheets are laminated

together to form a block. The block is then sliced so that the edges of the laminated veneer become the “grain” of the reconstituted veneer.

- Wood on Wood Also called 2-ply is a decorative wood veneer face with a utility grade wood backer applied at an opposing direction to the face veneer.

Advantages of using veneers

Compared to wood, one of the primary advantages of using veneer is stability. While solid wood can be prone to warping and splitting, because veneer is made of thin layers of wood glued together, the chances of splitting or cracking are reduced.

Some projects built using wood veneer would not be possible to construct using solid lumber, owing to expansion and contraction caused by fluctuation of temperature and humidity. Another advantage of veneer is sustainability—furniture made with wood veneer uses less wood than the same piece of furniture made with solid wood. Further, veneer may also be more readily available than solid wood as exotic hardwood lumber can be scarce and very expensive.

✓Plywood

Plywood is a material manufactured from thin layers or "plies" of wood veneer that are glued together with adjacent layers having their wood grain rotated up to 90 degrees to one another. It is an engineered wood from the family of manufactured boards which includes medium-density fiberboard and particle board.

An extremely versatile product, **plywood** is **used** for a wide range of structural, interior and exterior applications - from formwork through to internal paneling. **Plywood** is an assemblage of wood veneers bonded together to produce a flat sheet.

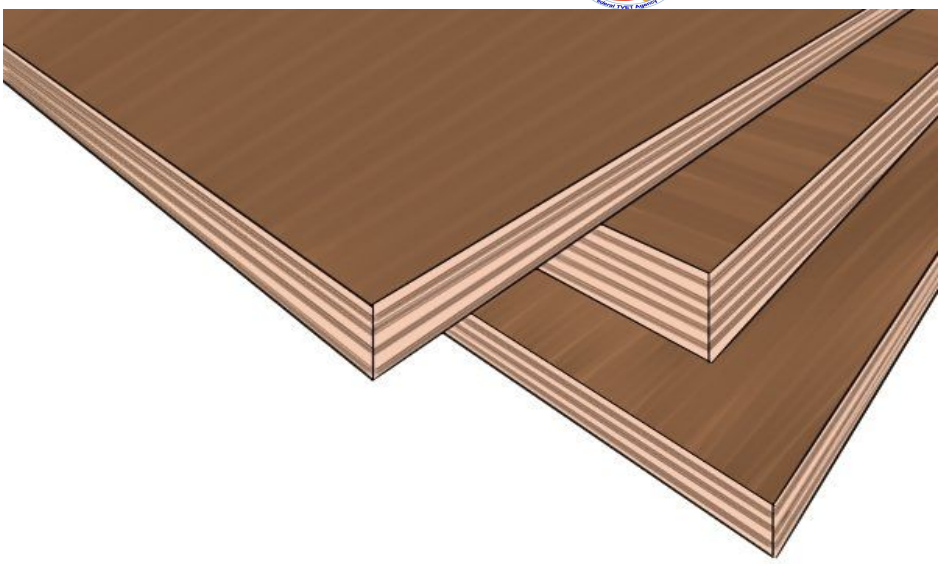


Figure 44 ply wood

Advantages and disadvantages of plywood

ADVANTAGES	DISADVANTAGES
• *Constructed of layers that are glued together, so has great strength compared to, for instance, MDF* • *Resistant to warping, cracking and twisting* • *Less expensive than full-wood boards, which makes it economical as a construction*	• *The layering of thin plies can make plywood susceptible to water damage over time* • *Becomes heavy when wet and needs a protective covering if left or used outside*

material

- *Available in many different types to suit an extremely wide range of applications*

✓ **hardboard**

Principal Hazardous Component (s): This material is hardboard (HB). As such it is essentially inert (nontoxic) during handling and storage. This MSDS also discusses potential hazards created in the sublimation process. The product may release small quantities of formaldehyde.

Hardboard is used in a variety of applications including furniture components, wall paneling, molded door skins, underlayment and perforated boards.

Figure 45 hard board

- ✓ Medium-density fiberboard (MDF)

is an engineered wood product made by breaking down hardwood or softwood residuals into wood fibers, often in a defibrator, combining it with wax and a resin binder, and forming panels by applying high temperature and pressure. MDF is generally denser than plywood. It is made up of separated fibers, but can be used as a building material similar in application to plywood. It is stronger and much denser than particle board.

Medium-density fiberboard (MDF) is generally cheaper than plywood, but it is not as hard and can sag under heavy weight. ... Moisture also affects the strength of plywood; exterior-glued plywood can be used outdoors, but it works best when moisture content remains low.

Medium density fiberboard (MDF) is a composite product used in many home and professional projects, such as furniture, cabinetry, flooring and even speaker boxes due to its smooth finish, machinability, strength and consistency.

Figure 46 medium density fiber

Advantages of MDF Wood

- MDF is inexpensive.
- MDF uses recycled wood, which is environmentally-friendly.
- Veneers can be attached to MDF to make it look like real wood.
- MDF will not expand and contract in the heat and humidity like solid wood can.
- MDF is easy to paint in a variety of colors and easier to shape than solid wood.
- MDF doesn't have knots that can make a piece hard to attach.
- MDF is resistant to pests, such as termites, due to the chemicals used in its construction.

Disadvantages of MDF Wood

- If MDF is chipped or cracked, you cannot repair or cover it easily.
- MDF can swell if it touches water.
- There's no natural grain on MDF wood.
- Small amounts of formaldehyde may be off-gassed during construction, and it's less child-friendly than solid wood.
- MDF has glue in it that can make it hard to sink certain types of fasteners into it.

✓ Particle board

Particle board – also known as particleboard, low-density fiberboard, and chipboard – is an engineered wood product manufactured from wood chips, sawmill shavings, or even sawdust, and a synthetic resin or other suitable binder, which is pressed and extruded.

Medium density fiberboard, or MDF, and particle board are both pressed wood products often used for cabinets, shelving, furniture and paneling. ... Also a waste-wood product, particleboard is less expensive than MDF and made by hot-pressing sawdust (vs. fiber) with resin adhesives.

Figure 47 particle board

✓ Fiber cement siding

Fiber cement siding is a building material used to cover the exterior of a building in both commercial and domestic applications. Fiber cement is a composite material made of cement reinforced with cellulose fibers.

Typically, fiber cement boards are made up of cement and cellulose fibers (plant extracts). While the former is extremely hardy and can be used for high load-bearing applications, the latter is best used for decorative purposes, such as sidings, soffit, and trims, or as a tile backing board.

Figure 48 fiber cement siding

The material, which can be made to resemble wood grain or even stucco, has been around for 100 years. It has received a bad rap because it contained asbestos fibers in the past. Now fiber cement board contains cellulose fibers, along with Portland cement and sand.

Self-Check -6	Written Test

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

Multiple choices

1. ----------is a material manufactured from thin layers or "plies" of wood veneer that are glued together with adjacent layers having their wood grain rotated up to 90 degrees to one another
   A. Hard board
   B. Ply wood
   C. Chip wood
   D. Lumber

2. Write the advantages and disadvantages of ply wood?
   I.

Note: **Satisfactory above – 4 out of 8 points Unsatisfactory - below 4 out of 8 point**

Information Sheet 7	Identifying environmental protection requirement

7.1 Environmental Requirement

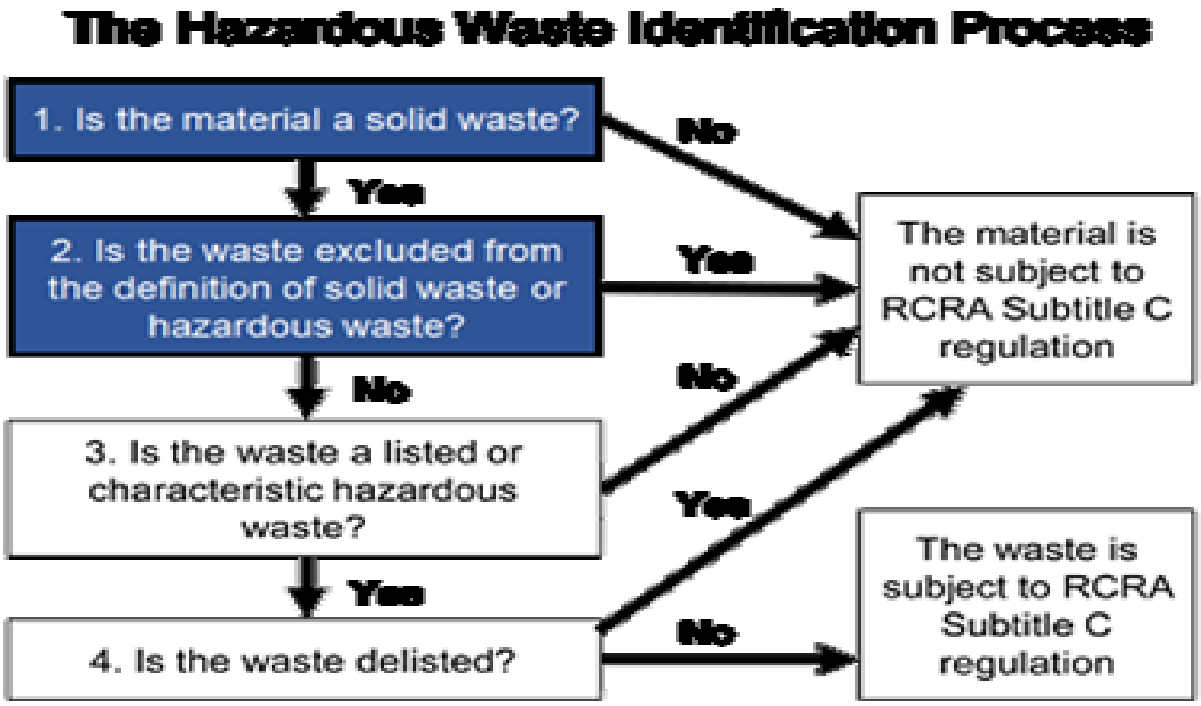
Environmental Requirement means any legal **requirement** relating to the environment and applicable to the Borrower or the Properties, including but not limited to any such **requirement** under CERCLA or other **Environmental** Law.

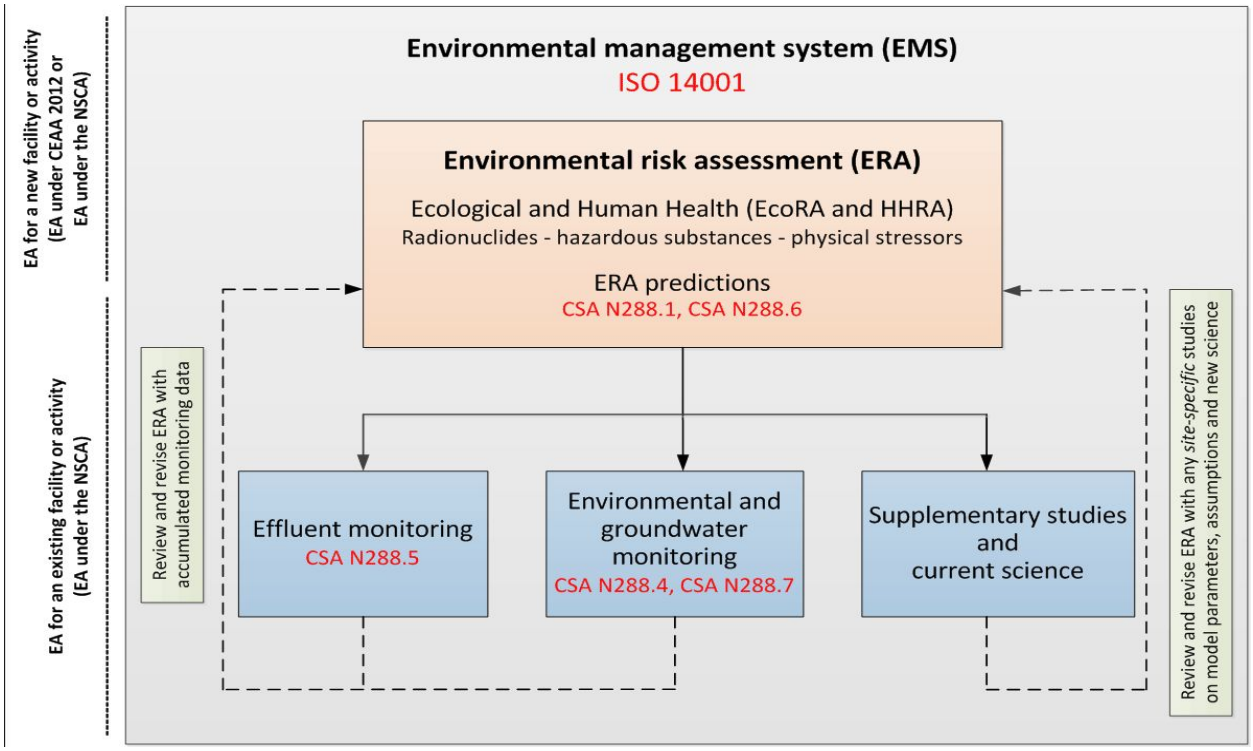
- The purpose of **environmental law** is to protect the **environment** and create rules for how people can use natural resources. ... **Laws** may regulate pollution, the use of natural resources, forest **protection**, mineral harvesting and animal and fish populations.

7 Environmental Principles of Nature (Explanation)

- Nature knows best. ...
- All forms of life are important. ...
- Everything is connected to everything else. ...
- Everything changes. ...
- Everything must go somewhere. ...
- Ours is a finite earth. ...
- Nature is beautiful and we are stewards of God's creation.

Safety Requirement Specification, SRS, is a documentation for **requirements** stated in the **safety standards** e.g. the standard IEC61511 “Functional **safety** – **Safety** instrumented systems for the process industry sector”. A SRS must be developed during a project that involves **Safety** Instrumented Systems, SIS.


The Hazardous Waste Identification Process
1. Is the material a solid waste?
No
Yes
2. Is the waste excluded from the definition of solid waste or hazardous waste?
Yes
No
3. Is the waste a listed or characteristic hazardous waste?
No
Yes
4. Is the waste delisted?
No
The material is not subject to RCRA Subtitle C regulation
The waste is subject to RCRA Subtitle C regulation


EA for a new facility or activity (EA under CEAA 2012 or EA under the NSCA)
EA for an existing facility or activity (EA under the NSCA)
Environmental management system (EMS)
ISO 14001
Environmental risk assessment (ERA)
Ecological and Human Health (EcoRA and HHRA)
Radionuclides - hazardous substances - physical stressors
ERA predictions
CSA N288.1, CSA N288.6
Review and revise ERA with accumulated monitoring data
Effluent monitoring
CSA N288.5
Environmental and groundwater monitoring
CSA N288.4, CSA N288.7
Supplementary studies and current science
Review and revise ERA with any site-specific studies on model parameters, assumptions and new science

Self-Check -7	Written Test

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

1. What is environmental requirement?

Note: **Satisfactory above – 4 out of 8 points Unsatisfactory - below 4 out of 8 point**

LAP Test 1	Practical Demonstration

Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: Given necessary templates, workshop, tools and materials you are required to perform the following tasks within 3 hours.

Task 1: Select and use correctly the appropriate personal protective equipment.
.

Task 2: Select appropriate tools and equipment

Task 3: Using the given template Identify ceiling to be line.

- identify the:

- . Determine fixing method from specifications.
- Nominate specified thermal insulation.
- Determine lining material requirements from job drawings and specifications.
- Calculate working height and determine the need for scaffold. Scaffold type and erection to comply with AS 1576.1 requirements.
- Check spacing of ceiling frame members to determine batten requirements (batten spacing to be within the specified maximum span for nominated sheet lining.
- Determine flatness of ceiling frame and rectify where required by machining, packing or installing battens.
- Check roof cavity for access and determine the stage of installation for thermal insulation.

- Set out ceiling to ensure balance of panels and nominated starting point. Where required, cut first sheet to size and install to specification.
- Install integrated cover strip where specified.
- Install remaining sheet paneling, ensuring joints are tight and sheet alignment is accurate. Joint between perimeter sheets and adjoining wall to be neat and within the specified tolerance.
- Cut and install perimeter bead/scotia. Scribe and miter joints to be tight fitting with nails punched below surface.
- Cut and install intermediate cover strip where specified. Joints to be tight fitting and nails punched below surface.
- Dismantle scaffold and store in specified area.

Task 4: Using a given template Store reusable materials safely.

Task5: Maintain and store tools and equipment.
Task 6: Clean work area and dispose of waste materials safely.

List of Reference Materials

.

- https://www.ccaa.com.au/imis_prod/documents/Library Documents/C
- https://www.houselogic.com/remodel/painting-lighting/concrete-painting/
- https://www.google.com/search?sxsrf=ACYBGNQHUi0Oo5VLVWER8HU5E4Hiyr5yWw:1569940933971&q=what+is+Applying+co

The trainers prepare TTLM

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3	Abdulahi Muktare	Somale	Somalia TVET Bureau		0935635068